185612

clean water portland

Protecting Portland and its world-class drinking water

Fluoridation proponents are misusing Oregon statewide data to claim a "Dental Health Crisis" in Portland requiring fluoridation

The Everyone Deserves Health Teeth Coalition is making numerous claims to support their argument that there is a "dental health crisis" in Portland but they're basing the claim on statewide numbers for Oregon instead of available data for Portland. But if they want to add fluoridation chemicals to Portland's water then shouldn't we consider Portland's dental health numbers?

Fluoridation promoters claim: *"One third of Oregon's children suffer from untreated dental decay"* ranking Oregon the "*fifth-worst in the nation.*"

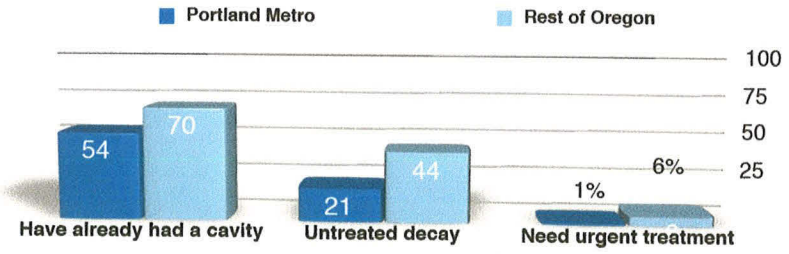
What if you compare Portland metro to the rest of Oregon?

• The percentage of Portland metro children that have had a cavity is 54%, compared to 70% of children outside of Portland. (2007 Smile survey at p. 12) This is true even though only 8% of the Portland area is fluoridated where as 33% of Oregon residents outside Portland metro is fluoridated. [1] Portland metro's cavity rate brings down the cavity rate outside Portland to a statewide to 66.3%.[2]

How does Portland compare nationally?

• Fluoridation promoters like to compare Oregon to other states, but if Portland was compared to other states **Portland's children would rank as having the 15th lowest rate of "cavities experiences" in the U.S.** (CDC Caries Experience data[3], New York state ranked 15th with 54.1%). This is true despite the high fluoridation rates in many states.

• The percentage of Portland metro children with untreated decay is 21%, compared to a 44% outside of Portland and 35.4% statewide. (2007 Smile survey at p. 12) While there's always room for improvement, the Portland metro area has already met the 2010 National Oral Health Objectives for rates of untreated decay (21%). That said, "untreated" decay highlights the real need for increased access to basic dental care and does nothing to support a need to fluoridate.



• With a untreated decay rate of 21% **Portland's rate of untreated decay would be the 15th lowest in the United States** if compared to other states including many with high rates of fluoridation. (CDC Caries Experience data[4], Iowa ranked 15th with 21.9%).

Conclusion: While Portland should work to improve oral health for children by increasing access to care and increasing preventative dental health education and sealants, there is no factual basis to support that Portland faces a dental crisis that is greater than other states or regions.

REFERENCES

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[1] Beaverton, Tualatin and Forest Grove are fluoridated and have combined population of 136,940 (2010 census). This is equal to roughly 8% of the total population of the Portland metro area of Multnomah, Washington and Clackamas Counties as defined by the 2007 Oregon Smile Survey at 12. Proportional representation of these towns in the survey is assumed. The number of fluoridated people (FP) in Oregon is 833,227 (CDC 2010). Of those, approximately 136,940 FP live in Portland metro, the remaining approximately 696,287 FP live in the rest of Oregon. These 696,287 FP in the rest of Oregon comprise 31.8% of the population outside of Portland metro. Oregon population outside Portland metro is 2,190,038 (2010 Census).

[2] CDC Oral Health webpage: http://apps.nccd.cdc.gov/nohss/IndicatorV.asp?Indicator=2&OrderBy=2

[3] CDC Oral Health webpage: http://apps.nccd.cdc.gov/nohss/IndicatorV.asp?Indicator=2&OrderBy=2

[4] CDC Oral Health webpage: http://apps.nccd.cdc.gov/nohss/IndicatorV.asp?Indicator=3&OrderBy=2

Top Ten Arguments Against Water Fluoridation www.flouridealert.org

1. **Fluoridation is a violation of the individual's right to informed consent to medication.**
2. **Fluoride is not an essential nutrient.** No biological process in animals or humans has been shown to depend on it. On the contrary, it is known that fluoride can interfere with many important biological processes and vital cellular constituents, such as enzymes and G-proteins. This makes fluoride potentially toxic even at low doses.
3. **Children in fluoridated countries are greatly over-exposed to fluoride.** When fluoridation began in 1940s, 10% of children were expected to develop dental fluorosis (damage to the enamel involving discoloration and/or mottling) in its very mild form. Today, the prevalence in fluoridated countries is much higher—41% of all American children aged 12-15 are now impacted with some form of dental fluorosis (CDC, 2010), with over 10% in categories (mild, moderate and severe) that may need expensive treatment.
4. **The chemicals used to fluoridate water supplies are largely hazardous by-products of the fertilizer industry.** These chemicals cannot be disposed of into the sea by international law, and have never been required to undergo randomized clinical trials for safety or effectiveness by any regulatory agency in the world. The U.S. FDA classifies fluoride as an "unapproved drug."
5. **There is mounting evidence that swallowing fluoride causes harm.** Fluoride has been found to damage soft tissues (brain, kidneys, and endocrine system), as well as teeth (dental fluorosis) and bones (skeletal fluorosis). There are now over 24 studies that show a relationship between fairly modest exposure to fluoride and reduced IQ in children. Two of these studies suggest that the threshold for damage may be reached at fluoride levels similar to those used in water fluoridation.
6. **Swallowing fluoride provides little or no benefit to the teeth.** Even promoters of fluoridation agree that fluoride works topically (on the outer surface of the teeth), and not via some internal biological mechanism (CDC, 1999). A recent U.S. study found no relationship between the amount of fluoride a child ingested and level of tooth decay (Warren et al., 2009). Topical treatment in the form of fluoridated toothpaste is universally available, so it is a mistake to swallow fluoride and expose all the tissues of the body to its harmful effects.
7. **Human breast milk is very low in fluoride.** Breast milk averages only 0.007 ppm F (NRC, 2006). Even in areas with high fluoride levels, nursing children receive only a small fraction of the mother's fluoride intake, ensuring that the sensitive brains and bodies of breast-fed infants are protected from the developmental effects of this toxin. In contrast, a bottle-fed baby in a fluoridated area (0.7-1.2 ppm F) gets up to 200 times more fluoride than a breast-fed baby, resulting in an increased risk of dental fluorosis and other adverse effects.
8. **Once fluoride is added to water, there is no way to control who gets the drug or how much is ingested.** No medical follow-up or monitoring of fluoride levels in citizens' urine or bones is being carried-out by health agencies and so no record is being kept of adverse effects or daily or accumulated exposures.
9. **Certain subgroups are particularly affected by fluoridation.** People vary considerably in their sensitivity to any toxic substance, including fluoride. Infants, the elderly, diabetics, those with poor nutrition (e.g. low calcium and low iodine), and those with kidney disease are especially vulnerable to specific adverse effects of fluoride. Black and Mexican-Americans have a higher prevalence of the more severe forms of dental fluorosis (see Table 23, CDC, 2005).
10. **Fluoridation discriminates against those with low incomes.** People on low incomes are least able to afford avoidance measures (reverse osmosis or bottled water), or treatment of dental fluorosis (see Point 3) and other fluoride-related ailments (see Point 5).

INFANT EXPOSURE

"Fluoride is now introduced at a much earlier stage of human development than ever before and consequently alters the normal fluoride-pharmacokinetics in infants. But can one dramatically increase the normal fluoride-intake to infants and get away with it?" - Dr. Jennifer Luke.

OVERVIEW

Of all age groups, infants are the most vulnerable to fluoride toxicity. Due to their small size, infants receive up to 400% more fluoride (per pound of body weight) than adults consuming the same level of fluoride in water. Not only do infants receive a larger dose, they have an impaired ability to excrete (http://www.fluoridealert.org/excerpt/infant-retention/) fluoride through their kidneys. Healthy adults can excrete more than 50% of an ingested fluoride dose; infants, by contrast, can only excrete 15 to 20%. This leads to a greater build-up of fluoride in the body, and may help explain why infants fed formula made with fluoridated water suffer higher rates of dental fluorosis (http://www.fluoridealert.org/studies/infants_fluorosis/), a discoloration of the teeth caused by excessive fluoride ingestion during childhood.

Teeth are not the only tissue that can be affected by fluoride exposure during infancy. A baby's blood brain barrier is not fully developed at birth, and this allows fluoride, a neurotoxin, greater access to the brain than in later periods in life. Over 30 studies have associated elevated fluoride exposure with neurological impairment (http://www.fluoridealert.org/issues/health/brain/) in children, which may, in part, result from fluoride's affect on the thyroid gland (http://www.fluoridealert.org/issues/health/thyroid/). In light of the serious nature of these effects, and the lack of benefit from pre-eruptive ingestion of fluoride, basic precautionary principles strongly counsel against exposing infants to any fluoride.

Concerns about the wisdom (http://www.fluoridealert.org/issues/infant-exposure/discoveries/) of supplementing an infant's diet with fluoride are being voiced by even ardent pro-fluoride dental organizations. In 1994, the American Dental Association (ADA), American Academy of Pediatrics (AAP), and American Academy of Pediatric Dentistry (AAPD) reversed their decades-long policy of recommending that doctors prescribe fluoride supplements (http://www.fluoridealert.org/issues/infant-

exposure/new-recommendations/) to newborn infants. While these organizations have refrained from taking the obvious step of recommending that fluoridated water (http://www.fluoridealert.org/studies/infant01/) not be be added to infant formula (a practice that exposes infants to nearly 4 times more fluoride than supplements) a growing number of prominent dental researchers have made this recommendation.

WHAT YOU NEED TO KNOW:

New Understandings: (http://www.fluoridealert.org/issues/infant-exposure/discoveries/)Read the five scientific discoveries that finally prompted pro-fluoride dental organizations to publicly recognize the problems with exposing infants to fluoride.

New Recommendations: (http://www.fluoridealert.org/issues/infant-exposure/new-recommendations/) See the new recommendations from pro-fluoride organizations and researchers on fluoride exposure during infancy.

5 Ways to Protect Your Child: (http://www.fluoridealert.org/issues/infant-exposure/protect/)Learn the five most important things you can do to protect a newborn child from fluoride.

HELP START AN INFANT WARNING CAMPAIGN:

The Fluoride Action Network is currently working with individuals and organizations throughout the United States to pass legislation on both the state and city level requiring public disclosure of the the risks that fluoridated water poses to infants. In 2012, FAN helped persuade the State of New Hampshire to pass by a landslide vote a bill requiring water departments in the state to notify consumers of the fluorosis risk posed by infant consumption of fluoridated water. To learn more and contribute to FAN's effort on this project, click here. (http://www.fluoridealert.org/issues/infant-exposure/legislation/)

↑ (#main)

RELATED VIDEOS:

Professional Perspectives on Water Fluoridation

(http://www.fluoridealert.org/fan-tv/prof-perspectives/)

Should Infants Drink Fluoridated Water?

(http://www.fluoridealert.org/fan-tv/should-infants-drink-fluoridated-water/)

Fluoride Warning Issued for Infants

(http://www.fluoridealert.org/fan-tv/infant-warning/)

RELATED ARTICLES:

New Fluoride Warning for Infants

Does your drinking water contain added fluoride? If so, keep it away from infants under the age of one. This directive was issued recently by an unlikely source: the American Dental Association (ADA). In a November 9th email alert sent to all of its members, the ADA noted that "Infants less

QUICK FACTS

FLUORIDATION DISPROPORTIONATELY HARMS BLACK CHILDREN. (HTTP://WWW.FLUORIDEALERT.ORG/ISSUES/E

33 STUDIES HAVE LINKED FLUORIDE WITH REDUCED IQ IN CHILDREN (HTTP://WWW.FLUORIDEALERT.ORG/STUDIES/

FLUORIDATED WATER CONTRIBUTES TO BONE DISEASE IN DIALYSIS PATIENTS. (HTTP://WWW.FLUORIDEALERT.ORG/STUDIES/

THERE IS NO NEED TO SWALLOW FLUORIDE - IT WORKS TOPICALLY. (HTTP://WWW.FLUORIDEALERT.ORG/STUDIES/

(http://www.fluoridealert.org/take-action)

(http://www.fluoridealert.org/articles/mothering_magazine/)

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Fluoridated Water & Infant Formula

The use of fluoridated water in infant formula is in the news. Yesterday, Reuters published an article on a study from the Journal of the American College of Nutrition which found that consumption of beverages (particularly infant formulas reconstituted with fluoridated water) is associated with an increase of dental fluorosis in a baby's primary teeth.

(http://www.fluoridealert.org/articles/science-watch09/)

Impact of Fluoride on Neurological Development in Children

In a meta-analysis, researchers from Harvard School of Public Health (HSPH) and China Medical University in Shenyang for the first time combined 27 studies and found strong indications that fluoride may adversely affect cognitive development in children. Based on the findings, the authors say that this risk should not be ignored, and that more research on fluoride's impact on the developing brain is warranted.

(http://www.fluoridealert.org/articles/hsph_2012/)

RELATED STUDIES:

The Fluorosis Risk: Infant Formula Made with Fluoridated Water

Babies who ingest infant formula made with fluoridated water have a significantly elevated risk of developing dental fluorosis in their permanent teeth. The fluorosis caused by infant exposure will generally appear on the child's front teeth, the teeth most likely to embarrass and cause anxiety for the child if they have fluorosis stains. The following

(http://www.fluoridealert.org/studies/infant03/)

Infants Have Impaired Ability to Excrete Fluoride

"Approximately 80% of an absorbed dose of fluoride is retained in young children compared to 50% in adults. This is supported by the finding that renal fluoride excretion rate is lower in children than adults. This difference in fluoride retention is due to high fluoride uptake in developing bones." SOURCE: Agency

(http://www.fluoridealert.org/studies/infant-retention/)

Fluoride Is Not an Essential Nutrient

In the 1950s, dentists believed that fluoride was a "nutrient." A nutrient is a vitamin or mineral that is necessary for good health. Dentists believed that fluoride ingestion during childhood was necessary for strong, healthy teeth. A "fluoride deficiency" was thus believed to cause cavities, just like a deficiency of calcium can

(http://www.fluoridealert.org/studies/essential-nutrient/)

RELATED MISCELLANEOUS CONTENT:

Top 5 Ways to Reduce Fluoride Exposure from Infant Formula

For situations where breast feeding is not a feasible option, this page provides 5 concrete ways to reduce your baby's exposure to fluoride when preparing infant formula.

(http://www.fluoridealert.org/content/formula/)

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COMMUNITIES WHICH HAVE REJECTED FLUORIDATION SINCE 1990

Compiled by Maureen Jones and the Fluoride Action Network

From the very start, water fluoridation has always been an unpopular program. In its 60+ year history, the majority of U.S. communities that have had an opportunity to vote on the measure have rejected it. Fluoridation was thus established in the U.S. not through public referenda, but executive actions by government bodies. For a a brief history on public opposition to fluoridation in the U.S., click here. (http://www.fluoridealert.org/content/fluoridation-vs-democracy/)

Community	Population	Date
Orillia, Ontario, Canada (http://www.fluoridealert.org/news/orillia-city-says-no-to-fluoride/)		July 17, 2012
Santa Fe, New Mexico (http://www.fluoridealert.org/news/santa-fe-city-council-votes-to-stop-adding-fluoride-to-water-supply/)		July 11, 2012
Argos, Indiana (http://www.fluoridealert.org/news/argos-stops-adding-fluoride-to-town-water/)		June 6, 2012
Bassett, Nebraska (http://www.fluoridealert.org/news/bassett-votes-against-fluoridation/)		May 15, 2011
Palisades, Colorado (http://www.fluoridealert.org/news/palisade-eliminates-fluoride-from-drinking-water/)	3,000	May 15, 2012
Pevely, Missouri (http://www.fluoridealert.org/news/pevely-fluoridation-ends-on-may-1st/)	6,000	May 1, 2012
Okotoks, Alberta, Canada (http://www.fluoridealert.org/news/okotoks-to-remove-fluoride-from-our-water-supply/)	25,000	April 23, 2012
Curacao (http://www.fluoridealert.org/news/curacao-ends-fluoridation-of-drinking-water/)	140,000	April 22, 2012
Albequerque, New Mexico (http://www.fluoridealert.org/news/albuquerque-water-authority-cuts-fluoride-from-city-water/)	500,000	April 11, 2012
West Manheim, Pennsylvania (http://www.fluoridealert.org/news/west-manheim-wants-no-fluoride-in-water/)	8,000	April 8, 2012
Bourbon, Indiana (http://www.fluoridealert.org/news/bourbon-ends-water-fluoridation/)	2,000	March 20, 2012
Amherstburg, Ontario, Canada (http://www.fluoridealert.org/news/amherstburg-town-council-passes-moratorium-on-putting-artificial-fluoridation-into-drinking-water/)	20,000	February 7, 2012
Bolivar, Missouri (http://www.fluoridealert.org/news/bolivar-mayor-seals-vote-to-remove-fluoride-from-water/)	11,000	February 7, 2012
Myerstown, Pennsylvania (http://www.fluoridealert.org/wp-admin/post.php?post=5476&action=edit)	3,500	January 13, 2012

QUICK FACTS

40% OF AMERICAN TEENAGERS HAVE DISCOLORED TEETH CAUSED BY FLUORIDE. (HTTP://WWW.FLUORIDEALERT.ORG/STUDIES/DENTAL_FLU

FLUORIDE IS NOT A NUTRIENT (HTTP://WWW.FLUORIDEALERT.ORG/STUDIES/ESSENTIAL-NUTRIENT/).

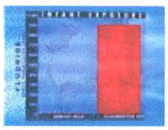
A HALF TUBE OF CANDY-FLAVORED

Hartland Township, Michigan (http://www.fluoridealert.org/news/hartland-township-ends-its-water-fluoridation-program/)	14,800	December 20, 2011
Moncton, New Brunswick, Canada (http://www.fluoridealert.org/news/moncton-to-drop-fluoride-from-water/)	140,000	December 19, 2011
Dieppe, New Brunswick, Canada (http://www.fluoridealert.org/news/dieppe-votes-against-fluoride/)	20,000	December 12, 2011
Grantsburg, Wisconsin (http://www.fluoridealert.org/news/grantsburg-getting-rid-of-the-fluoride/)	1,300	December 12, 2011
Lake Cowichan, British Columbia, Canada (http://www.fluoridealert.org/news/lake-cowichan-fluoridation-of-water-toppled-in-local-referendum/)	3,000	November 19, 2011
Williams Lake, British Columbia, Canada (http://www.fluoridealert.org/news/williams-lake-votes-to-end-fluoridation/)	11,200	November 19, 2011
Amesbury, Massachusetts (http://www.fluoridealert.org/news/amesbury-residents-vote-to-end-fluoridation-of-the-citys-water/)	16,500	November 8, 2011
Lakeshore, Ontario, Canada (http://www.fluoridealert.org/news/lakeshore-removes-fluoride-from-water-supply-2/)	33,000	October 31, 2011
Palmer, Alaska (http://www.fluoridealert.org/news/palmer-ordinance-that-ended-fluoridation/)	8,400	October 25, 2011
Lawrenceburg, Tennessee (http://www.fluoridealert.org/news/lawrenceburg-board-votes-to-remove-fluoride-from-lawrenceburg-water-supply/)	11,000	October 18, 2011
Churchill, Manitoba, Canada (http://www.fluoridealert.org/news/churchill-anti-fluoridation-group-claims-victory/)	1,000	October 18, 2011
New Plymouth, New Zealand (http://www.fluoridealert.org/news/new-plymouth-district-ends-fluoridation-in-new-plymouth-waitara-urenui-lepperton/)	50,000	October 13, 2011
Palmer, Alaska (http://www.fluoridealert.org/news/palmer-to-stop-adding-fluoride-to-citys-public-water-supply/)	8,400	October 11, 2011
Pinellas County, Florida (http://www.fluoridealert.org/news/floridas-pinellas-county-rejects-fluoride-in-drinking-water/)	700,000	October 4, 2011
Welsh, Louisiana	3,500	October 4, 2011
Spencer, Indiana /BPP Water	10,500	September 30, 2011
College Station, Texas (http://www.fluoridealert.org/news/college-station-council-votes-to-stop-adding-fluoride-to-water-supply/)	100,000	September 22, 2011
Slave Lake, Alberta, Canada (http://www.fluoridealert.org/news/slave-lakes-town-council-votes-to-end-fluoridation/)	7,000	September 12, 2011
Hohenwald, Tennessee (http://www.fluoridealert.org/news/hohenwald-council-votes-to-pull-fluoride-from-water/)	4,000	September 6, 2011
Pottstown, Pennsylvania (http://www.fluoridealert.org/news/pottstown-fluoride-wont-be-added-to-pottstown-water/)	15,500	August 16, 2011
Spring Hill, Tennessee (http://www.fluoridealert.org/news/spring-hill-to-quit-fluoridating-water/)	30,000	August 15, 2011
Philomath, Oregon (http://www.fluoridealert.org/news/philomath-council-stands-beside-decision-to-pull-fluoride-from-water-supply/) **(NOTE: This decision was reversed in 2012)**	4,500	August 8, 2011
Taber, Alberta, Canada (http://www.fluoridealert.org/news/taber-council-votes-to-get-rid-of-fluoride-in-water/)	6,500	July 20, 2011

TOOTHPASTE HAS ENOUGH FLUORIDE TO KILL A SMALL CHILD. (HTTP://WWW.FLUORIDEALERT.ORG/STUDIES/ACUTE01/)

FLUORIDATED WATER CONTRIBUTES TO BONE DISEASE IN DIALYSIS PATIENTS. (HTTP://WWW.FLUORIDEALERT.ORG/STUDIES/SKELETAL_FL

RELATED VIDEOS:



Should Infants Drink Fluoridated Water? (http://www.fluoridealert.org/fan-tv/should-infants-drink-fluoridated-water/)

The Fluoride Deception: An Interview with Christopher Bryson (http://www.fluoridealert.org/fan-tv/bryson/)

How Many Countries Fluoridate Water? (http://www.fluoridealert.org/fan-tv/countries/)

RELATED ARTICLES:

New Fluoride Warning for Infants

Does your drinking water contain added fluoride? If so, keep it away from infants under the age of one. This directive was issued recently by an unlikely source: the American Dental Association (ADA). In a November 9th email alert sent to all of its members, the ADA noted that "Infants less (http://www.fluoridealert.org/articles/mothering_magazine/

Study Finds Correlation Between Fluorides in Water and Lead Levels

HANOVER, N.H. —Although the dangers of lead poisoning have been known for years, substantial numbers of children continue to suffer from blood lead above danger level of 10 micrograms per deciliter of blood (10μg/dL). A study published this month in the International Journal of Environmental Studies, and led by Roger Masters, (http://www.fluoridealert.org/articles/dartmouth-1999/)

The Absurdities of Water Fluoridation

[caption id="attachment_10205" align="alignleft" width="190"] Paul Connett, PhD[/caption] Water fluoridation is a peculiarly American phenomenon. It started at a time when Asbestos lined our pipes, lead was added to gasoline, PCBs filled our transformers and DDT was deemed so "safe and effective" that officials felt no qualms spraying kids in school classrooms

Meadow Lake, Saskatchewan, Canada (http://www.fluoridealert.org/news/meadow-lake-city-council-sticks-with-decision-to-cut-fluoride/)	5,000	July 4, 2011
Taumarunui, New Zealand (http://www.fluoridealert.org/news/taumarunui-stops-fluoridation/)	5,000	June 30, 2011
Fairbanks, Alaska (http://www.fluoridealert.org/news/fairbanks-city-council-votes-5-1-to-end-fluoridation/)	80,000	June 6, 2011
Naples Village, New York	1,070	May 18, 2011
Mount Clemens, Michigan (http://www.fluoridealert.org/news/mount-clemens-city-commission-votes-unanimously-to-end-fluoridation/)	17,300	May 16, 2011
Holmen, Wisconsin	6,200	April 27, 2011
Lago Vista, Texas	6,500	April 21, 2011
Mechanicsville, Iowa	1,200	April 17, 2011
Marcellus, Michigan (http://www.fluoridealert.org/news/marcellus-ends-fluoridation/)	1,100	March 17, 2011
Independence, Virginia (http://www.fluoridealert.org/news/independence-agrees-not-to-fluoridate-its-water-supply/)	1,000	February 16, 2011
Calgary, Alberta, Canada (http://www.fluoridealert.org/news/calgary-fluoride-is-out/)	1,300,000	February 8, 2011
Yellow Springs, Ohio (http://www.fluoridealert.org/news/yellow-springs-council-says-no-to-fluoride/)	3,200	February 7, 2011
Verchères, Québec, Canada (http://www.fluoridealert.org/news/vercheres-council-votes-unanimously-to-end-fluoridation/)	5,240	February 7, 2011
Schuylkill Haven, Pennsylvania (http://www.fluoridealert.org/news/schuylkill-haven-ends-fluoridation/)	5,500	January 19, 2011 (First announced Feb 4, 2010)
Sparta, North Carolina (http://www.fluoridealert.org/news/sparta-town-council-nixes-fluoridating-water/)	2,000	November 15, 2010
Tellico, Tennessee (http://www.fluoridealert.org/news/tellico-takes-fluoride-out-of-water/)	900	November 4, 2010
Athabasca, Alberta, Canada	2,600	November 1, 2010
Waterloo, St. Jacobs and Elmira, Ontario, Canada (http://www.fluoridealert.org/news/waterloo-region-voters-say-no-to-fluoride/)	103,000	October 25, 2010
Red Bay, Alabama (http://www.fluoridealert.org/news/red-bay-stops-putting-fluoride-in-water/)		September 15, 2010
Napa, California (http://www.fluoridealert.org/news/napa-city-council-rejects-grand-jury-recommendation-to-fluoridate-its-water/)		August 17, 201
Sandpoint, Idaho (http://www.fluoridealert.org/news/sandpoint-drops-fluoride-from-water/)		July 24, 2010
Kaikohe, New Zealand (http://www.fluoridealert.org/news/kaitaia-and-kaikohe-far-north-towns-say-no-to-fluoride/)		May 17, 2010
Kaitaia, New Zealand (http://www.fluoridealert.org/news/kaitaia-and-kaikohe-far-north-towns-say-no-to-fluoride/)		May 17, 2010
Crete, Nebraska (http://www.fluoridealert.org/news/crete-residents-vote-no-to-fluoridation/)		May 11, 2010

(http://www.fluoridealert.org/articles/absurdity/)

RELATED STUDIES:

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NIDR's National Survey of Oral Health in the U.S. (1986-87)

In the 1986-87, the National Institute of Dental Research (NIDR) conducted the largest ever study of childhood dental health in the United States. The study examined the teeth of 39,207 schoolchildren from 84 communities across the country, including communities that fluoridate water and communities that do not. The results of the study were

(http://www.fluoridealert.org/studies/caries03/)

Allergy and Hypersensitivity to Fluoride

there are reasonable grounds for concluding that there are individuals in whom allergy or hypersensitivity to fluoride has been demonstrated.

(http://www.fluoridealert.org/studies/spittle-1993/)

Westendorf's Research on Incomplete Dissociation of Silicofluorides Under Physiological Conditions

The Kinetics of Acetylcholinesterase Inhibition and the Influence of Fluoride and Fluoride Complexes on the Permeability of Erythrocyte Membranes Dissertation to receive Ph.D. in Chemistry from the University of Hamburg By Johannes Westendorf Hamburg, Germany - 1975 (Click here to read Westendorf's thesis) Reviewer: Prof Dr. A. Knappwost Co-Reviewers: Prof. Dr. Malomy Prof. DR. Strehlow Prof. Dr. Hilz Prof Dr. Gercken The

(http://www.fluoridealert.org/studies/westendorf-foreword/)

RELATED MISCELLANEOUS CONTENT:

Another look at Brunelle & Carlos

Recently we received a letter commenting on our analysis of the Brunelle & Carlos (1990) paper. Before we print the letter and Michael's response, a little background. The Brunelle & Carlos paper was published in the Journal of Dental Research, Volume 69, pages 723-727, in 1990. The paper was the

(http://www.fluoridealert.org/content/ifin-290/)

LULAC's Resolution Opposing Water Fluoridation

The League of United Latin American Citizens (LULAC), the nation's largest Hispanic civil rights organization, has adopted a resolution calling for an end to water fluoridation.

(http://www.fluoridealert.org/content/lulac_resolution/)

Fluoridation Forum Report Flunks Test

Finally the Fluoridation Forum report is out (September 10, 2002) and can be found at http://www.doh.ie/publications/fluoridation.html. As expected they flunked my test. I had presented to the Forum (in person) my "50 Reasons to Oppose Fluoridation" and argued that the way they could demonstrate to me and the Irish people that

(http://www.fluoridealert.org/content/ifin-659/)

Dakota City, Nebraska (http://www.fluoridealert.org/news/dakota-city-nebraska-residents-vote-against-fluoridation/)	May 11, 2010
Franklin County, Nebraska (http://www.fluoridealert.org/news/franklin-county-nebraska-residents-vote-against-fluoridation/)	May 11, 2010
Norfolk, Nebraska (http://www.fluoridealert.org/news/norfolk-citizens-vote-no-to-fluoridation-for-the-third-time/)	May 11, 2010
Wahoo, Nebraska (http://www.fluoridealert.org/news/wahoo-residents-vote-no-to-fluoridation/)	May 11, 2010
Gatineau, Québec, Canada (http://www.fluoridealert.org/news/fluoridation-rejected-by-gatineau-council/)	May 5, 2010
Schuylkill Haven Borough, Pennsylvania (http://www.fluoridealert.org/news/schuylkill-haven-to-stop-adding-fluoride-to-water-supply/)	February 4, 2010
Xenia, Ohio (http://www.fluoridealert.org/news/xenia-will-not-add-fluoride-to-drinking-water/)	December 16, 2009
Beacon, New York (http://www.fluoridealert.org/news/beacon-city-council-authorizes-mayor-to-say-no-to-fluoridation/)	December 7, 2009
Amery, Wisconsin (http://www.fluoridealert.org/news/city-of-amery-ends-fluoridation-due-to-costs/)(Decision reversed in 2010 (http://www.fluoridealert.org/news/city-of-amery-resumes-fluoridation/))	November 30, 2009
Wisner, Nebraska (http://www.fluoridealert.org/news/wisner-this-time-voters-say-yes-to-no-fluoride/)	November 10, 2009
Yutan, Nebraska (http://www.fluoridealert.org/news/yutan-says-no-to-fluoride/)	November 10, 2009
Humboldt, Kansas (http://www.fluoridealert.org/news/humboldt-residents-say-no-to-fluoridation/)	September 22, 2009
Wakefield, Nebraska (http://www.fluoridealert.org/news/wakefield-neb-rejects-fluoridation-proposals/)	September 15, 2009
Thunder Bay, Ontario, Canada (http://www.fluoridealert.org/news/thunder-bay-council-says-no-to-fluoride/)	July 21, 2009
Poynette, Wisconsin (http://www.fluoridealert.org/news/poynette-board-votes-against-fluoridating-water/)*(voted to remove fluoride)* **(Decision reversed (http://www.fluoridealert.org/news/new-poynette-board-decides-to-resume-fluoridation/))**	April 13, 2009
Plainfield, Vermont (http://www.fluoridealert.org/news/plainfield-vt-bans-fluoride-from-tap-water/) *(voted to remove fluoride)*	March 3, 2009
Chippewa Falls, Wisconsin (http://www.fluoridealert.org/news/chippewa-council-votes-down-fluoride/) *(for the 2nd time)*	February 17, 2009
Skagit County, Washington (http://www.fluoridealert.org/news/skagit-county-commissioners-vote-to-halt-fluoride-program/)	February 10, 2009
Big Canoe, Georgia (http://www.fluoridealert.org/news/big-canoe-utilities-drops-water-fluoridation/)	January 8, 2009
Cranberry Portage, Manitoba, Canada (http://www.fluoridealert.org/news/cranberry-portage-stops-fluoridation/)	January 1, 2009
Drayton Valley, Alberta, Canada (http://www.fluoridealert.org/news/drayton-valley-cuts-fluoride-from-water-supply/)	December 31, 2008
Test Valley Borough Council (http://www.fluoridealert.org/news/test-valley-council-no-to-extra-fluoride-in-water-supplies/) (UK)	November 13, 2008
Jackman, Maine (http://www.fluoridealert.org/news/town-votes-to-remove-fluoride-from-drinking-water/)	November 4, 2008

Moose River, Maine (http://www.fluoridealert.org/news/mount-desert-voters-to-decide-fluoride-issue/)	November 4, 2008
Corning, New York (http://www.fluoridealert.org/news/fluoridation-opponents-win-by-ten-votes-in-corning/)	November 4, 2008
Ainsworth, Nebraska (http://www.fluoridealert.org/news/pierce-madison-ainsworth-schuyler-battle-creek-vote-no-to-fluoridation/)	November 4, 2008
Aurora, Nebraska (http://www.fluoridealert.org/news/aurora-voters-said-no-to-fluoride/)	November 4, 2008
Battle Creek, Nebraska (http://www.fluoridealert.org/news/pierce-madison-ainsworth-schuyler-battle-creek-vote-no-to-fluoridation/)	November 4, 2008
Bayard, Nebraska (http://www.fluoridealert.org/news/bayard-bridgeport-and-kimball-voters-reject-fluoridation/)	November 4, 2008
Beatrice, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Bridgeport, Nebraska (http://www.fluoridealert.org/news/bayard-bridgeport-and-kimball-voters-reject-fluoridation/)	November 4, 2008
Broken Bow, Nebraska (http://www.fluoridealert.org/news/fluoride-okd-in-just-two-of-eight-towns/)	November 4, 2008
Cambridge, Nebraska (http://www.fluoridealert.org/news/cambridge-and-imperial-voters-reject-fluoridation/)	November 4, 2008
Central City, Nebraska (http://www.fluoridealert.org/news/grand-island-rejects-fluoridation-of-citys-water/)	November 4, 2008
Chadron, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Cozad, Nebraska (http://www.fluoridealert.org/news/fluoride-okd-in-just-two-of-eight-towns/)	November 4, 2008
Crawford, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
David City, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Eagle, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Friend, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Geneva, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Gothenburg, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Grand Island, Nebraska (http://www.fluoridealert.org/news/grand-island-rejects-fluoridation-of-citys-water/)	November 4, 2008
Grant, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Hastings, Nebraska (http://www.fluoridealert.org/news/hastings-voters-overwhelmingly-defeat-fluoridation/)	November 4, 2008
Hebron, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Imperial, Nebraska (http://www.fluoridealert.org/news/imperial-city-residents-to-vote-on-fluoride-issue/)	November 4, 2008
Kimball, Nebraska (http://www.fluoridealert.org/news/bayard-bridgeport-and-kimball-voters-reject-fluoridation/)	November 4, 2008
Lexington, Nebraska (http://www.fluoridealert.org/news/fluoride-okd-in-just-two-of-eight-towns/)	November 4, 2008

Madison, Nebraska (http://www.fluoridealert.org/news/pierce-madison-ainsworth-schuyler-battle-creek-vote-no-to-fluoridation/)	November 4, 2008
Milford, Nebraska (http://www.fluoridealert.org/news/milford-city-votes-no-to-fluoridation/)	November 4, 2008
Mitchell, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
North Platte, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Ord, Nebraska (http://www.fluoridealert.org/news/grand-island-rejects-fluoridation-of-citys-water/)	November 4, 2008
Pawnee City, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Pierce, Nebraska (http://www.fluoridealert.org/news/plainview-and-pierce-vote-no-to-fluoridation/)	November 4, 2008
Plainview, Nebraska (http://www.fluoridealert.org/news/plainview-and-pierce-vote-no-to-fluoridation/)	November 4, 2008
Ravenna, Nebraska (http://www.fluoridealert.org/news/fluoride-okd-in-just-two-of-eight-towns/)	November 4, 2008
Schuyler, Nebraska (http://www.fluoridealert.org/news/pierce-madison-ainsworth-schuyler-battle-creek-vote-no-to-fluoridation/)	November 4, 2008
Scottsbluff, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Shelton, Nebraska (http://www.fluoridealert.org/news/fluoride-okd-in-just-two-of-eight-towns/)	November 4, 2008
Sidney, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
St. Paul, Nebraska (http://www.fluoridealert.org/news/grand-island-rejects-fluoridation-of-citys-water/)	November 4, 2008
Stanton, Nebraska (http://www.fluoridealert.org/news/stanton-votes-no-to-fluoridation/)	November 4, 2008
Stromsburg, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Sutherland, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Sutton, Nebraska (http://www.fluoridealert.org/news/hastings-four-area-towns-to-vote-on-fluoride-hebron-geneva-suttonfranklin/)	November 4, 2008
Tekamah, Nebraska (http://www.fluoridealert.org/news/tekamah-votes-no-to-fluoridation/)	November 4, 2008
Valentine, Nebraska	November 4, 2008
Weeping Water, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Wilber, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
Wood River, Nebraska (http://www.fluoridealert.org/news/grand-island-rejects-fluoridation-of-citys-water/)	November 4, 2008
Wymore, Nebraska (http://www.fluoridealert.org/news/many-communities-vote-to-opt-out-of-fluoride-plan/)	November 4, 2008
York, Nebraska (http://www.fluoridealert.org/news/york-voters-say-no-to-fluoridation/)	November 4, 2008
Prairie du Chien, Wisconsin	November

(http://www.fluoridealert.org/news/prairie-du-chien-voters-nix-fluoridation/)	4, 2008
Hyndburn, Lancashire, England (http://www.fluoridealert.org/news/hyndburn-council-lancashire-no-to-fluoride-in-water/)	September 23, 2008
Pendle, Lancashire, England (http://www.fluoridealert.org/news/pendle-councillors-vote-against-fluoridation/)	September 18, 2008
Alamo Heights, Texas (http://www.fluoridealert.org/news/alamo-heights-says-no-to-fluoridation/)	September 8, 2008
Alexandra and Earnslceugh/Manuheriki, New Zealand (http://www.fluoridealert.org/news/vincent-board-rejects-water-supply-fluoridation/)	September 8, 2008
Cromwell, New Zealand (http://www.fluoridealert.org/news/cromwell-community-board-decides-against-fluoridation-of-water/)	August 18, 2008
Isle of Man (http://www.fluoridealert.org/news/isle-of-man-abandons-all-plans-to-fluoridate/)	June 12, 2008
Elba, New York (http://www.fluoridealert.org/news/elba-village-board-of-trustees-ends-fluoridation/)	June 4, 2008
Littleton, Massachusetts (http://www.fluoridealert.org/news/littleton-voters-reject-fluoridation/)	May 10, 2008
Yarmouth, Massachusetts (http://www.fluoridealert.org/news/yarmouth-voters-soundly-defeat-fluoridation/)	May 6, 2008
Dryden, Ontario, Canada (http://www.fluoridealert.org/news/dryden-voters-soundly-reject-fluoridation/)	April 2008
Quebec City, Canada (http://www.fluoridealert.org/news/quebec-city-ends-36-years-of-fluoridation/) (after 36 years of fluoridation)	April 1, 2008
Welland, Pelham, and parts of Thorold, Ontario, Canada (http://www.fluoridealert.org/news/fluoridation-officially-ended-in-welland-pelham-and-parts-of-thorold/)	February 2008
Poughkeepsie, New York (http://www.fluoridealert.org/news/board-takes-fluoride-out-of-water/)	February 2008
Manila, Humboldt County, California (http://www.fluoridealert.org/news/manila-measure-b-defeated-fluoride-denied/)	February 2008
Elgin City Council, Texas (http://www.fluoridealert.org/news/elgin-city-council-votes-no-on-water-fluoridation/)	November 2007
Waitaki District Council, New Zealand (http://www.fluoridealert.org/news/waitaki-district-council-all-wards-with-referendum-vote-no-to-fluoridation/)	October 2007
Juneau, Alaska (http://www.fluoridealert.org/news/juneau-says-no-to-fluoride/)	October 2007
O'Connor UD, Sparta, White County, Georgia	August 8, 2008
Quebeck Walling UD, Sparta, White County, Georgia	August 8, 2008
Cobleskill Village, Schoharie County, New York (http://www.fluoridealert.org/news/cobleskill-village-in-schoharie-county-ends-use-of-fluoride/)(Decision reversed in 2009 (http://www.fluoridealert.org/news/cobleskill-surprise-village-votes-to-put-flouride-back/))	August 2007
Marshall County BUP#1, Lewisburg, Marshall County, Georgia	July 27, 2008
Rotherham, Yorkshire, UK (http://www.fluoridealert.org/news/rotherham-council-rejects-fluoridation/)	June 2007

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Conewango Township, Pennsylvania (http://www.fluoridealert.org/news/warren-county-four-townships-reject-fluoridation-idea/)	May 2008
Glade Township, Pennsylvania (http://www.fluoridealert.org/news/warren-county-four-townships-reject-fluoridation-idea/)	May 2008
Mead Township, Pennsylvania (http://www.fluoridealert.org/news/warren-county-four-townships-reject-fluoridation-idea/)	May 2008
Pleasant Township, Pennsylvania (http://www.fluoridealert.org/news/warren-county-four-townships-reject-fluoridation-idea/)	May 2008
Big Creek Utility District, Grundy County, Georgia (http://www.fluoridealert.org/news/tennessee-lawmaker-campaigns-against-fluoride-bill/)	May 7, 2008
Cagle-Fredonia Utility District, Big Creek, Sequatchie, Georgia (http://www.fluoridealert.org/news/tennessee-lawmaker-campaigns-against-fluoride-bill/)	May 7, 2008
Altoona, Pennsylvania (http://www.fluoridealert.org/news/altoona-city-authority-wont-fluoridate-its-water-supply/)	May 2008
Beach Haven, New Jersey (http://www.fluoridealert.org/news/beach-haven-votes-to-remove-fluoride-from-water-supply/)	April 2007
Sulphur Rock, Arkansas (http://www.fluoridealert.org/news/sulphur-rock-stops-fluoridation-program/)	April 2007
LaGuardo UD, Lebanon, Wilson County, Georgia	May 20, 2008
Mt Desert Water District, Maine (http://www.fluoridealert.org/news/town-votes-to-remove-fluoride-from-drinking-water/)	March 5, 2007
Martin County, Florida	December 19, 2006
Juneau, Alaska (http://www.fluoridealert.org/news/juneau-nixes-fluoridation/)	December 11, 2006
Central Bridge Water District, New York (http://www.fluoridealert.org/news/cobleskill-village-in-schoharie-county-ends-use-of-fluoride/)	November 21, 2006
Ashland, Oregon (http://www.fluoridealert.org/news/ashland-passes-bill-prohibiting-fluoridation/)(Decision reversed in 2008 (http://www.fluoridealert.org/news/ashland-votes-to-fluoridate/))	November 21, 2006
Lenapah, Oklahoma	November 21, 2006
Page, Arizona (http://www.fluoridealert.org/news/page-voters-reject-fluoridation-proposal/)	November 7, 2006
Lincoln, Maine (http://www.fluoridealert.org/news/lincoln-voters-reject-fluoridation/)	November 7, 2006
Rockford, Iowa (http://www.fluoridealert.org/news/rockford-to-discontinue-fluoride-water-treatment/)	January 12, 2006
Golden, British Columbia, Canada (http://www.fluoridealert.org/news/golden-voters-give-fluoridation-a-big-no/)	November 19, 2005
Lafayette, Tennessee (http://www.fluoridealert.org/news/lafayette-discontinues-fluoridation-program/)	November 9, 2005
Bellingham, Washington State (http://www.fluoridealert.org/news/its-official-bellingham-voters-reject-fluoridation/)	November 8, 2005
Springfield, Ohio (http://www.fluoridealert.org/news/springfield-voters-reject-fluoride/)	November 8, 2005
Xenia, Ohio	November

	8, 2005
Tooele, Utah (http://www.fluoridealert.org/news/fluoride-overwhelmingly-rejected-in-tooele/)	November 8, 2005
Mammoth Lakes, California	November 8, 2005
Homer, New York (http://www.fluoridealert.org/news/homer-council-votes-to-stop-fluoridation/)	November 1, 2005
Hood River, Oregon (http://www.fluoridealert.org/news/hood-river-voters-pass-measure-to-keep-contaminated-fluoride-from-drinking-water/)	May 2005
Neosho, Missouri (http://www.fluoridealert.org/news/two-fluoride-votes-split/)	April 5, 2005
Pagosa Springs, Colorado (http://www.fluoridealert.org/news/voters-reject-fluoride-ban/)	March 2005
Snohomish, Washington State (http://www.fluoridealert.org/news/snohomish-council-votes-not-to-add-fluoride-to-citys-water/)	January 2005
Lancaster, Ohio (http://www.fluoridealert.org/news/fluoride-goes-down-the-drain-in-lancaster/)	November 2, 2004
Hutchinson, Kansas (http://www.fluoridealert.org/news/fluoride-addition-fails-in-hutchinson/)	November 2, 2004
Clarksdale, Mississippi (http://www.fluoridealert.org/news/city-decides-against-fluoridation-of-water/)	October 25, 2004
Milton, Washington State (http://www.fluoridealert.org/news/milton-to-stop-fluoridating-water/)	September 20, 2004
Telluride, Colorado (http://www.fluoridealert.org/news/voters-reject-fluoride-ban/)	September 2004
Sumner, Washington State (http://www.fluoridealert.org/news/sumner-to-stop-putting-fluoride-in-water/)	August 2, 2004
South Blount Water District, Tennessee (http://www.fluoridealert.org/news/south-blount-utility-board-opts-against-fluoridation/)	June 2004
Chippewa Falls, Wisconsin (http://www.fluoridealert.org/news/chippewa-voters-overwhelmingly-reject-fluoridation/) (Rejected again in 2009)	April 2004
Honolulu, Hawaii (http://www.fluoridealert.org/news/honolulu-city-council-votes-to-ban-fluoridation/)	January 28, 2004
Lancaster, Ohio (http://www.fluoridealert.org/news/fluoride-goes-down-the-drain-in-lancaster/)	January 12, 2004
Burns Lake, British Columbia, Canada (http://www.fluoridealert.org/news/burns-lake-voters-end-40-years-of-fluoridation/)	June 25, 2003
Dutton-Dunwich, Ontario, Canada (http://www.fluoridealert.org/news/elgin-communities-to-end-fluoridation/)	June 2003
West Elgin, Ontario, Canada (http://www.fluoridealert.org/news/elgin-communities-to-end-fluoridation/)	June 2003
Sequim, Washington State (http://www.fluoridealert.org/news/sequim-council-rejects-fluoridation/)	May 7, 2003
York, Nebraska (http://www.fluoridealert.org/news/york-voters-give-fluoridation-the-brush-off/)	May 6, 2003
Columbiana, Alabama (http://www.fluoridealert.org/news/columbiana-water-board-votes-no-to-fluoridation/)	May 2003
Canton, New York (http://www.fluoridealert.org/news/canton-rids-its-tap-water-of-fluoride/)	February 18, 2003

Shaler, Pennsylvania (http://www.fluoridealert.org/news/unanimous-vote-keeps-shalers-water-fluoride-free/)		February 11, 2003
Billings, Montana (http://www.fluoridealert.org/news/billings-voters-say-no-to-fluoride-for-3rd-time-in-35-years/)		November 5, 2002
Kalispell, Montana (http://www.fluoridealert.org/news/kalispell-fluoride-proposal-defeated/)		November 5, 2002
Washoe County, Nevada (http://www.fluoridealert.org/news/washoe-county-votes-no-to-fluoridation/)		November 5, 2002
Methuen, Massachusetts (http://www.fluoridealert.org/news/methuen-voters-keep-town-fluoride-free-again/)		November 5, 2002
Redding, California (http://www.fluoridealert.org/news/redding-voters-reject-fluoride/)		November 5, 2002
Watsonville, California (http://www.fluoridealert.org/news/voters-reject-watsonville-fluoridation/)		November 5, 2002
Texarkana, Arkansas (http://www.fluoridealert.org/news/texarkana-votes-no-to-fluoridation/)	31,660	November 5, 2002
Ashdown, Arkansas (http://www.fluoridealert.org/news/a-second-victory-in-arkansas/)	5,150	November 5, 2002
Oneida, New York (http://www.fluoridealert.org/news/oneida-city-council-votes-no-to-fluoridation/)		August 6, 2002
Franklin, North Carolina (http://www.fluoridealert.org/news/aldermen-turn-off-water-fluoridation/)		May 2002
Plainville, Massachusetts (http://www.fluoridealert.org/news/voters-in-plainville-vote-no-to-fluoridation/)		April 1, 2002
Monroe, Louisiana (http://www.fluoridealert.org/news/monroe-louisiana-votes-no-to-fluoridation/)		February 26, 2002
Colorado Springs, Colorado (http://www.fluoridealert.org/news/colorado-springs-city-council-votes-no-to-fluoridation/)		January 16, 2002
Kennewick, Washington (http://www.fluoridealert.org/news/kennewick-council-rejects-fluoridation/)		January 15, 2002
Bennington, Vermont (http://www.fluoridealert.org/news/bennington-dental-health-committee-recommends-no-fluoridation/)		January 8, 2002
Lanai, Hawaii (http://www.fluoridealert.org/news/lanai-drinking-water-will-not-be-fluoridated/)		January 2002
Cobalt, Ontario, Canada (http://www.fluoridealert.org/news/cobalt-rejects-fluoridation/)		December 11, 2001
Erie, Colorado (http://www.fluoridealert.org/news/erie-votes-down-fluoridation/)		November 2001
Modesto, California (http://www.fluoridealert.org/news/modesto-city-council-puts-formal-end-to-flouride-plans/)		November 7, 2001
Worcester, Massachusetts (http://www.fluoridealert.org/news/worcester-votes-no-to-fluoridation/)		November 7, 2001
Flagstaff, Arizona (http://www.fluoridealert.org/news/flagstaff-voters-flush-fluoride/)		November 7, 2001
Sutherlin, Oregon (http://www.fluoridealert.org/news/sutherlin-keeps-fluoride-out-of-water/)		November 7, 2001
Kamloops, British Columbia, Canada (http://www.fluoridealert.org/news/kamloops-votes-to-remove-fluoride-from-water/)		October 13, 2001
White Salmon, Washington (http://www.fluoridealert.org/news/columbia-river-gorge-		September 2001

communities-say-no-to-fluoridation/)	
Goldendale, Washington (http://www.fluoridealert.org/news/columbia-river-gorge-communities-say-no-to-fluoridation/)	September 2001
Bishopville, South Carolina (http://www.fluoridealert.org/news/bishopville-to-stop-adding-fluoride-to-water/)	June 2001
Harper, Kansas (http://www.fluoridealert.org/news/citizen-opposition-sinks-plan-to-fluoridate-harper-ks/)	May 31, 2001
Brewster, Massachusetts (http://www.fluoridealert.org/news/brewster-voters-soundly-reject-fluoride/)	May 15, 2001
McPherson, Kansas (http://www.fluoridealert.org/news/mcpherson-voters-soundly-reject-fluoride/)	April 3, 2001
Norridgewock, Maine (http://www.fluoridealert.org/news/norridgewock-votes-no-to-fluoridation/)	May 5, 2001
Blue River, Wisconsin	February 2001
Willamina, Oregon (http://www.fluoridealert.org/news/willamina-council-says-no-to-fluoride/)	January 2001
Ithaca, New York (http://www.fluoridealert.org/news/ithaca-votes-no-to-fluoridation/)	November 7, 2000
Spokane, Washington (http://www.fluoridealert.org/news/fluoridation-loses-twice-in-washington/)	November 7, 2000
Brattleboro, Vermont (http://www.fluoridealert.org/news/brattleboros-decision-not-to-fluoridate-its-water/)	November 7, 2000
East Wenatchee, Washington (http://www.fluoridealert.org/news/east-wenatchee-voters-flush-fluoride/)	November 7, 2000
Shawano, Wisconsin (http://www.fluoridealert.org/news/shawano-votes-no-to-fluoridation/)	November 7, 2000
Nibly City, Utah	November 7, 2000
Hyrum City, Utah	November 7, 2000
Providence City, Utah	November 7, 2000
Smithfield City, Utah	November 7, 2000
Logan City, Utah	November 7, 2000
River Heights, Utah	November 7, 2000
Pequannock, New Jersey (http://www.fluoridealert.org/news/pequannock-new-jersey-votes-against-fluoridation/)	November 7, 2000
Ozark, Missouri (http://www.fluoridealert.org/news/ozark-voters-reject-fluoridation/)	November 7, 2000
Wooster, Ohio (http://www.fluoridealert.org/news/wooster-voters-say-no-to-fluoride/)	November 7, 2000
Squamish, British Columbia, Canada (http://www.fluoridealert.org/news/squamish-votes-no-to-fluoridation/)	October 16, 2000
Woodside, California (http://www.fluoridealert.org/news/woodside-california-rejects-fluoridation/)	September 2000

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Ste. Genevieve, Missouri (http://www.fluoridealert.org/news/residents-vote-against-fluoridating-citys-water-in-referendum/)	August 8, 2000
Winfield, Kansas	March 6, 2000
Wilmington, Massachusetts	February 15, 2000
Santa Barbara, California	November 23, 1999
Johnstown, New York	November 19, 1999
Wichita, Kansas	October 26, 1999
Boca Raton, Florida	October 25, 1999
El Carjon, California	April 27, 1999
Helix Water District, California	April 7, 1999
Lakeside Water District, California	April 6, 1999
Hutchinson, Kansas	March 30, 1999
Riverview Water District, California	March 24, 1999
La Mesa, California (http://www.nofluoride.com/cal_cities_say_no.htm#1)	March 9, 1999
Santa Cruz, California	March 4, 1999 ... banned
Bremerton, Washington	February 2, 1999
Olympia, Washington	December 15, 1999
Seward, Nebraska	November 3, 1998
Whitehorse, Yukon Territory, Canada	July 28, 1998... quit after 30 years
Grand Island, Nebraska	May 13, 1998... quit
Norfolk, Nebraska	May 13, 1998
North Platte, Nebraska	May 13, 1998
Washington, Missouri	April 7, 1998
Kitmat, British Columbia, Canada	March 1998... quit
Hot Springs, Arkansas	February 1998
Ridgefield, Oregon	December 22, 1997
Largo, Florida	July 15, 1997

Clearwater, Florida	July 15, 1997
North Redington Beach, Florida	July 15, 1997
Amsterdam, New York	May 21, 1997
Suisun City, California	May 1, 1997
Yardly, Pennsylvania	April 16, 1997
Village of Orfordville, Wisconsin	December 9, 1996
Western Nassau County, New York	November 21, 1996... quit after 23 years
Kelowna, British Columbia, Canada	November 16, 1996... quit after 42 years
Gothenberg, Nebraska	December 1996
Bloomer, Wisconsin	November 6, 1996
Kodiak, Alaska	July 12, 1996
Carle Place, New York	February 1, 1996... quit
Winter Springs, Florida	January 10, 1996
Pasco, Florida	December 14, 1995
York, Pennsylvania	July 29, 1995
Thurmont, Maryland	February 3, 1994
Albany, New York	December 8, 1994
Middletown, Maryland	November 1993... quit
Barnstable (Cape Cod), Massachusetts	November 4, 1993
Wagoner, Oklahoma	June 17, 1993
Redwood Valley, California	February 6, 1993
Los Altos Hills (Purissima) California	1993
Campbell River, British Columbia, Canada	April 1993... quit after 33 years
Port Hardy, British Columbia, Canada	November 1993... quit after 19 years
Squamish, British Columbia, Canada	November 1993...

	quit after 20 years
Fort Smith, Arkansas	November 3, 1992
Milltown, Wisconsin	October 17, 1992
Bellingham, Washington	May 19, 1992
Comox/Courtenay, British Columbia, Canada	February 1992
Palm Beach County, Florida	October 22, 1991
Ketchikan, Alaska	October 2, 1991
Suffolk County, New York	August 15, 1991
Davis, California	December 14, 1990... 5th rejection
Morgan Hill, California	March 7, 1990... quit

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(https://twitter.com/FluorideAction)

185612

September 6th, 2012
2:00 pm
Portland City Hall
Portland, Oregon

Welcome to the international release of the new documentary film

An Inconvenient Tooth

A feature length documentary featuring 11 opponents
of water fluoridation by Portland filmmaker Guy Wagner

You are cordially invited to view the film, free of charge at:

AnInconvenientTooth.org

185612

Testimony in support of fluoridation of Portland's Community Water Supply

Thursday, September 5, 2012, Portland City Council Chambers

Barry Rice

Mister Mayor and members of Portland's City Council: My name is Barry Rice; I live Portland, Oregon. I have been a resident for 38 years. My wife and I have earned our living in Portland and raised our two children in Portland where they attended Portland Public Schools.

Both my wife and I grew up in Washington State communities that had optimally fluoridated community water supplies. When we moved to Portland we were surprised that the city didn't fluoridate its water.

Our children's dentist was Dr. Alan Pike, is a pediatric dentist who practices on Sylvan Hill. He has patients who live in the Tualatin Valley Water District and patients who live in Portland's water supply system. He has practiced in that location for over 35 years. He has told me on numerous occasions that the children from Tualatin Valley (which is fluoridated) have **noticeably** fewer cavities than the children who live in Portland. I offer this as a local comparisons of the benefits of community water fluoridation.

Today, I serve on the board of directors of ***The Friends of Creston Children's Dental clinic***, which provides free dental services to low-income and uninsured students attending Portland Public Schools.

I have seen what untreated oral health infections can do to stifle the health and productivity of these students. Fluoridating Portland's community water supply will provide all the city's people improved oral health security and all its related benefits.

Thank you adding fluoridation to our city's public health arsenal.

185612

Mayor Adams, members of the council, my name is Mary Overgaard.

When my husband and I moved from Lincoln, Nebraska to Portland 31 years ago with our one year old son it never occurred to us that in progressive Portland we would need to give our son fluoride supplements. Lincoln had had fluoridated water since I was a girl. And even the small town of Ogallala, where my husband is from had fluoridated water.

Had a colleague not told me about the need for fluoride supplements for our son I doubt he would have the perfect teeth he has today at age 32.

Luckily for us we understood the importance of fluoride to good dental health and we could afford the supplements. Although the supplements are free to kindergarten through fifth grade students in Multnomah County to be fully effective treatment needs to start well before that. Also, many children of limited means do not get fluoride because their parents, many whom do not speak English as their first language, don't understand the need . Fluoridated water truly levels the playing field so all children have an equal chance of good dental health.

It's time Portland joined the ranks of states and cities to promote good dental health for all our children.

My name is Autumn Johnstone and I am a representative for OSBHCN. I am also a Dental Hygienist and a mom. I support water fluoridation.

First and foremost as a Dental Hygienist I understand and value teeth. Teeth have many functions. We use them for eating, speaking, and we even use them when we smile. I think the first time I understood the importance of teeth on ones self esteem was when I was a teenager. We had two foster children living with us. The older one had lost here 4 top incisors due to early childhood caries. I remember being at parks with her and church with her, and hearing other children ask her what happened to her teeth. I could see her become visibly uncomfortable. I could see her trying to hide the fact her teeth were missing. She was only four-years-old at the time. As a practicing hygienist of 12 years, I have come to learn that dental coverage, dental care, and dental education are luxuries. I have worked in Scottsdale, AZ, where patients were paying cash for 28 veneers and crowns. I have worked in Newberg, OR where patients were only able to have the treatment that was covered by their insurance. I have volunteered with Medical Teams International and have seen kids who said they didn't have a toothbrush and/or toothpaste at home.

The key in dentistry is PREVENTION! We can help prevent decay with water fluoridation. When fluoride is in the water it allows everyone to have the benefit and not just those who can afford it. When you think about the fact that fluoridated water costs less than 1 dollar per person per year, it seems like a no brainer.

The one thing I think all dental practitioners struggle with is patient compliance. I am sure it applies in the medical world too. I have spent so much time on patient education. I have explained to patients the benefits of brushing and flossing. I have talked to them about the effect of bacteria on their mouth and whole body. I have shown them plaque in their own mouth and how to remove it and yet they come back six months later with plaque in the same spots and confessing they still aren't brushing and/or flossing. I am sure there are plenty of folks in this very room who know they should floss everyday and simply do not. While I think education is a critical part of oral health we need to consider the fact that not everybody has the opportunity to be instructed by a dental professional on proper techniques of bacteria removal. Nor can we depend on every parent to provide their child with the necessary tools meaning toothbrush, toothpaste, and floss. I feel the most effective and affordable means to help make sure everybody gets a head start with better oral health is water fluoridation. Even children who don't get to go the dentist should be able to have something to help them out.

I have been fortunate. I have never experienced significant tooth pain. However, I have seen patients come into the office after having been up all night with a toothache. It is described as excruciating and intolerable. Patients will do just about anything just to have the pain go away. The top reason children miss school is due to tooth decay. Can we really expect children to be able to focus on learning when they are in pain? Heaven forbid the day or days they missing are the very days oral

education and fluoride are being administered at their school. They can't get the benefits if they aren't there.

I urge you to consider the overall benefits of adding fluoride to our water and the individual impact it can make on the lives of our community members.

185612

Testimony to Portland City Council
Re: Water Fluoridation
September 6, 2012

Mr. Mayor and City Commissioners:

My name is Mary Lou Hennrich and I am a second generation Portlander, residing on the eastside of Mt. Tabor. My 89 year old father, two adult children and my granddaughter were also born in Portland.

I have spent my career working in Public Health, focusing on improving the health of children and working to reduce the health disparities and inequities suffered by our most vulnerable residents.

I want to applaud you Mayor Adams, and Commissioner's Leonard and Fish for announcing your support of fluoridating Portland's water. I hope you will make it a unanimous "yes" vote Commissioner's Salzman and Fritz after hearing the overwhelmingly informed and supportive testimony today from so many experts, residents and community representatives.

As a life long resident of Portland—a daughter, mother and grandmother, I am here asking you to take the most effective and economical step possible to protect Portlander's teeth from the rampant dental disease that has plagued us for decades and makes a city with some of the highest dental decay in the nation.

I'm also here to remind you that even people like my family who have been blessed with good educations, access to healthy foods, family wage jobs and some level of dental insurance, have experienced much unnecessary dental disease simply because we were born and lived our lives in Portland—without the advantage of fluoridated water.

I have had several dentists comment on my and my children's teeth saying, "oh...I can see you grew up in Portland!" My father recounts similar comments. These statements have were not said in a complimentary manner, but rather while shaking their heads, outlining the restorative dental work needed along with the cost, including time and pain.

Please vote yes and take the long overdue step to assure ALL of us who drink water from our treasured Bull Run have the preventive health benefits of fluoridated drinking water. It is actually a plea from me as a grandmother who cares about ALL Portland children. For my own granddaughter, Briana, I am in many ways sorry that she lives across the river in Vancouver—but for the sake of her teeth and health, I'm glad she lives in a city where fluoride is strengthening her teeth daily as she drinks her city's water.

Mary Lou Hennrich—7206 S.E. Salmon St. 503-887-8416

185612

Good afternoon Mayor Adams and Commissioners,

My name is Damien Fair. I am a neuroscientist and father of a 7-year old boy and a brand new 8-week old girl. I run a lab at OHSU where we study brain development. I am here today to discuss why I support water fluoridation for Portland. I'll cover two points.

The first point regards the significant amount of misinformation circulating on the Internet causing some concern on whether or not we should join the other 200 million Americans in using water fluoridation to prevent tooth decay. I've reviewed the evidence on fluoride and brain development. What I've concluded is in line with the Centers for Disease Control and Prevention, the Environmental Protection Agency, the World Health Organization, and other expert bodies. Optimal water fluoridation does not impair brain development.

There have been studies conducted in China, Iran, Mongolia and other countries where fluoride levels are naturally high in the water - up to 15 times greater than the optimal levels found in the U.S. These studies have been reviewed by the National Research Council and also in a recent paper that many call the "Harvard Study." The primary measurement used in these studies was IQ, which by itself is a controversial way to estimate mental abilities – especially across cultures. The multitude of studies simply compared IQ results of children in high versus low fluoride areas. The control groups, who scored marginally higher in the low fluoride areas, actually had levels of water fluoridation similar to what is found in the U.S. However, even at the highest levels of exposure only minor differences were found, well within the standard measure of error for IQ testing, and without controlling for other factors such as parent's education, family income, nutrition, school attendance, or the children's exposure to arsenic or lead - all factors that can affect IQ. The fact that in the U.S., average IQ scores have actually increased by 15 points since water fluoridation was initiated in 1945[i] highlights the safety of this intervention.

My second point relates to the question, how does fluoridation actually assist in brain development? Some of the most influential factors that lead to typical or atypical brain development are the environment and stress. The pain and stress of tooth decay reduce children's ability to learn and concentrate. These children often miss school, which engenders lower grades and increases the environmental stressors on teachers and peers - even those with healthy teeth. These problems are not hypothetical. They are real. Importantly, we have an opportunity to do something about it.

As a father of two beautiful children, my hope is that they will have access to water fluoridation, as I did when I was child. But I'm also hoping that their friends and peers, not all of who are as well off as my wife and I, have access to the same benefit. Good oral health actually promotes healthy brain development and is an important piece in maximizing all of our children's mental abilities.

Thank you,
Damien Fair

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[i] *Ulric Neisser, "Rising Scores on Intelligence Tests," American Scientist <http://www.americanscientist.org/issues/id.881,y.0,no.,content.true,page.1,css.print/issue.aspx> , September-October 1997.)*

185612

Parsons, Susan

From: Griffin-Valade, LaVonne on behalf of City Auditor Griffin-Valade
Sent: Monday, September 10, 2012 11:06 AM
To: Moore-Love, Karla; Parsons, Susan
Subject: FW: Fluoridation testimony
Attachments: DR BAILEY FLUORIDE COMMENTARY.doc; Mercury monkey tissues.doc

From: Steven Bailey ND [mailto:bnatural@spiritone.com]
Sent: Sunday, September 09, 2012 7:47 PM
To: City Auditor Griffin-Valade; Adams, Mayor; Commissioner Fish
Subject: Fwd: Fluoridation testimony

Dear City Auditor, Ms. LaVonne Griffin-Valade

I have forwarded to you the additional testimony to accompany the pink binder that I presented with my oral testimony on Thursday September 6. As it explains my central and most important point was lost with the minimally related questions by Mayor Adams. Between 13 scheduled patients on Friday I was able to draft and have my wonderful wife and office manager help edit during this busy day. I sent it to all five members of the council at 4:50 pm, Friday September 7, within the proper time allotment. Two auto replies came, one from the mayor and the other from Commissioner Fish. Both these replys were dated 24 hours late, Saturday September 8 which would be past the allowed time. I responded immediately to both auto responses to identify the wrong time in the computers and both of these emails got auto replies, this time still the next day but 21, not 24 hours later. Primary is that the testimony be allowed, but secondarily I as a citizen would ask a response that one this has been acknowledged and that all people who communicated before the cut off time be cleared of this confusion and two either an explaination of how this is an irrelevent computer action or an explaination/investigation to determine if hacking or corruption of the Cities computer occured.
Respectfully, Rev. Steven A. Bailey, N.D.

-------- Original Message --------
Subject: Fluoridation testimony
Date: Fri, 07 Sep 2012 16:52:45 -0700
From: Steven Bailey ND <bnatural@spiritone.com>
To:sam.adams@portlandoregon.gov, amanda@portlandoregon.gov, nick@portlandoregon.gov, randy@portlandoregon.gov, dan@portlandoregon.gov

I respectfully implore you to read and understand what I have
communicated to you in the attached document.
As a practicing physician in Portland since 1983, I am passionate about
the health of my patients and my community.
I am deeply distressed by the potential impact of fluoridization and ask
that you take my words to heart . I truly fear
the motion to fluoridate and am left to help calm the fears of my
community. As a doctor I am in a bind between the care I am asked
to give and the damage I feel you ready to assign.

Go with knowledge and truth - the decision is not yours alone.

185612

Respectfully,
Rev. Steven A. Bailey, ND

9/10/2012

Rev. Steven A. Bailey, ND
Northwest Naturopathic Clinic
1540 SE Clinton Street
Portland, OR 97202
503-224-8083

185612

September 7, 2012

Dear Mayor Sam Adams and esteemed Commissioners.

It was a privilege to speak before the four of you at the hearings on fluoridation on September 6. I am the Pastor of the group and my point of concern was not presented in the 3 minutes allowed with 90 seconds taken by non-fluoride questions posed by the Mayor. I am also a practicing Naturopathic Doctor who has served the Portland community since 1983.

My most important message is found in the word Epigenetics, I will complete the explanation of that in this letter. You may ask why, as a doctor, the director of a non-profit program and practicing physician I chose to wear my cloth. I believe it is my point, that makes this debate about world-wide negative impact on human and public health that needs to be included in your decision.

Each day that you have an emptied garbage can in your office, you indirectly have me to thank. Your city hall, OHSU, and many commercial buildings in the Portland area are maintained by the disabled work force of Portland Habilitation Center. This showpiece of successful implementation of the Javett's Wagner - O'Day government program employs disabled workers with full union wages and benefits. When I was made Program Director of this $30,000 a year custodial program, few disabled graduates exceeded minimum wage and many relied on state disability, worker's comp or social security. After 31/2 years of leading this program, I retired from the position to attend medical school with $1,000,000 in union contracts, saving the state about $500,000 each year in social and health costs; empowered previously isolated people and created an income for both workers and businesses. Today, the program manages over $14,000,000 annually with equal 50% return to state revenues (now unspent) and 10% operating capital for PHC.

Why do I mention this? Because I believed (still do) that disabled people could effectively contribute to society. At the outset of the program, each and every JWO contract with disabled workers immediately brought a US Secretary asking to divide the union wages into 1/3 FTE equivalent (30% economic, stability and viability) and was always awarded an exclusion for the act. "Really, you can't expect a disabled person to do a real job." They were wrong and PHC proved this. There are many questions – but only one right answer that will hold up over time.

We do not need to take a 100%, irrevocable action of fluoridation to provide 30% dental relief to an unsuspecting public. A public that has accessible dental care via the Oregon Health Plan and other state sponsored programs funded by the public body. Can we not educate to a higher health standard that would include both medical and dental wellness? There are compounding life style and economic factors that promote other expensive non-dental conditions including obesity, diabetes (type two), heart disease and cancer. Removing responsibility does not improve the ultimate balance of integrated health.

I reject the claims of 30% reduction of caries from fluoridated water, and if I did believe the statistics, I do not think a 30% effect worthy of praise. There will be new costs and harm to our industries, (many of them expressing concern for having to filter their water before producing goods). You already see how mass medication can powerfully divide our citizenry into an us-versus-them mentality instead of "let's get together and solve the true problems".

The proponent analysis of this action is terribly skewed by a profession that for 150 years has defended the use mercury, a neurotoxin identified this year by the EPA, for treatment of an economically driven disease. Your grand children's children, with scientific objectivity may experience fluoridation as one of the most misguided acts every chosen by man.

Part two: Mayor Adams, you seemed really interested in the China Fluoride study. I have been to China twice on invitation by the Chinese Academy of Science. I have visited Beijing University and Shanghai University, met with doctors, researchers, toured hospitals and traveled to remote areas to evaluate the production and toxicity of natural products in the regions. Finding a need to constantly do extensive testing for mercury, lead, organo-chemical and the like, it appears that much of the fluoride debates isolate fluoridated factors and fail to consider a significant contribution or deletion of other health factors associated with heavy metal, solvent and nutritional mineral considerations.

So when the Harvard study looks at fluoride influence in IQ, have they factored out all lead levels in the districts, all mercury, and other solvents? You have to know if you are looking at objective elemental relationships that provide fine scientific confidence but rarely give truly scientific conclusions.

.

Weston Price DMD, who opposed amalgam fillings, found that soil mineral content was one of the two contributors to cariogenesis. This is hard water (higher levels of fluoride) with much higher levels of normal minerals involved in the formation and maintenance of healthy teeth like calcium, magnesium, potassium as well as zinc (cell, immune health) chromium (reduction of type two diabetes). I have never found the pro fluoridation science to perform quality study designs.

During the years of fluoridation and the change in amalgam composition that out-gasses much more mercury, there has been over a ten fold increase in nearly every neuro-degenerative disease (Parkinson's, dementia, ALS, MS), and a five-fold increases in cancer rates. The failure of modern medicine to reduce both inflammatory and chronic disease is not a platform to dismiss risks of know potentially toxic agents.

Mayor Adams, regarding you question on sodium hydroxide. Yes it can be a poisonous. It is broken down to normal nutritive atoms of sodium, oxygen and hydrogen. There is no heavy metal detoxification pathway involving this chemical, there is no evidence of accumulation or morbidity of consumption of a very wide range of safe concentrations. This is absolutely not true of Fluoride. Most pharmaceutical drugs begin their initial metabolic elimination through the cytochrome pathways but immediately end up in the "mulching" breakdown of shared hepatic detoxification. These secondary elimination pathways are nutrient dependent and significantly less functional in the populations at risk for caries. These metal detoxification pathways share the same mulching mechanism as lead, mercury, cadmium, arsenic and aluminum.

The very group that the proponents are working to evoke emotional reactions to their pain, are the most at risk for individual insults to their entire health systems, not just teeth. You cannot deliver fluoride to just the teeth, the teeth belong to the body.

So **Epigenetics, the moral issue!** Within the last 15 years medical science has opened an entirely new paradigm and understanding of disease and genetic relationships with disease. This is the new field of EPIGENETICS. It helps explain why 20,000 Americans die each year due to their individual reaction to "safe" drugs used properly. This has to do with the extreme limitations of pharmaceutical safety studies on genetically similar populations. Science now finds that through genetic diversity some people are harmed by chemicals at a dosage that is safe for 99+% of the population.

PORTLAND, the LAST AMERICAN CITY free of fluoridation, a city that holds huge international genetic variances exists as the very last metropolitan center where the epigenetic insults of fluoridated water can be researched. In taking support from what I categorically defined as flawed science, choosing to minimize both theoretical and proven health insults, you as a council are to make a decision that removes the ability of modern science to truly answer the questions being discussed by the opposing groups. If I am wrong I will continue to help on issues of social and medical equity, If I am right, as a man of the cloth, I have offered the opportunity to slow down, consider your own turpitude, and calculate the potential for injurious insult to life as we have been able to understand it.

In closing, please do the right thing and put your steam roller on hold. Table this and come to a place where you are able to absolutely know what you are doing. Ecclesiastes 7:1 comes to mind, but then I'm both a Christian Pastor and a member of the First Unitarian Universalist Church downtown, go figure.

Respectfully,

Reverend Steven Bailey N.D.

P.S. I have enclosed a very well done scientific study, using radioactive markers in amalgam to truly show the consistent immediate distribution of mercury from amalgam fillings throughout the primate system. It is unethical to do these tests on humans, maybe on animals as well, but both sheep and primate models have categorically proven another false claim of the ADA to be a lie.

Whole-body imaging of the distribution of mercury released from dental fillings into monkey tissues

LESZEK J. HAHN, REINHARD KLOIBER, RONALD W. LEININGER,* MURRAY J. VIMY,† AND FRITZ L. LORSCHEIDER‡,¹

*Departments of Radiology, *Pathology, †Medicine and ‡Medical Physiology, University of Calgary, Faculty of Medicine, Calgary, Alberta, Canada T2N 4N1*

Abstract The fate of mercury (Hg) released from dental "silver" amalgam tooth fillings into human mouth air is uncertain. A previous report about sheep revealed uptake routes and distribution of amalgam Hg among body tissues. The present investigation demonstrates the bodily distribution of amalgam Hg in a monkey whose dentition, diet, feeding regimen, and chewing pattern closely resemble those of humans. When amalgam fillings, which normally contain 50% Hg, are made with a tracer of radioactive ^{203}Hg and then placed into monkey teeth, the isotope appears in high concentration in various organs and tissues within 4 wk. Whole-body images of the monkey revealed that the highest levels of Hg were located in the kidney, gastrointestinal tract, and jaw. The dental profession's advocacy of silver amalgam as a stable tooth restorative material is not supported by these findings. — HAHN, L. J.; KLOIBER, R.; LEININGER, R. W.; VIMY, M. J.; LORSCHEIDER, F. L. Whole-body imaging of the distribution of mercury released from dental fillings into monkey tissues. *FASEB J.* 4: 3256–3260; 1990.

Key Words: dental amalgam · mercury · tooth fillings · mercury vapor · mercury exposure

DENTAL "SILVER" AMALGAM TOOTH FILLINGS, which normally contain 50% mercury (Hg) metal by weight, release Hg vapor into human mouth air as a result of chewing (1–3) or tooth brushing (4). Levels of Hg vapor in intraoral air correlate significantly with the number of amalgam fillings (2, 3), and these Hg vapor levels remain elevated during prolonged chewing, declining slowly to basal levels 90 min after chewing ceases (3).

Estimations of the amount of amalgam Hg absorbed daily in humans vary from 1.2 to 27 μg Hg/day, with an average of approximately 10 μg/day; and individual subjects can receive daily doses of as much as tenfold higher than this average (5). Human autopsy studies demonstrate significantly higher Hg levels in the brain and kidney of adult subjects with aged dental amalgams than in control subjects with no amalgams (6). It is believed that dental amalgams constitute the major source of exposure to inorganic Hg in the general population (7).

Recently we used an experimental animal model in which sheep received dental amalgam fillings containing a radioactive Hg tracer. One study demonstrated, by whole-body imaging, that the sites of amalgam Hg uptake in sheep include oral tissues, jaw bone, lung, and gastrointestinal tract, with a subsequent high concentration of Hg in the kidney and liver (8). Another study, which used pregnant sheep, showed that both maternal and fetal tissues begin to accumulate Hg within several days after amalgam placement, and that this accumulation progressed along with gestation (9). It is unknown whether the frequency of eating, molar chewing pattern, or type of food influenced the degree to which Hg was released from sheep dental amalgams, or if the results were directly comparable to humans. Therefore the objective of the present investigation was to determine the bodily distribution of amalgam Hg in a primate species whose dentition is similar to that of humans, and whose diet, frequency of feeding, and chewing pattern closely resemble those of humans.

METHODS

A wild-caught male cynomolgus monkey (*Macaca fascicularis*), approximately 7 years old and weighing 5 kg, was obtained from Charles River Canada Inc. (St. Constant, Quebec, Canada). The animal was singly housed in a large squeeze-back cage and acclimated to its environment and diet for 2 wk before surgery. Twice daily the animal was fed Wayne 25% Primate Diet (no.

¹To whom correspondence should be addressed, at: Department of Medical Physiology, Faculty of Medicine, Health Sciences Centre, University of Calgary, 3330 Hospital Drive N.W., Calgary, Alberta, Canada T2N 4N1.

8663, Teklad/Premier Laboratory Diets, Madison, Wis.) supplemented with apples, oranges, bananas, sunflower seeds, and peanuts. Fresh water was available ad libitum. Before dental surgery the monkey was fasted for 24 h and water was withheld for 12 h. Anesthesia was induced with an intramuscular injection of ketamine hydrochloride-xylazine mixture (Ketaset, 11 mg/kg, Austin Laboratories Canada Ltd., Joliette, Quebec, Canada; Rompun, 1.1 mg/kg, Haver/Chemagro Ltd., Etobicoke, Ontario, Canada). A 5.5-mm o.d. endotracheal tube (Portex Inc., Wilmington, Mass.) was inserted, and unassisted general anesthesia was maintained with a Narkovet 2 anesthetic machine (N. American Drager, Telford, Pa.) delivering a gas mixture of 0.6 l/min nitrous oxide, 0.4 l/min oxygen, and halothane (0.5–0.8%, MTC Pharmaceuticals, Cambridge, Ontario, Canada).

The preparation and placement of dental amalgam fillings was as previously described for sheep (8), with several modifications. Before the study, stone gypsum models of adult monkey teeth were constructed from alginate impressions of the maxilla and mandible of a monkey skull. Occlusal amalgam fillings were placed in the stone models, trimmed, and finished in three maxillary and three mandibular molar teeth, and then the fillings were removed and weighed. The average mass of these fillings (180 mg each) was used to determine the minimum amount of nonradioactive Hg needed to dilute the isotopic Hg and be sufficient to fill 16 teeth. Before mixing the amalgam, 15.5 mCi of radioactive ^{203}Hg metal with a specific activity of 17.37 mCi/g (Amersham Canada, Oakville, Ontario, Canada) was diluted 2.5-fold with nonradioactive Hg to a lower specific activity of 6.91 mCi/g.

At surgery, occlusal amalgam fillings were prepared (8) and inserted into 16 teeth (3 molars and the adjacent second premolar in each quadrant of the upper and lower jaws). After amalgam placement, an average occlusal amalgam mass of 186 mg/tooth (93 mg Hg/tooth) was estimated by correcting for both the remaining unused Hg and an estimated 25% amalgam loss during placement and carving. The total Hg in the monkey teeth (1488 mg) was labeled with 10.3 mCi ^{203}Hg. The amalgam fillings were limited to the occlusal surface; they were completely supported circumferentially by solid tooth structure, and were slightly overcarved to create a concave surface that would not be subject to abnormally rapid wear. At the conclusion of dental surgery, the oral cavity was flushed thoroughly several times with a water rinse that was removed by vacuum aspiration to clean the mouth of amalgam particle trimmings.

On day 28 after amalgam placement, the monkey was again anesthetized with ketamine alone (13 mg/kg) and then killed with an i.v. injection of sodium pentobarbital (Euthanyl, MTC Pharmaceuticals). Blood, cerebrospinal fluid, and urine specimens were taken for Hg analysis. Each of the 16 teeth containing amalgam fillings was individually sectioned in the horizontal plane immediately above the gingival margin, and the clinical crown was removed intact with the amalgam to reduce the high background from the ^{203}Hg. The animal was taped in the ventral position to a rigid cardboard support and imaged with a large field-of-view gamma camera to localize ^{203}Hg by planar scintigraphy as described for sheep (8), with several modifications. The ADAC GENESYS single photon emission computerized tomography and total body digital imaging system (ADAC Laboratories, Milpitas, Calif.) was used. Three imaging scans were obtained: one in the anterior (ventral), and two in the posterior (dorsal) projections before and after removal of the entire gastrointestinal tract. The data were acquired using the pulse height analyzer (PHA)[2] peaked at 279 ± 28 keV. To outline the body contour of the monkey in each projection, transmission images were obtained with a flat 30-cm diameter ^{57}Co source using a PHA setting of 122 ± 12 keV.

Tissue and fluid specimen weights obtained at autopsy were used in conjunction with radioactivity measurements to determine total Hg concentrations as described previously (8), with several modifications. A Canberra Nuclear Products Group (Canberra Industries, Meriden, Conn.) well-counter system was used with a SpecMate NaI preamplifier/amplifier, an Accuspec acquisition interface board, and a Bicron 2" NaI (Tl) scintillation detector operating on MS-DOS 3.3 based software supplied by the manufacturer for IBM PC XT/AT,386,PS/2 computers. This system counted ^{203}Hg with a 25% instrument detection efficiency, its multichannel analyzer was peaked to accept a 279 keV ± 10% energy range, and a stable low background count was subtracted from each tissue measurement. In this scintillation detection configuration 1 μCi equals 555,000 cpm, at 28 days of physical decay for ^{203}Hg approximately 66% of the isotope remains, and after a 2.5-fold dilution with nonradioactive Hg, the specific activity of ^{203}Hg in amalgam was 144,000 ng/μCi. Total amalgam Hg in tissue (ng Hg/g wet wt) was calculated by the equation: (cpm/66%) × (144,000 ng/μCi)/555,000 cpm/μCi/g.

RESULTS

Figure 1 demonstrates the bodily distribution of ^{203}Hg released from dental amalgam tooth fillings 28 days after placement as viewed from both ventral and dorsal imaging positions. The transmission image, obtained without moving the animal from each position, is superimposed to outline the body contour. Figure 1*A* is the ventral whole-body image projection, revealing that the primary sites of Hg concentration are kidney, gastrointestinal tract, and jaw. Figure 1*B* is a dorsal whole-body image projection revealing the same three sites of Hg concentration. The apparent lower activity of ^{203}Hg, particularly in the jaw, reflects the increased tissue attenuation between the gamma camera and the radioisotope locus in this projection. Figure 1*C* is the dorsal whole-body image projection after removal of

[2]Abbreviation: PHA, pulse height analyzer.

0892-6638/90/0004-1256/$01.50.

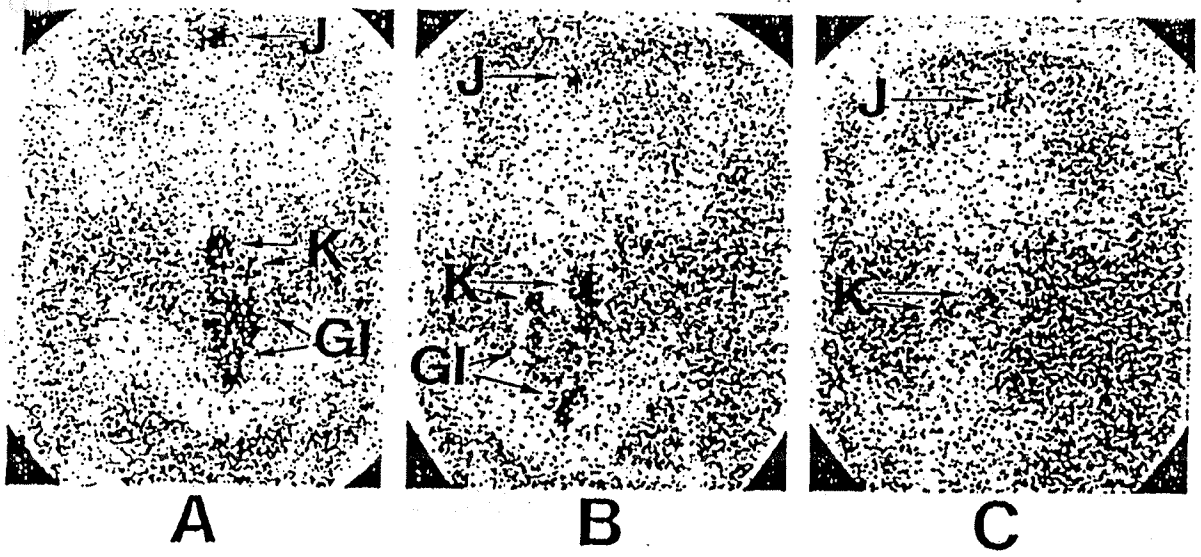

Figure 1. Whole-body image scan of amalgam ^{203}Hg localization in a 7-year-old male monkey (*M. fascicularis*) after removal of dental amalgams. A superimposed transmission scan with a ^{57}Co source outlines the body contour. *A*) Ventral image; *B*) dorsal image; *C*) dorsal image after removal of the gastrointestinal tract. J, jaw; K, kidneys; GI, gastrointestinal tract.

the entire gastrointestinal tract. The kidneys and jaw remain visible.

Table 1 lists the total concentration of amalgam Hg in various tissues obtained at autopsy 28 days after amalgam placement. Whole blood and urine contained 5.8 and 17.7 ng Hg/g, respectively. Synovial membrane had concentrated 31.6 ng/g, but Hg in skeletal muscle was very low and was not detected in fat. In oral tissues, Hg was concentrated primarily in tooth alveolar bone (7756 ng/g), gingivae adjacent to the amalgam fillings (4190 ng/g), and the tongue region in opposition to the filled teeth (253 ng/g). In the gastrointestinal tract, washed linings of the large intestine (983 ng/g) and colon (482 ng/g) contained the highest concentrations of Hg. Bile concentration of Hg (243 ng/g) was 40-fold higher than Hg concentration in blood. Feces contained 3490 ng Hg/g. Heart muscle levels of Hg were similar to that of blood, but Hg concentration in the lung was threefold higher than in blood, and in the trachea it was twofold higher. The abdominal organ with the highest concentration of Hg was the kidney (3053 ng/g). Liver, at 133 ng/g, had more than 20-fold the Hg levels found in blood. In the nervous system, all three regions of the brain concentrated Hg at levels greater than either blood or cerebrospinal fluid. However, no Hg was detected in either the spinal cord or sciatic nerve. Endocrine gland concentrations of Hg were highest for the pituitary (83 ng/g) and for other glands, except the thyroid, they were two- to fivefold higher than that of blood.

TABLE 1. *Concentration of amalgam Hg in monkey tissues 28 days after placement of dental amalgam tooth fillings*

Tissue	ng Hg/g
Whole blood	5.8
Urine	17.7
Synovial membrane (knee joint)	31.6
Skeletal muscle (gluteus)	1.9
Fat (mesentery)	0.0
Tooth alveolar bone	7756.1
Oral mucosa	86.6
Gingivae	4190.4
Tongue	253.3
Parotid gland	1.6
Stomach	18.4
Small intestine	68.9
Large intestine	983.1
Colon	482.7
Bile	243.1
Feces	3490.2
Heart (ventricle)	6.6
Lung	15.0
Trachea	12.6
Kidney	3053.5
Liver	133.1
Spleen	15.6
Frontal cortex	7.2
Occipital cortex	12.6
Thalamus	9.9
Sciatic nerve	0.0
Spinal cord	0.0
Cerebrospinal fluid	1.9
Pituitary	83.6
Thyroid	4.1
Adrenal	31.3
Pancreas	15.6
Testes	12.7

DISCUSSION

This study clearly demonstrates that the phenomenon of high Hg accumulation in body tissues after dental amalgam placement which we previously reported in sheep

(8, 9) is not unique to that species, and is readily demonstrable in primates as well. The dentition, chewing pattern, and diet of this monkey were similar to that of humans. The surgical procedure and the use of isotopic Hg ensured that the only Hg detected was that which escaped from the amalgam tooth fillings during the 4-wk period after dental surgery. The routes of absorption of amalgam Hg and the potential significance of this phenomenon to dental and medical physiology have been discussed in detail in our earlier report on sheep (8).

Each amalgam tooth restoration in the monkey contained only 93 mg Hg, which compares with an average of 425 mg Hg/tooth in sheep (8). All 16 amalgam fillings remained intact for the duration of the present study.

A substantial amount of Hg was transported from dental amalgam to adjacent oral tissues, and is visualized in the monkey. This finding is consistent with earlier reports of other methods in humans which have demonstrated that Hg ions migrate from amalgam into gingivae (10), dentin (11, 12), dental pulp (13), tooth roots, and surrounding alveolar bone (14).

Concentration of Hg in the kidney of this monkey (3053 ng/g) contrasted to that in sheep kidney (7438 ng/g) (8). Such differences may reflect frequency and patterns of chewing in these species. Coincident with the present study, another laboratory reports that after prolonged exposure (1 year) to amalgam Hg, monkeys that had only eight nonradioactive occlusal amalgam fillings (containing one-third the total Hg used in the present study) will have kidney levels of Hg averaging 3900 ng/g tissue with dense Hg accumulations located in proximal tubule cells (15). As this is approximately 30% higher Hg concentration than we have observed in the primate kidney 4 wk after placement of twice the number of such fillings, this suggests that with longer duration of exposure to amalgam Hg the kidney will concentrate increasingly larger amounts of Hg. Moreover, the locus of Hg accumulation in the proximal tubule, which is the primary site of sodium reabsorption, would explain why such reabsorption is markedly impaired in animals after placement of dental amalgams (16). The significance of amalgam Hg accumulation in kidney on parameters of renal function will be communicated in full detail in another report.

Similarly, fecal Hg concentration was 3490 ng/g in monkey compared with 4489 ng/g in sheep (8). Fecal excretion of Hg in sheep was evident within 3 days after amalgam placement, and continued throughout a 140-day study (9); a similar Hg excretion pattern was observed in the monkey for the duration of this experiment. Full details of the effects of amalgam Hg excretion patterns on the populations and functions of bacterial species in the intestinal tract and on gingival surfaces will be reported elsewhere.

Now that it has been established that Hg vapor is continuously released from amalgam fillings in human teeth (2, 3, 5) and that specific tissue loci in the sheep and monkey will concentrate large amounts of this Hg (8, 9), the possible pathophysiological consequences of such Hg exposure must be addressed. Preliminary reports on two recent investigations indicate that kidney function (16) and intestinal and gingival flora populations (17) are significantly altered when animals are exposed to amalgam Hg dose accumulations delivered from 12–16 occlusal amalgam fillings for 1–2 months after placement.

Advocacy by the dental profession (18, 19) that Hg-based silver amalgam is stable and systemically biocompatible is not supported by our animal studies (8, 9) or by the pathophysiological consequences of amalgam usage that we demonstrated (16, 17). [FJ]

Support for this study was provided by research grants from the Wallace Genetic Foundation and the International Academy of Oral Medicine and Toxicology. The authors thank Dr. J. E. Fewell, Director of the Reproductive Medicine Research Group, and the Christie Unit for the Study of Human Reproduction for provision of facilities and assistance with materials to conduct this investigation. The authors are also grateful to A. Joseph and T. Rayman for assistance with dental surgery, L. Morck and R. Dawson for assistance with animal management, and the Foothills Provincial Hospital Department of Nuclear Medicine for provision of imaging facilities.

REFERENCES

1. Svare, C. W., Peterson, L. C., Reinhardt, J. W., Boyer, D. B., Frank, C. W., Gay, D. D., and Cox, R. D. (1981) The effects of dental amalgams on mercury levels in expired air. *J. Dent. Res.* 60, 1668–1671.
2. Vimy, M. J., and Lorscheider, F. L. (1985) Intra-oral air mercury released from dental amalgam. *J. Dent. Res.* 64, 1069–1071.
3. Vimy, M. J., and Lorscheider, F. L. (1985) Serial measurements of intra-oral air mercury: estimation of daily dose from dental amalgam. *J. Dent. Res.* 64, 1072–1075
4. Patterson, J. E., Weissberg, B., and Dennison, P. J. (1985) Mercury in human breath from dental amalgam. *Bull. Environ. Contam. Toxicol.* 34, 459–468
5. Vimy, M. J., and Lorscheider, F. L. (1990) Dental amalgam mercury daily dose estimated from intra-oral vapor measurements: a predictor of mercury accumulation in human tissues. *J. Trace Elem. Exp. Med.* 3, 111–123
6. Nylander, M., Friberg, L., and Lind, B. (1987) Mercury concentrations in the human brain and kidneys in relation to exposure from dental amalgam fillings. *Swed. Dent. J.* 11, 179–187
7. Clarkson, T. W., Friberg, L., Hursh, J. B., and Nylander, M. (1988) The prediction of intake of mercury vapor from amalgams. In *Biological Monitoring of Toxic Metals* (Clarkson, T. W., Friberg, L., Nordberg, G. F., and Sager, P. R., eds) pp. 247–260, Plenum, New York
8. Hahn, L. J., Kloiber, R., Vimy, M. J., Takahashi, Y., and Lorscheider, F. L. (1989) Dental "silver" tooth fillings: a source of mercury exposure revealed by whole-body image scan and tissue analysis. *FASEB J.* 3, 2641–2646
9. Vimy, M. J., Takahashi, Y., and Lorscheider, F. L. (1990) Maternal-fetal distribution of mercury (203-Hg) released from dental amalgam fillings. *Am. J. Physiol.* 258, R939–R945
10. Freden, H., Hellden, L., and Milleding, P. (1974) Mercury content in gingival tissues adjacent to amalgam fillings. *Odont. Rev.* 25, 207–210
11. Soremark, R., Wing, K., Olsson, K., and Goldin, J. (1968) Penetration of metallic ions from restorations into teeth. *J. Prosthet. Dent.* 20, 531–540
12. Soremark, R., Ingels, O., Plett, H., and Samsahl, K. (1962) Influence of some dental restorations on the concentrations of inorganic constituents of the teeth. *Acta Odont. Scand.* 20, 215–224

13. Moller, I. (1978) Reaction of the human dental pulp to silver amalgam restorations. Mercury determination in the pulp by flameless atomic absorption spectrophotometry. *Swed. Dent. J.* **2**, 93–97
14. Till, T., and Maly, K. (1978) Quecksilber in Zahnwurzein und Kieferknochen. *ZWR (Heidlrb.)* **87**, 288–290
15. Danscher, G., Horsted-Bindslev, P., and Rungby, J. (1990) Traces of mercury in organs from primates with amalgam fillings. *Exp. Mol. Pathol.* **52**, 291–299
16. Vimy, M. J., Boyd, N. D., Hooper, D. E., and Lorscheider, F. L. (1990) Glomerular filtration impairment by mercury released from dental "silver" fillings in sheep. *Physiologist* **33**, A-94 (abstr.)
17. Sungners, A. O., Wireman, J., Vimy, M. J., and Lorscheider, F. L. (1990) Increased mercury resistance in monkey gingival and intestinal bacterial flora after placement of dental "silver" fillings. *Physiologist* **33**, A-116 (abstr.)
18. Letters to the Editor (1990) Dental silver tooth fillings. *FASEB J.* **4**, 1542–1543
19. American Dental Association Divisions of Communication and Scientific Affairs (1990) When your patients ask about mercury in amalgam. *J. Am. Dent. Assoc.* **120**, 395–398

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185612

Testimony for the Portland City Council

Submitted by Rev. Steven A. Bailey, N.D.

September 6, 2012

"Evidence questioning the policy Of fluoridation of the Portland Municipal Water Supply"

Fresh Start
Restorative Health Services Inc.

FRESH START
Restorative Health Services Inc.

Steven A. Bailey, N.D.
Program Director

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bnatural@spiritone.com

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Bill Clinton, September 5, 2012

"when asked, I would always reply with a single word answer:

Arithmetic"

Rev. Dr. Steven Bailey, September 6, 2012, in opposing fluoridation:

"when asked, I would reply with a single word answer:
Science"

Steven A. Bailey, N.D.
Biography

Steven Bailey received his doctorate degree in Naturopathic Medicine from the National College of Naturopathic Medicine (NCNM) in 1983. Upon graduation he received a rarely given award for community service while at NCNM, and was elected to the college's Board of Trustees, where he served as treasurer, then Secretary until 1991.

Doctor Bailey has been in practice as the owner and director of the Northwest Naturopathic Clinic since 1983. His clinic has a special emphasis on fasting and immune support, though he maintains a general family practice as well as treatment of chronic and terminal diseases. He lectures regionally on medical, environmental, and specific issues, he also guest lectures at the naturopathic colleges and professional conferences.

Twice each year (Spring and Fall) Dr. Bailey leads a group fast for the purpose of therapeutic cleansing and detoxification. This popular program regularly takes up to forty people through a 3-day cleansing and detoxification process with resounding success. Now in the 23rd year, the fasting program is a testament to Dr. Bailey's leadership and expertise and has resulted in the writing of his "Fasting Diet" published by McGraw-Hill in 2002.

From 1987 to 1998 Dr. Bailey was on KBOO community radio in Portland on his popular weekly show "Healthwatch". He now appears as a regular monthly guest on "The Electric Salon" hosted by Marlana Smith.

Dr. Bailey earned his first degree in psychology in 1976. He was the founder of Portland Habilitation Center's union employment program, the now multi-million dollar organization that employs disabled persons, at union wages and benefits, in providing janitorial and maintenance services in local and government facilities. This was the first program in the nation to provide union employment for the disabled.

As program director at Portland Habilitation Center in 1978, doctor Bailey discovered the field of naturopathic medicine and its only US College, NCNM. He chose to wait a year for admission, so that he could turn over his program with the least amount if disruption

Dr. Bailey now has over twenty years in the naturopathic profession. He has served on boards and committees on behalf of the industry and as legislative chair for the State of Oregon from 1985 to 1987. Dr. Bailey has been an assistant professor of Pharmacognosy and nutrition at the National College of Naturopathic Medicine and has been a frequent guest lecturer at the college and community centers. His most recent (2004) presentation to the college grand rounds event showcased his own personal journey of an infantile seizure disorder as experienced with his own daughter. A story with a happy ending, Dr.

Bailey outlined the personal and clinical challenges of a parent faced with the maze of concerns when medical intervention is most indicated.

A strong historical and political perspective colors Dr. Bailey's awareness. He pays respect to the elders of science and medicine while keeping abreast of the interests that control our resources and access to sound care. A regular co-host on KBOO, 90.7 FM non-commercial public radio, Dr. Bailey shares his vast knowledge and of health, politics, environment, religion and philosophy with the local community via a call-in format. He also works during the semi-annual pledge drives to ensure the continuation of this valuable non-commercial radio resource.

The Northwest Naturopathic Clinic has been the training ground for more than 200 new doctors entering their own path of practice. A dedicated teacher, Dr. Bailey is host to doctors-in-training through the college preceptor program. With otherwise limited opportunity to observe a patient-doctor relationship, the preceptor program includes the student doctor in regular patient visits to the benefit of their experience, confidence and the practical needs of patient service.

As a writer, Dr. Bailey has authored The Fasting Diet, Contemporary Press/McGraw-Hill (Feb.2002), and co-authored the book on juicing, titled Juice Alive, with Larry Trivieri, Jr.; which was released in February of 2007 on the Square One Publishers label. He was a major contributor to Alternative Medicine, The definitive guide, and You Don't have to Die, unraveling the AIDS Myth, both on Burton Goldberg Press. He has contributed to numerous natural health books by Rodale and other presses. In the eighties he authored both weekly and monthly news columns in local and regional newspapers and magazines.

He has spoken at national conferences, conventions and continuing education courses for the health field. He is also active in local presentations on holistic, natural and spiritual applications of medicine.

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Education
Doctor of Naturopathic Medicine, (N.D.), 1983
National College of Naturopathic Medicine (NCNM), Portland, Oregon
Recipient Community Service Award, 1983 graduation ceremony.

Bachelor of Science, Psychology, 1976
Lewis and Clark College, Portland, Oregon

Celebration Tabernacle Pastoral Training: 2009-2010, Ordained October 2011

Professional Experience / Employment
1983 - Present, Private Practice
Northwest Naturopathic Clinic
2606 NW Vaughn Street, Portland, Oregon
Moved to 1540 SE Clinton St. Portland, Oregon in February of 2008

1976-1979 Program Director, Portland Habilitation Center
Employment and training program. At this Federal CARF accredited program, Steven Bailey established the first union employment program in the US utilizing the Javitts Wagner, O'Day Set Aside Program. Starting with a $35,000 annual program with 3 employees, Steven Bailey negotiated contracts over a three year program leaving PHC with 35 additional union waged, disabled employees and over $1,000,000 in annual contracts. He left this program in good standing to begin studies at NCNM in the fall of 1979

Better Business Bureau
1997 – 2004- Member Highest Recognition Awards every year.

KBOO FM Public Affairs Radio
1987 – 1997 - "Healthwatch", topical discussions, interviews and listener call-ins
1997 – 2008 – Regular (monthly) featured guest on "Radiozene"

Cable Access, Public Affairs
The Doctors Corner, monthly on 4th Wednesday as live show, repeated in metro area cable over 10 times each month. 2007-2008

Public Service
1995 - 1997 Hosford-Abernethy Neighborhood District (HAND)
Chairman of the Board
Director: Fresh Start Restorative Health Services Inc. 501C-3 non profit

Teaching
1993, "Bridges", AANP National Conference, Portland, Oregon
"Naturopathic Approach to AIDS, HIV Infection"

1993, American Vegetarian Society Annual Conference
Lewis and Clark College
"Juice Fasting", "Doctors' Panel"

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1993, "Therapeutic Fasting", Oregon approved Continuing Education
NCNM, Seattle, Washington
"Naturopathic Approach HIV, SLE"

1987 – 1991, Assistant Professor - National College of Naturopathic Medicine
Pharmacognosy 1, 2 Therapeutic Fasting Physiotherapy

1983 -Present, numerous continuing education lectures, workshops and public classes in nutrition, immunology, botanical medicine and HIV infection.

1998 – Present, Clinical Faculty, Natural Health Center East
Teaching Clinic for the National College of Naturopathic Medicine

2001, AANP Annual Conference, Therapeutic Fasting, Tempe Arizona

2006, AANP Annual Conference, with Dr. Ralph Weiss, Naturopathic History, Philosophy and Practice. Portland

2007: NWNPC; lecture with DR. Ralph Weiss on naturopathic philosophy and practice.

2009: AANP: Miracles of Nature (opathy), case studies with Dr. Ralph Weiss

Awards: 2011 National "Vis Award" from the AANP

Publications
Over 150 articles on health related issues in local publications:
Portland Observer, Just Out, NW Examiner, Reflections

Alternative Medicine - The Definitive Guide, Future Medicine Publishing, Inc., Puyallup, Washington, 1993. Contributing author on Fasting, Juice Therapy, Constipation, Parasitic Infection, Cancer, and Carpal Tunnel Syndrome.

You Don't Have To Die, Unraveling the AIDS Myth, Future Medicine Publishing, Inc., Puyallup, Washington, 1994. Contributing author.

Passage 23, Steven A. Bailey, 1996. 23-Day juice fast program developed over 10 years of guiding fasts. Program includes pre-fast, fast, re-entry and personal growth activity during 23-day program.

Contributions to numerous Rodale Press books on natural medicine.

The Fasting Diet, by Steven A. Bailey, N.D., Contemporary Press/McGraw-Hill, February 2002

Juice Alive, by Steven A. Bailey, N.D. with Larry Triviolli, Square One Publishing, release January, 2007

Juice Alive, Second Edition, by Steven A. Bailey, N.D., with Larry Triviolli, Square One Publishing, released February 2010

Professional Meetings
March 6-9, 1996, 12th International Seating Symposium, Vancouver, British Columbia

July 8 - 14, 1996, Healing Ourselves and Our Communities, Native Nations Annual Meeting, Kamloops, Canada

Professional Affiliations
2005-2007, vice speaker AANP House of Delegates
2007-2009, Speaker HOD, member AANP BOD

1983-1991, NCNM Board of Trustees, Secretary

1989-1991, Physician Representative, Oregon Medical Review Committee
Oregon Department of Insurance and Finance

1985-1987, Oregon Association of Naturopathic Physicians, Legislative Chair

Oregon Association of Naturopathic Physicians - Member

American Association of Naturopathic Physicians, Member
Currently serving on the Board of Directors and as speaker of the House of Delegates

1987-2000, African Health Care Coalition, Member

International
January 1994, Santiago, Chile. Research healthcare delivery, botanical and natural medicine in South America. Continuing association with two Naturistas with intention to share knowledge and practices.

November 1996, China. Research healthcare systems, botanical and natural medicine in China. Toured hospitals, pharmacies, research and production facilities.

November 1998, Japan, Attendance at the 6th Annual AHCC Conference on the treatment of cancer.

May 2000, China, Continued research into the clinical application of medicinal fungi.

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Fluoridation Time line
Provided by Rev. Steven A. Bailey, N.D.
Portland, City Council Hearing on Fluoridation in Portland
September 6, 2012

150 AD: Galen, of Pergamon, Roman physician discovers burn remains of humans contain minerals and metals.
150 AD: Rome lines aquaducts with lead as it doesn't rust are presumed safe.

1850: USA and Europe: Scientists discover that the halide fluoride attaches to teeth and bones.

1939: Weston Price DMD founder and chair of the ADA research institutes publishes *Nutrition and Physical Degeneration,* a comprehensive review of health and dental health in countries and regions around the world. Finds direct relationship between cariogenesis and poor soil mineral content with poor processed diet.

Late 30's and throughout 40's Alcoa, Reynolds and other aluminum companies involved in multiple law suits for down wind impact and death on livestock. Eddie Bernays working for Alcoa begins the "safe" aluminum related halides and metals with the national fluoridation campaign for urban water systems.

Early 1950's livestock in Troutdale area downwind from Reynolds plant begin dieing. Blame placed on either tansy or mold in clover, no forensic proof.

1955: Highest source of Government review of pharmacology of plants, minerals and drugs: "The Dispensatory of the United States of America" states that chloride of mercury at 130,000 parts per million is a safe oral treatment of both constipation and parasite infections. States that mercury is not absorbed into the human system, now recognized as a neuro-toxin, mercury like silver was advocated at concentrations many times that which is considered safe today. Portland was still restoring its lead pipes and this was the initial state of science that found no problems with the use of fluorides between 1 and 22 parts per million. Follow up studies in the 1990 find low level fluorides increase certain cancer rates in animals and interfere with thyroid and other hormonal pathways.

2011 Comments on EPA's Risk Assessment and Relative Source Contribution Documents, prepare by Kathleen Thiessen, Ph.D. (enclosed)

2012: Three Portland commissioners report that they are willing to place an initiative to place a toxic agent in controlled levels in the drinking water, soil irrigation and river reception.

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Another Fluoride Drug Bites the Dust

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5 Do YOU Take Any of These 11 Dangerous Cholesterol Drugs?

By Andreas Schuld and Wendy Small
Parents of Fluoride Poisoned Children (PFPC)

Yet another fluoridated drug was withdrawn from the global market this week.

"Baycol" (made by Bayer AG) - a cholesterol-lowering drug taken by 700,000 Americans - was pulled off the market on Wednesday, August 8th. It had been linked to 31 U.S. deaths. Bayer would not disclose the total number of deaths worldwide, but at least nine more fatalities abroad are known.

Baycol had been found to cause muscle destruction - a condition known as rhabdomyolysis - and displayed compounded toxicity when used with other drugs.

On August 9th, the European Medicines Evaluation Agency announced a safety review of other drugs in the same class as Bayer 's "Baycol".

COMMENT (by Andreas Schuld and Wendy Small):

This is not the only recent withdrawal of a fluorinated drug.

The pulling of Baycol follows the earlier withdrawal of other fluorinated "weight-reducing" drugs such as Redux, Fen-Phen and Pondimin (September 1997).

Regarding the once very popular drug combination Fen-Phen, it is important to note that only the fluorinated compound ("Fen" - fenfluramine) was withdrawn, while Phentermine ("Phen") was not pulled.

Rhabdomyolysis

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Concerning rhabdomyolysis - other fluorinated medications have shown the same adverse effect.

Since 1988 - their introduction on the market - many cases of tendonitis and rhabdomyolysis have also been reported due to fluoroquinolone antibiotics, which are used in the treament of a large variety of infections.

In October 1994 the Japan Pharmaceutical Affairs Bureau amended the product information for Enoxacin, Fleroxacin, Norfloxacin, Sparfloxacin and Tosufloxacin to state that rhabdomyolysis may occur. (Reference: Information on Adverse Reactions to Drugs No.128, October 1994.)

In 1996, the Sri Lanka Drug Evaluation Sub-Committee decided that the product information of fluoroquinolone antibiotics should include a warning stating: "The onset of tendon pain calls for immediate withdrawal of fluoroquinolone antibiotics." (Reference: 27th Meeting of the Drug Evaluation Sub-Committee, Ministry of Health, Colombo, 26 November 1996.)

Fluorophenyl

"Baycol" (Cerivastatin) is yet another drug containing a fluorophenyl compound. Prozac and Paxil are some other well-known drugs containing fluorophenyl compounds, as are pesticides including Flusilazole and Fluorbenside.

Starting in the 1930s, fluorophenyl compounds were used as successful agents in the treatment of hyperthyroidism. Originally used mainly in the dye and pesticide industries, it had been found by IG Farben (Bayer) and Knoll's scientists that all fluoride compounds - organic or inorganic - interfere with thyroid hormone activity.

[It is important to realize that this disturbance is not caused by the thyroid gland itself. Any effects on the actual gland are a secondary effect and a result of the severe disturbance caused elsewhere in peripheral tissue, particularly the liver and brain.]

Organic fluoride compounds undergo extensive transformation in the liver, mainly via a process called oxidative demethylation, involving the thyroid hormone (T3) mediated P-450 enzyme system.

In many instances the resulting metabolites may have higher activity and/or greater toxicity than the original compound.

Ironically, an example often used as textbook case to demonstrate of how more-toxic metabolites are produced after passing through the liver, is a compound called "Sevoflurane", which is one of many fluorinated agents used in anesthesia.

Inorganic fluoride is a normal metabolite of Sevoflurane and thought to be responsible for the renal failure observed.

Fluvoxamine (Luvox) transforms to at least 9 metabolites.

Drug Interaction

The activity of organic fluoride compounds on the P-450 enzyme system is also important as it relates to the elimination of many other drugs. Inhibition of these enzymes can cause other drugs to accumulate to dangerous levels in the body, and many cases implicating fluorinated medications are documented in hundreds of studies on MEDLINE.

As just one example, fluoxetine (Prozac) increased up to 13 times the concentrations of thioridazine and its metabolites in the plasma when both medications were administered (Daniel et al, 1999).

Drug interaction was also part of the reason for the Baycol withdrawal.

Liver

Liver damage is often observed when fluorinated agents are used. This, again, is true for all organic fluoride compounds.

In 2000, 3M announced a phase-out of "Scotchgard" products after discovering that the product's primary ingredient-a fluorinated compound called perfluorooctanylsulfonate (PFOS) -- was found in all tested blood bank examinations.

PFOS and related compounds are known to cause liver dysfunction and liver cancer.

Paxil and Prozac are also known to cause liver disease.

Fluoxetine (Prozac) has been shown to cause severe liver dysfunction such as hepatitis (Cai et al, 1999; Johnston & Wheeler, 1997; Mars et al, 1991; Friedenberg & Rothstein, 1996).

Fluoxetine has also shown tumor-promoting activity in the liver (Lin et al, 1999).

Tolrestat (fluorinated anti-diabetic) was withdrawn in 1997 after the appearance of severe liver toxicity.

Thyroid Hormones

All fluoride compounds interfere with thyroid hormones.

Example: Prozac (fluoxetine)

Several studies show that fluoxetine causes a decline inT3 levels and affects T3 production (Eravci et al, 2000; Lin et al, 1999; Baumgartner et al, 1994; Shelton et al, 1993).

In rat brain, fluoxetine has also been shown to interfere with T3 metabolism (Eravci et al, 2000; Baumgartner et al, 1994).

In 1983 Golstein et al. stated that, "the major effect of the drug seems to be stimulation of TSH synthesis and release via the inhibition of T4-mediated thyroid-pituitary feedback. Additionally, fluoxetine could exert a minor direct central stimulatory effect on TSH secretion".

Fetal/Infancy

The metabolites produced by organic fluoride compounds in the liver are tranferred to the fetus through various pathways, including circulatory via placental passage, gastrointestinal via fetal swallowing, and respiratory secondary to fetal lung absorption (Hostetter et al, 2000). Numerous congenital abnormalities have been reported due to first trimester exposure to Fluconsazole, a systemic antifungal agent (Pursley et al, 1996).

Infants who were breastfed by mothers taking fluoxetine (Prozac) demonstrated a growth curve significantly below that of infants who were breastfed by mothers who did not take the drug (Chambers et al, 1999).

This is of urgent concern. The potential for severe mental dysfunction is immense.

Other F-Drugs Recently Withdrawn:

Most of the fluorinated drugs withdrawn have shown to cause serious cardiac adverse effects, which is not surprising considering their influence on thyroid hormone activity.

(Ironically many were first held of benefit in heart disease).

1) In 2000 **Cisapride** ("Propulsid") was withdrawn because it caused severe cardiac side effects

2) The drug **Mibedrafil** ("Posicor") was withdrawn after it was shown that patients with congestive heart failure showed a trend to higher mortality (1998).

3) **Flosequinan** was withdrawn in 1993 after it was shown that the beneficial effects on the symptoms of heart failure did not last beyond the first 3 months of therapy. After the first 3 months of therapy, patients on the drug had a higher rate of hospitalization than patients taking a placebo.

4) **Astemizole** (allergy drug) was withdrawn in 1999 because it also became associated with serious life threatening cardiac adverse events.

5) **Fenfluramine** and **dexfenfluramine** were withdrawn in 1997 due to serious cardiac adverse health effects.

(Other fluorinated drugs have also shown serious cardiac toxicity, such as Halofantrine, but remain on the market with only

warnings issued so far.)

6) **Tolrestat** (anti-diabetic) was withdrawn in 1997 after the appearance of severe liver toxicity and deaths.

7) In 1992 Abbott withdrew **Temafloxacin** (anti-biotic) ("Omniflox"). The drug had caused deaths, liver dysfunction, etc.

8) **Grepafloxacin** was removed from the market in 1999 because of serious cardiac events.

Etc., etc., etc...

This is also what we call - fluoride poisoning.

Andreas Schuld, Wendy Small
Parents of Fluoride Poisoned Children (PFPC) -http://www.bruha.com/fluoride/

Vancouver, BC, Canada

PS: Last year, U.S. District Judge Louis C. Bechtle approved a $3.75 billion national settlement of health claims stemming from "Fen-Phen". More than 9,000 lawsuits were filed against American Home Products, maker of fenfluramine.

Additional comments from **Jeff Green** of **Citizens for Safe Drinking Water** (phone - 800-728-3833):

One of the most frequently used anesthesias for general surgery is fluorinated halothane. A finding of significantly higher incidence of cardiac arrhythmias in children who were undergoing outpatient dental extraction and who were anaesthetised with halothane compared with sevoflurane, is reported on at: http://www.doh.gov.uk/cmo/cmo99_13.htm

For more information, please refer to the following:

Scientific References - Fluoride and the Thyroid

Scientific References - PFOA/PFOS (Scotchgard)

3M and Scotchgard: "Heroes of Chemistry" or a 20-year coverup?

References:

Baumgartner A, Dubeyko M, Campos-Barros A, Eravci M, Meinhold H - "Subchronic administration of fluoxetine to rats affects triiodothyronine production and deiodination in regions of the cortex and in the limbic forebrain" Brain Res 635(1-2):68-74 (1994)

Chambers CD, Anderson PO, Thomas RG, Dick LM, Felix RJ, Johnson KA, Jones KL - "Weight gain in infants breastfed by mothers who take fluoxetine" Pediatrics 104(5):e61 (1999)

Eravci M, Pinna G, Meinhold H, Baumgartner A - "Effects of pharmacological and nonpharmacological treatments on thyroid hormone metabolism and concentrations in rat brain" Endocrinology 141(3):1027-40 (2000)

Friedenberg FK, Rothstein KD - "Hepatitis secondary to fluoxetine treatment" Am J Psychiatry 153(4):580(1996)

Golstein J, Schreiber S, Velkeniers B, Vanhaelst L - "Effect of fluoxetine, a serotonin reuptake inhibitor, on the pituitary-thyroid axis in rat" Eur J Pharmacol 91(2-3):239-43 (1983)

Hostetter A, Ritchie JC, Stowe ZN - "Amniotic fluid and umbilical cord blood concentrations of antidepressants in three women" Biol Psychiatry 48(10):1032-4 (2000)

Jackson IM, Luo LG - "Antidepressants inhibit the glucocorticoid stimulation of thyrotropin releasing hormone expression in cultured hypothalamic neurons" J Investig Med 1998 Dec;46(9):470-4 (1988)

Johnston DE, Wheeler DE - "Chronic hepatitis related to use of fluoxetine." Am J Gastroenterol 92(7):1225-6 (1997)

Lin X, Levitsky DA, King JM, Campbell TC - "The promotion effect of anorectic drugs on aflatoxin B(1)-induced hepatic preneoplastic foci" Carcinogenesis 20(9):1793-9 (1999)

Mars F, Dumas de la Roque G, Goissen P - "Acute hepatitis during treatment with fluoxetine" Gastroenterol Clin Biol 15(3):270-1 (1991)

Pursley TJ, Blomquist IK, Abraham J, Andersen HF, Bartley JA - "Fluconazole-induced congenital anomalies in three infants" Clin Infect Dis 22(2):336-40 (1996)

Shelton RC, Winn S, Ekhatore N, Loosen PT - "The effects of antidepressants on the thyroid axis in depression." Biol Psychiatry 33(2):120-6 (1993)

Be sure to read the other two articles on Baycol in this week's issue:

Baycol Pulled From Market as Numerous Deaths Linked to It

The Baycol Recall: How Safe Is Your Statin?

Related Articles:

Cholesterol Drugs: How Expensive Is Too Expensive?

New Cholesterol Guidelines Issued

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Soil Science:
March 1947 - Volume 63 - Issue 3 - ppg 195-208
Article: PDF Only

THE EFFECTS OF CALCIUM FLUORIDE INCORPORATIONS UPON PLANT GROWTH, FLUORINE AND PHOSPHORUS UPTAKE, AND SOIL pH

MACINTIRE, W. H.; WINTERBERG, S. H.; CLEMENTS, L. B.; DUNHAM, H. W.

THE EFFECTS OF CALCIUM FLUORIDE INCORPORATIONS UPON PLANT GROWTH, FLUORINE AND PHOSPHORUS UPTAKE, AND SOIL pH[1]

W. H. MacINTIRE, S. H. WINTERBERG, L. B. CLEMENTS, AND H. W. DUNHAM[2]

The University of Tennessee Agricultural Experiment Station

Received for publication November 16, 1946

Fluorine in soils has been attributed to occurrences of tourmaline, biotite, muscovite, and phlogopite, the micas, and to apatite and fluorite (6, 18, 21, 22, 24, 25). The element occurs in relatively meager proportions, however, in soils other than those derived from rocks of unusual apatite, or fluorphosphate, content. Fluoride increments come to the soil through the use of phosphatic fertilizers and insecticides (10) and through rainwaters (15).

Fluorine was virtually disregarded as a component of the soil system until recent concern as to possible effects of additive fluorides prompted studies that led to the adaptation of an analytical technic (16) prescribed by the A. O. A. C. (2). The fluorine occurrences in profiles of many types of soils were reported in a recent contribution on the apparent fate of fluorides carried by incorporations of fertilizers (21).

Soluble fluorides have been added to soils to determine effects upon plant growth (1, 5, 8, 26) and also for pest control (10, 23) as well as for effects upon the malting of grain (22). In some cases, the fluoride additions proved beneficial; in others they were of no effect; and in still others they proved detrimental (10), especially to germination (1, 3, 4, 8) and to the feeding value of the grain wastes from distilleries (22). As pointed out by Aso (1) and found at the Tennessee Station (10) however, incorporated soluble fluorides undergo substantial transition to equivalences of the less soluble fluoride of calcium Hence, for soils having normal occurrence of reactive alumina, consideration of the effects of any probable input of fluorine is narrowed virtually to the behavior of an equivalence of calcium fluoride.

Recent contributions dealt with the possibility that fluorides carried by incorporations of superphosphate may exert an influence within the soil system (13, 14, 18, 20). One worker concluded that such an input of component fluorides proved injurious to the germination of corn on unlimed soil (19). Hart, Phillips, and Bohstedt (9) raised the question whether continuous fertilizer in-

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Journal Article
Measurements of fluoride in bone biopsies by neutron activation analysis

PLANT AND SOIL
Volume 49, Number 3 (1978), 653-656, DOI: 10.1007/BF02183290

SHORT COMMUNICATION

Effect of fluoride pollution on the organic matter content of soil

Dhruva N. Rao and Dhirendra Pal

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Abstract

In the present study effect of fluoride contamination of soil and litter by an aluminium factory on the organic matter content of soil is investigated. It was found that increase in fluoride content of litter and soil causes accumulation of organic matter content in the surface soil. It is suggested that the presence of fluoride in the litter and soil decreases the growth and activity of micro-organisms resulting in greater accumulation of organic matter in the soil.

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Plant and Soil 49, 683–686 (1978) Ms. 6756

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Introduction

The phytotoxic effects of fluoride pollution have been studied in considerable detail[6,10,12], but not much is known about its effect on the soil constituents. Soil is polluted by fluoride either by the direct absorption of gases, such as hydrogen fluoride and silicon tetrafluoride or by the deposition of particulate matter, like cryolite and fluorspar as well as fluoride contaminated litter. In a F-polluted area, the plants accumulate fluoride in their leaves and other organs which, on falling down on the ground, decomposes and enrich the fluoride content of the soil. Fluoride thus accumulated in the soil may cause toxicity to soil micro-organisms, thereby hampering the process of organic matter decomposition or mineralization in the soil[2,11]. In the present study organic matter and fluoride content of soils polluted by the emissions from an aluminium factory at Renukoot, Mirzapur, were determined to assess the effects of soil fluoride on litter decomposition.

Materials and methods

Samples of soil and litter were collected from eight sites lying between 0.5 to 16 km in the northwest direction of the aluminium factory. This area is heavily polluted by the gaseous and particulate fluorides emitted from the factory. The vegetation in the area is extensively affected which is evident from the characteristic fluoride injury symptoms shown by the leaves.

Soil samples were collected at various sites from 15 cm² areas upto a depth of 10 cm from the surface. These samples were air dried and their organic matter content were determined by Walkley and Black's rapid titration method[7]. Fluoride in the soil was extracted by the method suggested by Hardin[5] and its content was determined spectrophotometrically[4].

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Community Water Fluoridation

View by Topic

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- Other Fluoride Products
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Contact Info

Centers for Disease Control and Prevention
Division of Oral Health
Mail Stop F-10
4770 Buford Highway NE
Atlanta, GA 30341

Contact Us

Overview: Infant Formula and Fluorosis

The proper amount of fluoride from infancy through old age helps prevent and control tooth decay. Community water fluoridation is a widely accepted practice for preventing and controlling tooth decay by adjusting the concentration of fluoride in the public water supply.

Fluoride intake from water and other fluoride sources, such as toothpaste and mouthrinses, during the ages when teeth are forming (from birth through age 8) also can result in changes in the appearance of the tooth's surface called dental fluorosis. In the United States, the majority of dental fluorosis is mild and appears as white spots that are barely noticeable and difficult for anyone except a dental health care professional to see.

Recent evidence suggests that mixing powdered or liquid infant formula concentrate with fluoridated water on a regular basis may increase the chance of a child developing the faint, white markings of very mild or mild enamel fluorosis.

You can use fluoridated water for preparing infant formula. However, if your child is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased chance for mild dental fluorosis. To lessen this chance, parents can use low-fluoride bottled water some of the time to mix infant formula; these bottled waters are labeled as de-ionized, purified, demineralized, or distilled.

What is the best source of nutrition for infants?

Breastfeeding is ideal for infants. CDC is committed to increasing breastfeeding throughout the United States and promoting optimal breastfeeding practices. Both babies and mothers gain many benefits from breastfeeding. Breast milk is easy to digest and contains antibodies that can protect infants from bacterial and viral infections. More can be learned about this subject at http://www.cdc.gov/breastfeeding/.

If breastfeeding is not possible, several types of formula are available for infant feeding. Parents and caregivers are encouraged to speak with their pediatrician about what type of infant formula is best suited for their child.

Why is there a focus on infant formula as a source of fluoride?

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Infant formula manufacturers take steps to assure that infant formula contains low fluoride levels—the products themselves are not the issue. Although formula itself has low amounts of fluoride, if your child is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased chance for mild dental fluorosis.

Infants consume little other than breast milk or formula during the first 4 to 6 months of life, and continue to have a high intake of liquids during the entire first year. Therefore, proportional to body weight, fluoride intake may be higher for younger or smaller children than for older children, adolescents, or adults.

What types of infant formula may increase the chance of dental fluorosis?

There are three types of formula available in the United States for infant feeding. These are powdered formula, which comes in bulk or single-serve packets, concentrated liquid, and ready-to-feed formula. Ready-to-feed formula contains little fluoride and does not contribute to development of dental fluorosis. Those types of formula that require mixing with water—powdered or liquid concentrates—can be a child's main source of fluoride intake (depending upon the fluoride content of the water source used) and may increase the chance of dental fluorosis.

Can I use optimally fluoridated tap water to mix infant formula?

Yes, you can use fluoridated water for preparing infant formula. However, if your child is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased chance for mild dental fluorosis. To lessen this chance, parents can use low-fluoride bottled water some of the time to mix infant formula; these bottled waters are labeled as de-ionized, purified, demineralized, or distilled.

How can I find out the level (concentration) of fluoride in my tap water?

The best source of information on fluoride levels in your water system is your local water utility. Other knowledgeable sources may be a local public health authority, dentist, dental hygienist, or physician. CDC's Web site My Water's Fluoride allows consumers in some states to learn the fluoridation status of their water systems. Nearly all tap water contains some natural fluoride, but depending on the water system, the concentration can range from very low (0.2 mg/L fluoride or less) to very high (2.0 mg/L fluoride or higher). More than 18,000 water systems serving 204 million people in the U.S. provide fluoridated water to their residents.

Will using only low fluoride water to mix formula eliminate my child's risk for dental fluorosis?

Using only water with low fluoride levels to mix formula will reduce, but will not eliminate, the risk for dental fluorosis. Children can take in fluoride from other sources during the time that teeth are developing (birth through age 8). These sources include drinking water, foods and beverages processed with fluoridated water, and dental products, such as fluoride toothpaste, that can be swallowed by young

in the lumbar spine (predominantly cancellous bone), 12 percent (P<0.0001) in the femoral neck, and 10 percent (P<0.0001) in the femoral trochanter (sites of mixed cortical and cancellous bone), but the bone mineral density decreased by 4 percent (P<0.02) in the shaft of the radius (predominantly cortical bone). The number of new vertebral fractures was similar in the treatment and placebo groups (163 and 136, respectively; P not significant), but the number of nonvertebral fractures was higher in the treatment group (72 vs. 24; P<0.01). Fifty-four women in the fluoride group and 24 in the placebo group had side effects sufficiently severe to warrant dose reduction; the major side effects were gastrointestinal symptoms and lower-extremity pain.

We conclude that fluoride therapy increases cancellous but decreases cortical bone mineral density and increases skeletal fragility. Thus, under the conditions of this study, the fluoride —calcium regimen was not effective treatment for postmenopausal osteoporosis. (N Engl J Med 1990; 322:802–9.)

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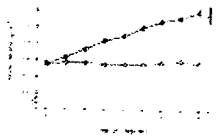

Mean (±SE) Bone Density of the Lumbar Spine in the Fluoride Group (Solid Circles) and the Placebo Group (Open Circles).

children whose swallowing reflex is not fully developed.

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Additional Resource

Dental Fluorosis – Learn more about simple steps to reduce your child's risk for dental fluorosis.

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Content source: Division of Oral Health, National Center for Chronic Disease Prevention and Health Promotion

Centers for Disease Control and Prevention, 1600 Clifton Rd, Atlanta, GA 30333, U.S.A
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ORIGINAL ARTICLE

Effect of Fluoride Treatment on the Fracture Rate in Postmenopausal Women with Osteoporosis

B. Lawrence Riggs, M.D., Stephen F. Hodgson, M.D., W. Michael O'Fallon, Ph.D., Edmund Y.S. Chao, Ph.D., Heinz W. Wahner, M.D., Joan M. Muhs, B.S.N., Sandra L. Cedel, M.S., and L. Joseph Melton, III, M.D.

N Engl J Med 1990; 322:802-809 March 22, 1990

Abstract Article References Citing Articles (366) Letters

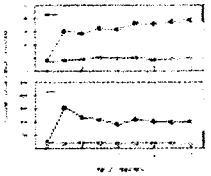
Abstract

Although fluoride increases bone mass, the newly formed bone may have reduced strength. To assess the effect of fluoride treatment on the fracture rate in osteoporosis, we conducted a four-year prospective clinical trial in 202 postmenopausal women with osteoporosis and vertebral fractures who were randomly assigned to receive sodium fluoride (75 mg per day) or placebo. All received a calcium supplement (1500 mg per day). Sixty-six women in the fluoride group and 69 women in the placebo group completed the trial.

As compared with the placebo group, the treatment group had increases in median bone mineral density of 35 percent (P<0.0001)

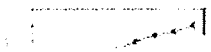
MEDIA IN THIS ARTICLE

FIGURE 1



Mean (±SE) Serum Fluoride and Urinary Fluoride Levels in the Fluoride Group (Solid Circles) and the Placebo Group (Open Circles).

FIGURE 2



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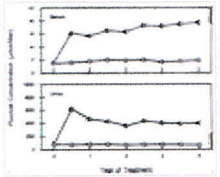

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FIGURE 2

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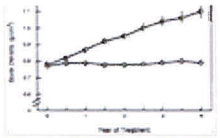

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ARTICLE ACTIVITY

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Subject: Hey CT Members and visitors, please read this information concerning the fluoridation of our water.
From: Robin Gordon <robindgordon@gmail.com>
Date: 8/23/2012 6:02 PM
To: Robin Gordon <robindgordon@gmail.com>

Hey CT Members and visitors, please read this information concerning the fluoridation of our water.

Please feel free to forward this to your networks!

PG

Begin forwarded message:

Subject: Re: Water Fluoridation - a matter of equity [please share!]

A few details to add to the points made by Dr. Bailey:
90% of fluoride used for water fluoridation in the US comes from the pollution scrubbing systems of the phosphate fertilizer industry in the form of hydrofluosilicic acid
The most common contaminant of hydrofluosilicic acid is arsenic and other heavy metals such as lead and mercury has been found – translation, fluoridating water ADDS toxins to our drinking supply
The reason we fluoridate water in the US is due in no small part to Eddie Bernays, the father of public relations and nephew of Sigmund Freud. Bernays was hired by ALCOA to find a way to convince the public that fluoride was safe because ALCOA was producing vast amounts of aluminum for the Manhattan project and, as a byproduct of this production, fluoride was seeping into the surrounding environment and livestock was being killed. ALCOA was concerned that lawsuits could hinder production and put a halt on the Manhattan project on a whole. Bernays eventually came up with the solution to convince Congress that Fluoride is good for teeth and good for children and that it should be put in public drinking supplies at a "low" level
Studies of mice have found that fluoride causes adult mice to become lethargic, lazy, and overweight and also that the offspring of these mice suffer from hyperactive disorders (sound familiar)
Evidence showing that fluoride has improved dental health since 1946 is blind to evidence that shows European countries (where they do not fluoridate their water) have experienced the same dental health improvements over the same time frame. This can be attributed in large part to cleaner overall environments with less pervasive bacteria.
Portland has one of the cleanest public drinking water in the US and it is not fluoridated. Why mess with a great thing?
There is a LOT of research out there. A fantastic book is called "The Fluoride Deception" and I highly recommend you get ahold of it before championing this cause.

Andy Bell
achaiarecords.com

185612

***

Fluoridation was initiated in water in 1946 at the same time we were all told by our government and medicine that lead pipes were 100% safe and even until 1956 that mercury was safe when taken orally because it is not absorbed by the human body. Three years earlier the finest book ever written on cause and cure of dental carries was published by Weston Price citing nutrition and soil mineral content as the single most important factor in preventing cavities in America and many countries that added data. Fluoride has to be controlled at a very very low level of 22 part per million, slightly higher than allowable levels of cadmium, arsenic and lead (ok so a big four times the micro parts per million of lead). Truly beneficial nutritional minerals cited by Price as helping to prevent cavities are allowable at levels of 100,000 per million, only 5,000 less of a concern than fluoride. The Urban League especially should rethink their support for depressing cavities caused by too much sugar, poor hygiene and a variety of clearly economic factors, by a toxic agent fluoride which at slightly higher than 22 parts per million has been linked with liver damage, bone fragility (increase bone fractures in women over 50) death in some toxic fluoride drugs pulled from the market and which I as both a physician and pastor challenge any person to show a single normal metabolic pathway of humans or animals that requires or involves fluoride. I do not believe that safety of fluoride has been provided and many many questions about unsafe ramifications of fluorides deposited in human tissue abound. Maybe Amy, our fitness instructor and nutritional counselor at Fresh Start will want to add reasons why she does not support fluoridation.
Respectfully,
Rev. Steven A. Bailey, N.D.
On 8/23/2012 3:37 PM, Robin Gordon Jr. wrote:
Actually Mr. Wasongolo, according to Dr. Bailey, Naturopathic Dr. and according to research by my friend who's studied this particular subject, Fluoridation of the water would be a grave mistake for us to back up.

It's an industrial waste byproduct, is a polutant that belongs no-where near our bodies.

Dr. Bailey and Andy, would you please share a little info on the subject?

PG

On Aug 21, 2012, at 2:18 PM, Wasongolo wrote:

Hello Everyone,
Would you like to share the subjected above information, and spread the word especially those who live in Portland.
I hope you join other folks by signing after you find it help for the future generation, I believe!
With hope for all,
Wasongolo

Eca -Etabo D Wasongolo,
Community Organizer
Village Gardens

Janus youth programs,inc.
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185612

From: aimee santos-lyons [mailto:aimee.santoslyons@gmail.com]
Sent: Tuesday, August 21, 2012 10:16 AM
To: Wasongolo; Nafisa; Khadiji fai
Subject: Fwd: Water Fluoridation - a matter of equity [please share!]

Hello fello board members,

Here's the petition from the flouridation campaign that we should sign up for individually (but only if you live in Portland). Kindly send it out to your contacts as well with a personal message about why we're endorsing and signing up. This petition has good language to reinforce. My own story is about my two eldest kids who before they were 7 have had painful dental extractions and poor dental health overall.

Based on our decision last night, I'm inviting the campaign folks to talk to us over a conf call. Can folks do a conf call on any of the following dates and times?

Aug 28th 12nn - 1pm OR 6-7pm
Aug 29th 12nn- 1pm OR 6-7pm
Aug 31st 6-7pm

Hope one or all of these times work.
Thanks everyone!
Aimee

--------- Forwarded message ---------

Dear Partners and Friends,

We are launching a petition over the next 10 days to build support for water fluoridation with Portland City Council with a specific message about racial, economic and social equity. Our initial goal is to generate 100 signers from communities of color, immigrants and refugees. Will you please share this Petition "Water Fluoridation - a matter of equity" with your staff, friends and communities? http://www.change.org/petitions/water-fluoridation-a-matter-of-equity Let me know so we can ensure we hit or exceed our goal!

I've drafted a sample email you can share below. Also please sign yourself!

With thanks,
Joseph O: 971-340-4861 | M: 503-512-0490 | www.apano.org

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185612

Dear _____,

The Portland region has a dental decay crisis that is threatening our children's health and educational success. We see this as a crucial health equity issue facing Portland today. While one in five children in Oregon suffer from rampant decay, we know that in communities of color, immigrants and refugees, the suffering is worse. For too long there has been inaction due to fear and misinformation – so today we are asking for your support on this important health equity issue. We are the last major city in the U.S. without fluoridated water, and low-income people and communities of color are paying the biggest price.

Your help can make a difference.

Will you please sign and share our petition - "Water Fluoridation - a matter of equity" with your friends and community?

Our organization is a supporter of the Everyone Deserves Healthy Teeth Coalition, along with many others who work with communities of color, immigrants and refugees including: African Women's Coalition, Asian Pacific American Network of Oregon (APANO), CAUSA, Center for Intercultural Organizing, Chinese American Citizen's Alliance - Portland Lodge, Coalition of Communities of Color, Latino Network, Native American Youth and Family Center (NAYA), OPAL Environmental Justice Oregon, Oregon Latino Health Coalition, Philippine American Chamber of Commerce of Oregon, Urban League of Portland

For a full list visit [www.everyonedeserveshealthyteeth.org].

Sincerely,

Weston Price

From Wikipedia, the free encyclopedia

Weston Andrew Valleau Price[1] (September 6, 1870 – January 23, 1948) was a dentist known primarily for his theories on the relationship between nutrition, dental health, and physical health. He founded the research institute of the National Dental Association, which later became the research section of the American Dental Association, and served as its chair from 1914–1928.[2][3][4]

Weston A Price

Price initially did dental research on the relationship between endodontic therapy and pulpless teeth and broader systemic disease, known as focal infection theory, a theory which resulted in many extractions of tonsils and teeth.[5] Focal infection theory fell out of favor in the 1930s and was pushed to the margins of dentistry by the 1950s.[6]

By 1930, Price had shifted his interest to nutrition. In 1939, he published *Nutrition and Physical Degeneration*,[7] detailing his global travels studying the diets and nutrition of various cultures. The book concludes that aspects of a modern Western diet (particularly flour, sugar, and modern processed vegetable fats) cause nutritional deficiencies that are a cause of many dental issues and health problems. The dental issues he observed include the proper development of the facial structure (to avoid overcrowding of the teeth) in addition to dental caries. This work received mixed reviews, and continues to be cited today by proponents of many different theories, including controversial dentistry and nutritional theories.

Contents

Early years

Born in Newburgh, Ontario, Canada, on September 6, 1870, Price graduated from the dental college of the University of Michigan in 1893 and began to practice in Grand Forks, North Dakota. He moved to Cleveland, Ohio that same year.[8]

Research

Technology development

Price conducted research to develop technological solutions to dental diseases. He invented and improved the pyrometer dental furnace for the manufacture of porcelain inlays that included the fusion of metal and porcelain. He researched improvements in producing dental skiagraphs in the early 1900s and developed special instruments for studying the effect of x-rays on cancer. Much of this work was presented at various professional societies in which he had membership.[1][9] His work with radiographs include pioneering a new radiological technique for studying teeth and using radiographs to analyze endodontically-treated teeth.[10] His 1904 paralleling and bisecting angle techniques would not be become popular until the work of Dr. Gordon Fitzgerald of the University of California in the late 1940s.[11][12] The practice of using radiographs began a new era in dentistry, as dentists could finally see evidence of past dental treatments.[10]

Endodontics and focal infection

Price spent 25 years of his career performing research on pulpless and endodontically-treated teeth, which supported the theory of focal infection, which held that systemic conditions, including complexion, intestinal disorders, and anemia could be explained by infections in the mouth. This theory held that infected teeth should be treated by dental extraction rather than root canals, to limit the risk of more general illness. His research, based on case reports and animal studies performed on rabbits, claimed to show dramatic improvements after the extraction of teeth with non-vital pulps. Price's research fit into a wider body of testimonials in the dental literature of the 1920s, which contributed to the widespread acceptance of the practice of extracting, rather than endodontically treating, infected teeth.[13] Despite

contentions in a 1927 review of Price's work of "faulty bacterial technique" in Price's 1925 publication *Dental Infections and related Degenerative Diseases*,[14] Price's publication *Dental Infections, Oral and Systemic* was used as a reference in textbooks and diagnosis guides published in the mid 1930s.[15][16]

By the 1930s, the theory of focal infection began to be reexamined, and new research shed doubt on the results of previous studies. A 1935 *Journal of the Canadian Dental Association* article called Price radical, while citing his comment in *Dental Infections, Oral and Systemic* of "continually seeing patients suffering more from the inconvenience and difficulties of mastication and nourishment than they did from the lesions from which their physician or dentist had sought to give them relief" as a good reason for the use of tooth extraction to be minimized.[17] One researcher in 1940 noted "practically every investigation dealing with the pulpless teeth made prior to 1936 is invalid in the light of recent studies" and that the research of Price and others suffered from technical limitations and questionable interpretations of results.[18]

Three years after Price died in Santa Monica, California, a special review issue of the *Journal of the American Dental Association* confirmed the shift of standard of care from extraction back to endodontical dentistry.[19] Compared to modern research, Price's studies lacked proper control groups, used excessive doses of bacteria, and had bacterial contamination during teeth extraction, leading to experimental biases.[13]

Nutrition

Beginning in 1894, Price started to consider diet as the primary factor causing tooth decay. In 1925 he was attracted to calcium metabolism when he became an active student of nutrition.[8][20] In the early 1930s, Price's research suggested vitamin B and mineral salts were important dietary components to prevent caries.[21]

In 1939, Price published *Nutrition and Physical Degeneration*,[7] a book that details a series of ethnographic nutritional studies he performed across diverse cultures, including the Lötschental in Switzerland, Native Americans, Polynesians, Pygmies, and Aborigines, among many others.[22] The research materials include some 15,000 photographs, 4,000 slides, and many filmstrips.[8]

In the book, Price claimed that various diseases endemic to Western cultures of the 1920s and 1930s – from dental caries to tuberculosis – were rarely present in non-Western cultures. He argued that as non-Western groups abandoned indigenous diets and adopted Western patterns of living, they showed increases in typical Western diseases. He concluded that Western methods of commercially preparing and storing foods stripped away vitamins and minerals necessary to prevent these diseases..[23]

The 1939 foreword to the book, written by physical anthropologist Earnest A. Hooton, lauded Price's work for confirming previous research that dental caries were less prevalent in "savages" and attempting to establish the etiology for this difference. In 1940, a review in the

Canadian Medical Association Journal called the book "a masterpiece of research", comparing Price's impact on nutrition to that of Ivan Pavlov in digestion. In 1950, a review in the journal *The Laryngoscope* said that "Dr. Price might well be called "The Charles Darwin of Nutrition" while describing Price's documentation of his global travel and research in a book.[24] Other reviews were less sympathetic, with the *Scientific Monthly* noting some of his conclusions went "much farther than the observations warrant," criticizing Price's controversial conclusions about morality as "not justified by the evidence presented", and downplaying the significance of his dietary findings.[23] Likewise, a review in the *Journal of the American Medical Association* disagreed with the significance of this nutritional research, noting Price was "observant but not wholly unbiased", and that his approach was "evangelistic rather than scientific."[25]

A 1981 editorial by William T. Jarvis published in *Nutrition Today* was more critical, identifying Price's work as a classic example of the "myth of the healthy savage," which holds that individuals who live in more technologically primitive conditions lead healthier lives than those who live in more modern societies. The review noted that Price's work was limited by a lack of quantitative analysis of the nutrition of the diets studied, and said he overlooked alternative explanations for his observations, such as malnutrition in primitive societies and overindulgence in the Western diet, rather than the diet itself, as a cause for poorer health. The review makes the assertion that Price had a preconceived positive notion about the health of primitive people, which led to data of questionable value and conclusions that ignored important problems known to afflict their societies, such as periodontal disease.[26]

Legacy

In 1994 George E. Meinig published *Root Canal Cover-up Exposed*, which resurrected the outdated studies of Rosenow and Price. Concerns were raised that patients hearing about these studies might view them as new and reliable.[27] A book review in the *Annals of Dentistry* critical of Meinig's book noted Meinig based his ideas entirely on Price's 1923 *Dental Infections, Oral and Systemic*, and that Meinig's book suffers from a lack of professional editing, makes unsubstantiated claims, confuses basic terms (such as infection and inflammation), and expands into areas unrelated to the main topic. The review states that Price's work has been well discussed and has not been covered up, and notes that although Price's theories were later supplanted by subsequent research that found endodontic treatment is safe and effective, his focus on the biology of teeth and infection is still relevant in modern dentistry, as some clinicians have placed more emphasis on technology and poorly-tested procedures for the treatment of infected teeth.[28]

Price is credited with much of the development of holistic dentistry. The Price-Pottenger Nutrition Foundation (PPNF), a non-profit organization established in 1952, with a membership of 28 dentists as of 2008, maintains an archive of Price's manuscripts and photographs and espouses principles of holistic medicine. The Weston A. Price Foundation was co-founded in 1999 by Sally Fallon and nutritionist Mary G. Enig to disseminate his research. Stephen Barrett, writing on the Quackwatch website, dismissed holistic dentistry and much of Price's research, writing "Price made a whirlwind tour of primitive areas, examined the natives superficially, and jumped to simplistic conclusions. While extolling their health, he ignored their short life expectancy and high rates of infant mortality, endemic diseases, and malnutrition.

While praising their diets for not producing cavities, he ignored the fact that malnourished people don't usually get many cavities." Barrett asserted that dental problems experienced by native peoples resulted from "abuse" of sweet, fatty, and salty food, exposure to new germs, inactivity, and alcoholism, and described Price's studies on bacterial leakage from root canals as "poorly designed".[29] The Foundation has written a rebuttal to Barrett's claims.[30] William T. Jarvis' article "The Myth of the Healthy Savage" states that his work on primitive diets is still widely sourced by dentists who emphasize nutrition, but argues that it had shortcomings that Price overlooked due to a steadfast ideologically-motivated adherence to the notion that the modern diet led to physical degeneration.[26] The foundation has written a rebuttal to the arguments contained within the article that have also been raised by other critics.[31]

Selected works

In a statistical overview derived from writings by and about Weston Price, OCLC/WorldCat encompasses roughly 10+ works in 50+ publications in 4 languages and 1,000+ library holdings.[32]

- *Dental Infections, Oral and Systemic* (1923) Penton publishing company; Cleveland, OH
- *Nutrition and Physical Degeneration: A Comparison of Primitive and Modern Diets and Their Effects* (1939) Paul B. Hoeber, Inc; Medical Book Department of Harper & Brothers
- 1925. "Dental Infections and related Degenerative Diseases" *J Am Med Assoc* 1925;84(4):254–261.

See also

- Thomas L. Cleave
- Robert Corruccini
- Albert Howard
- Robert McCarrison
- Michael Pollan

References

Notes

1. ^ *a b* Ambler, Henry Lovejoy (1911). *History of Denistry in Cleveland, Ohio*. pp. 44–56.
2. ^ "Weston A Price" *New York Times* Jan 24, 1948
3. ^ (1925) *The Nebraska State Medical Journal*, Volume 10, Issue 6; pg 205

4. ^ (1928) *British Journal of Dental Science* Volumes 72–73; Page 101
5. ^ Thomas J. Pallasch, DDS, MS, and Michael J. Wahl, DDS (2000) "The Focal Infection Theory: Appraisal and Reappraisal" (http://www.cda.org/library/cda_member/pubs/journal/jour0300/focal.html) , *Journal of the California Dental Association.*
6. ^ Jaypee Brothers, Medical Publishers (2009) *Essentials of Clinical Periodontology and Periodontics* pg. 116
7. ^ [a] [b] Price, Weston A. *Nutrition and Physical Degeneration (http://www.journeytoforever.org/farm_library/price/pricetoc.html) : A Comparison of Primitive and Modern Diets and Their Effects* 1939. Paul B. Hoeber, Inc; Medical Book Department of Harper & Brothers.
8. ^ [a] [b] [c] *Dental Items of Interest*, Volume 70 (1948). p. 426
9. ^ *Medical Record, A Weekly Journal of Medicine and Surgery* (http://books.google.com/books?id=ERoCAAAAYAAJ&lpg=PA982&ots=UHzJij_9yQ&dq=invention%20of%20dental%20skiagraph&pg=PA982#v=onepage&q&f=false) . December 1903, Volume 64, page 982
10. ^ [a] [b] Walton, Richard E. (2007), "Diagnostic Imaging", *Ingle's Endodontics* (6 ed.), PMPH-USA, pp. 554, ISBN 978-1-55009-333-9
11. ^ Karjodkar (2006), *Textbook of Dental and Maxillofacial Radiology* (1 ed.), Jaypee Brothers, Medical Publishers, pp. 6, ISBN 81-8061-854-4
12. ^ Langland, Olaf E.; Francis H. Sippy (1973) *Textbook of Dental Radiography*
13. ^ [a] [b] Baumgartner, J. Craig; Siqueira, Jose F.; Sedgley, Christine M.; Kishen, Anil (2007), "Microbiology of Endodontic Disease", *Ingle's Endodontics* (6 ed.), PMPH-USA, pp. 221–222, ISBN 978-1-55009-333-9
14. ^ Crowe, Henry Warren; Herbert George Franking (1927) *Bacteriology & surgery of chronic arthritis and rheumatism* "Etiology Continued : Dental Infections And Degenerative Diseases – A Review And Commentary" Oxford university press pg 23–32
15. ^ Hayes, Louis Vincent (1935) "Clinical diagnosis of diseases of the mouth: a guide for students and practitioners of dentistry and medicine" pg 389
16. ^ McGehee, William Harper Owen (1930, 1936) "A text-book of operative dentistry" Page 39, pg 110
17. ^ (1935) *Journal of the Canadian Dental Association* volume 1; pg 451
18. ^ Grossman, Louis (1940), "Pulpless teeth and focal infection", *Root Canal Therapy*, Philadelphia: Lea & Febiger, pp. 16–17
19. ^ "An Evaluation of the Effect of Dental Focal Infection on Health" JADA 42:609–697 June 1951
20. ^ (1946) *Washington State Dental Journal*, Volumes 13–16; pg 19
21. ^ Bodecker, Charles F. (1934) "Metabolic Disturbance in Relation to the Teeth" *Bulletin of the New York Academy of Medicine* September; 10(9): 553–573 (http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1965672/pdf/bullnyacadmed00884-0037.pdf)
22. ^ Nutrition and Dental Caries (http://books.google.com/books?id=K0wrAAAAYAAJ&lpg=PA429&ots=GAFIpP4rfk&dq=increasing%20caries%20incidence&pg=PA429#v=onepage&q=increasing%20caries%20incidence&f=false) – A Survey of the Literature of Dental Caries. Page 429
23. ^ [a] [b] Vaughn, Warrent T. 1940. "Effects of Dietary Deficiencies". The Scientific Monthly, 50(5):463–464
24. ^ Jones, Isaac H.; et al. (December 1950). "Nutrition and the eye, ear, nose and throat (with excerpts from the literature.)". *The Laryngoscope* **60** (12): 1210–1216. doi:10.1288/00005537-195012000-00004 (http://dx.doi.org/10.1288%2F00005537-195012000-00004) .
25. ^ "Nutrition and Physical Degeneration: A Comparison of Primitive and Modern Diets and Their Effects". *J Am Med Assoc* **114** (26): 2589. 29 June 1940.
26. ^ [a] [b] Jarvis, William T. (Mar/Apr 1981). "The myth of the healthy savage". *Nutr Today* (Lippincott Williams & Wilkins) **16** (2): 14–15, 18, 21–22.
27. ^ Baumgartner JC, Bakland LK, Sugita EI (2002) (PDF), *Endodontics, Chapter 3: Microbiology of endodontics and asepsis in endodontic practice* (http://faculty.ksu.edu.sa/Dr.Hanan/BooksIngle/ch03.pdf) , Hamilton, Ontario: BC Becker, pp. 63–94, http://faculty.ksu.edu.sa/Dr.Hanan/BooksIngle/ch03.pdf, retrieved 2009-11-27
28. ^ Hasselgren, Gunnar (1994) Annals of dentistry: Volumes 53–54

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New York Academy of Dentistry pg 42–43)

29. ^ Stephen Barrett, M.D. "Stay Away from 'Holistic Dentistry'" (http://www.quackwatch.org/01QuackeryRelatedTopics/holisticdent.html) . Quackwatch. http://www.quackwatch.org/01QuackeryRelatedTopics/holisticdent.html. Retrieved 2007-02-11.
30. ^ The Right Price (http://www.westonaprice.org/abcs-of-nutrition/960-the-right-price.html) (scroll down screen or search on section titled "Stephen Barrett")
31. ^ Sally Fallon Morell. "Nasty, Brutish and Short?" (http://www.westonaprice.org/traditional-diets/nasty-brutish-short) . *The Ecologist*, Vol 29, No 1, January/February 1999. http://www.westonaprice.org/traditional-diets/nasty-brutish-short. Retrieved 2011-10-24.
32. ^ WorldCat Identities (http://www.oclc.org/research/activities/identities/default.htm) : Price, Weston A. (Weston Andrew) (http://www.worldcat.org/identities/lccn-n85-810394)

Sources

- Weston Andrew Price, Forewords by Earnest Hooton, Granville Knight, and Abram Hoffer (2004). *Nutrition and Physical Degeneration* (6th edition ed.). Price-Pottenger Nutrition Foundation. ISBN 0-916764-08-7.
- Price, Weston A. *Dental Infections, Oral and Systemic & the Degenerative Diseases, Vol. 1 & 2* (1923).

External links

- Review of Weston A. Price's book "Nutrition and Physical Degeneration" (http://foundation.westonaprice.org/book-reviews/thumbs-up/394-nutrition-and-physical-degeneration.html)
- The first 21 chapters of "Nutrition and Physical Degeneration", with illustrations and photographs (http://journeytoforever.org/farm_library/price/pricetoc.html)

Retrieved from "http://en.wikipedia.org/w/index.php?title=Weston_Price&oldid=509257075"
Categories: 1870 births 1948 deaths American dentists American medical researchers American nutritionists People in alternative medicine

Guyton & Hall
Textbook of Medical Physiology
Ninth Edition

p. 900 "Fluorine does not seem to be a necessary element for metabolism"

"Fluorine does not make the teeth themselves stronger but has a poorly understood effect on suppressing the cariogenic process."

p. 1000 "most of the exchange of minerals with the saliva instead of with the fluids of the pulp cavity".

Guyton & Hall
Textbook of Medical Physiology
Ninth Edition

Comments on EPA's Fluoride Risk Assessment and Relative Source Contribution Documents

Prepared for the
U.S. Environmental Protection Agency

April 19, 2011

Submitted at the request of the
International Academy of Oral Medicine and Toxicology (IAOMT)
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These comments on recent reports from the U.S. Environmental Protection Agency's Office of Water (EPA 2010a,b) are submitted to the Environmental Protection Agency (EPA) in response to their January 7, 2011, announcements (EPA 2011a,b) and January 2011 fact sheet (EPA 2011c). These comments are not to be considered a comprehensive review of the EPA reports or of fluoride exposure or toxicity.

The author of these comments is a professional in the field of risk analysis, including exposure assessment, toxicity evaluation, and risk assessment. She has recently served on two subcommittees of the National Research Council's Committee on Toxicology that dealt with fluoride exposure and toxicity, including the NRC's Committee on Fluoride in Drinking Water. She has also authored an Environmental Protection Agency report on fluoride toxicity.

These comments are submitted at the request of the International Academy of Oral Medicine and Toxicology (IAOMT), and their preparation was supported in part by the IAOMT. Opinions and conclusions expressed herein are those of the author.

Summary

The comments below pertain primarily to EPA's recent reports on exposure and relative source contribution (EPA 2010a) and non-cancer risk assessment (EPA 2010b) for fluoride. The goal of these two reports is the derivation of a new Reference Dose (RfD) for fluoride. The RfD is defined as "an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime" (EPA 2009). However, EPA's new RfD for fluoride is not protective for a number of adverse health effects. EPA inappropriately includes an estimate of benefit in its assessment of the risk of adverse effects; the assumed benefit is not supported by available data. The exposure estimate does not include some important subsets of the population. The uncertainty factor of 1 selected by EPA does not reflect limitations of the data used (EPA 2011d) and will not lead to protection of the U.S. population from deleterious effects. Thus, EPA's new Reference Dose for fluoride, 0.08 mg/kg/day, fails to meet the standards of a Reference Dose as defined by EPA.

(1) Evaluation of safety

EPA should be reminded of its definitions for the Maximum Contaminant Level Goal (MCLG) and the Reference Dose (RfD):

> **MCLG:** Maximum Contaminant Level Goal. A non-enforceable health goal which is set at a level at which no known or anticipated adverse effect on the health of persons occurs and which allows an adequate margin of safety. (EPA 2009)
>
> **RfD:** Reference Dose. An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. (EPA 2009)

> **Reference Dose (RfD):** An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a NOAEL, LOAEL, or benchmark dose, with uncertainty factors generally applied to reflect limitations of the data used. Generally used in EPA's noncancer health assessments. (EPA 2011d)

EPA's recent risk assessment for fluoride (EPA 2010b) is based on protection of the population from severe dental fluorosis. Dental fluorosis, including severe dental fluorosis, is a well-known effect from overexposure to fluoride during the early years of life. The National Research Council (NRC 2006) concluded that severe dental fluorosis is an adverse health effect, not merely a cosmetic effect as EPA had previously determined for "objectionable" dental fluorosis (EPA 1989). It is certainly appropriate to protect the population from severe dental fluorosis. However, there are a number of other "known or anticipated adverse" or "deleterious" effects that should also be protected against. EPA's new RfD for fluoride of 0.08 mg/kg/day (EPA 2010b) is not adequately protective.

The NRC (2006) concluded that EPA's MCLG for fluoride (4 mg/L) was not protective, based on severe dental fluorosis, stage II skeletal fluorosis, and increased risk of bone fracture. These are adverse effects for which there is sufficient information in the literature to consider them to be "known." However, the NRC also described a number of other adverse health effects which can reasonably be "anticipated" from fluoride exposure, but for which the information base is much less complete. While the NRC did not need these additional adverse health effects or deleterious effects to conclude that the MCLG was inadequately protective, EPA should consider them in setting a new RfD or a new MCLG, in keeping with its definitions for the MCLG and the RfD.

A revised RfD and MCLG should continue to protect against "objectionable" dental fluorosis (defined as moderate or severe; EPA 1989), not just severe dental fluorosis. Raising the RfD to 0.08 mg/kg/day (EPA 2010b) from the previous value of 0.06 mg/kg/day (EPA 1989) will not be protective for "objectionable" dental fluorosis. Severe dental fluorosis is obviously an adverse health effect, given the increased risk for dental caries (NRC 2006; EPA 2010b); Health Canada (2009) considers moderate dental fluorosis to be an adverse effect, and the NRC (2006) reports the general consensus in the literature that both severe and moderate dental fluorosis should be prevented. The psychological and social ramifications of "objectionable" dental fluorosis are not well characterized, but it should be intuitive that "objectionable" dental fluorosis can be deleterious (causing harm or damage; New Oxford American Dictionary) to an individual's social or emotional well-being, whether or not EPA considers it to be an "adverse health effect." In addition, the cost to repair objectionable dental fluorosis can be considerable.

EPA has not considered the association of dental fluorosis with increased risk of other adverse health effects, including thyroid disease, lowered IQ, and bone fracture (Alarcón-Herrera et al. 2001; Zhao et al. 1996; Li et al. 1995; Lin et al. 1991; Desai et al. 1993; Yang et al. 1994; Jooste et al. 1999; Susheela et al. 2005). For instance, data reported by Alarcón-Herrera et al. (2001) show a clear relationship between severity of dental fluorosis and increased likelihood of having had a bone fracture (Fig. 1). To the best of my knowledge, no studies in the U.S. or Canada have looked for associations between dental fluorosis and risk of other adverse effects. However, the

failure to look for adverse health effects does not demonstrate the absence of adverse health effects. The available information indicates that an association between dental fluorosis and other adverse health effects can reasonably be "anticipated," supporting a need for EPA to protect against most or all dental fluorosis, not just severe dental fluorosis.

In addition to the "known" adverse health effects of dental fluorosis, skeletal fluorosis, and increased risk of bone fracture, "anticipated" adverse health effects from fluoride exposure or community water fluoridation include (but are not limited to) carcinogenicity, genotoxicity, endocrine effects, increased blood lead levels, and hypersensitivity (reduced tolerance) to fluoride. These effects (described in more detail below) are not as well studied as the dental and skeletal effects, which should indicate that a greater margin of safety is necessary to ensure protection of the population—"in the face of uncertain evidence it is important to act in a manner that protects public health" (Tickner and Coffin 2006). The incompleteness of the information base is not a justification to ignore these effects in setting a new RfD or MCLG. In addition, it should be noted that some of these effects may occur at lower fluoride exposures than those typically associated with dental or skeletal effects, such that protection against the dental or skeletal effects does not necessarily ensure protection against other anticipated adverse health effects.

A few comments regarding the interpretation of the available fluoride studies may be helpful. As Cheng et al. (2007) have described, a "negative" study may simply mean that the study was not sufficiently sensitive to demonstrate a moderate (as opposed to large) effect. This is often due to use of too small a sample size. In addition, study populations are often grouped by community, water source, or fluoride concentration in the water, rather than by individual intake. Due to the wide variation in drinking water intake, this approach results in study groups with overlapping intakes and makes it difficult to detect dose-response relationships that do in fact exist.

The few studies that have looked at age-dependent exposure to fluoride have found increased risks of adverse effects (e.g., Bassin et al. 2006 for osteosarcoma; Danielson et al. 1992 for hip fracture risk); studies that have not looked at age-dependent exposure cannot be assumed to provide evidence of no effect. Similarly, studies that have used a measure of current exposure where a cumulative measure would be more appropriate, or vice versa, cannot be assumed to demonstrate lack of an effect.

Studies of fluoride toxicity in laboratory animals are sometimes dismissed as irrelevant because the exposures or fluoride concentrations used were higher than those expected for humans drinking fluoridated tap water. It is important to know that animals require much higher exposures (5-20 times higher, or more; see NRC 2006; 2009) than humans to achieve the same effects or similar fluoride concentrations in bone or serum. In other words, humans are considerably more sensitive to fluoride than are most animal species that have been studied.

EPA based its new RfD only on severe dental fluorosis in part because adequate dose-response information was available for severe dental fluorosis but not for skeletal effects. While it would be nice to have good dose-response information for various adverse health effects, the lack of it should not be a justification to eliminate a "known" or "anticipated" effect from being considered in setting an RfD or MCLG. As described in the IRIS Glossary's definition (EPA 2011d), an RfD can be set from a NOAEL (no observed adverse effect level) or LOAEL (lowest observed adverse effect level) in the absence of dose-response information.

In fact, a number of adverse health effects can be expected to occur in at least some individuals when estimated average intakes of fluoride are around 0.05 mg/kg/day or higher (NRC 2006; 2009); in other words, a LOAEL for some adverse health effects is lower than EPA's new RfD, which is supposed to protect the population, including sensitive subgroups, from deleterious effects during a lifetime (EPA 2009; 2011d). For persons with iodine deficiency (one example of a sensitive subgroup), average intakes as low as 0.01-0.03 mg/kg/day could produce effects (NRC 2006). The remainder of this section briefly summarizes some (not all) of the adverse health effects, known and anticipated, that should be considered in EPA's reevaluation of the drinking water standards for fluoride. Most of these effects have been reviewed in detail by the NRC (2006), although the NRC did not specifically evaluate health risks over the whole range of fluoride intakes or attempt to identify a "safe" level of fluoride exposure. Consideration of carcinogenicity and genotoxicity do not belong in a non-cancer risk assessment, of course, but they should be part of EPA's reevaluation of the drinking water standards and so are included here.

Skeletal fluorosis

Bone fluoride concentrations in the ranges reported for stage II and III skeletal fluorosis will be reached by long-term fluoride exposures of 0.05 mg/kg/day or higher (estimated from NRC 2006). Chachra et al. (2010) have recently reported bone fluoride content for residents of Toronto (fluoridated for 32-36 years at the time of the study) and Montreal (not fluoridated) who were undergoing total hip replacement surgery; most of the individuals had a diagnosis of osteoarthritis. Two of the 53 individuals in Toronto had bone fluoride concentrations in the range reported for skeletal fluorosis (NRC 2006), although both individuals would have been well into adulthood when exposure to fluoridated water began. The study did not include exposure histories; nevertheless, it does indicate that bone fluoride concentrations in fluoridated North American cities can be in the range reported for skeletal fluorosis.

Bone fluoride concentrations, radiologic changes, and symptoms are not clearly correlated (Franke et al. 1975). Most of the literature addresses high fluoride exposures over a few years; there has been essentially no investigation of effects of low exposures over many years and no effort to identify fluorosis of any stage in the U.S. "Arthritis" (defined as painful inflammation and stiffness of the joints) is the leading cause of disability in the U.S., currently affects at least 46 million adults in the U.S. (including 50% of the population > 65 years old), and is expected to affect 67 million adults in the U.S. by 2030 (CDC 2006). The possibility that a sizeable fraction of "bone and joint pain" or "arthritis" in U.S. adults is attributable to fluoride exposure has not been addressed, although it is plausible, given what is known about fluoride intakes.

Increased risk of bone fractures

The NRC (2006) concluded that lifetime exposure to fluoride at an estimated average daily intake of 0.08 mg/kg/day (average adult fluoride intake with water at 4 mg/L and equal to EPA's new RfD) is likely to result in higher bone fracture rates, and the available information suggests an increased likelihood of bone fracture for daily fluoride intakes of 0.05 mg/kg/day (average adult fluoride intake at 2 mg/L and equal to IOM's recommended intake). The Agency for Toxic Substances and Disease Registry (ATSDR) has identified a chronic-duration Minimal Risk Level

(MRL) for oral exposure to fluoride of 0.05 mg/kg/day, based on an increased risk of bone fracture (ATSDR 2003). The NRC's findings (NRC 2006) indicate that the ATSDR's MRL is not protective enough, and thus EPA's RfD is even less protective. The available studies consider fluoride intake only in terms of the concentration in the local drinking water, and most use fluoridated water (1 mg/L, corresponding to an average daily intake of 0.03 mg/kg/day for adults) as a control. Thus there is probably considerable overlap in exposures between groups, making effects more difficult to distinguish, and the entire dose response range of interest has not been well studied. The findings in humans are consistent with animal studies that have found increased brittleness of bones with increased fluoride exposure (Clark and Mann 1938; Turner et al. 1997; 2001).

Danielson et al. (1992) reported an increased relative risk for hip fracture in a fluoridated area of 1.27 (95% CI 1.08-1.46) for women and 1.41 (95% CI 1.00-1.81) for men. These authors reported a difference between women exposed to fluoride prior to menopause and those exposed afterwards. For women exposed prior to menopause, the fracture risk was considerably higher than for those not exposed to fluoride. Many studies of fracture risk have not looked at age-specific exposure, or have involved women exposed only after menopause, when fluoride uptake into bone is probably substantially lower. EPA (2010b, p. 85) includes the Danielson et al. study in a table of bone fracture studies but does not include the finding for men and does not discuss the issue of timing of fluoride exposure with respect to menopause.

The Iowa study reported effects on bone mineral concentration and bone mineral density with average childhood fluoride intakes of 0.02-0.05 mg/kg/day (Levy et al. 2009). Linear correlation between dental fluorosis and risk of bone fracture has been reported for children and adults (Alarcón-Herrera et al. 2001; Fig. 1). Bone fracture rates in children in the U.S. may be increasing (e.g., Khosla et al. 2003), but fluoride exposure has not been examined as a possible cause or contributor.

Carcinogenicity

Three U.S. courts have found water fluoridation to be injurious to human health, specifically that it may cause or contribute to the cause of cancer and genetic damage (described in detail by Graham and Morin 1999). The NRC's committee on fluoride toxicology unanimously concluded that "Fluoride appears to have the potential to initiate or promote cancers," even though the overall evidence is "mixed" (NRC 2006). Referring to the animal studies, the committee also said that "the nature of uncertainties in the existing data could also be viewed as supporting a greater precaution regarding the potential risk to humans." The committee discussed the limitations of epidemiologic studies, especially ecologic studies (those in which group, rather than individual, measures of exposure and outcome are used), in detecting small increases in risk—in other words, the studies are not sensitive enough to identify small increases in cancer risk; therefore a "negative" study does not necessarily mean that there is no risk (see also Cheng et al. 2007).

While the NRC did not assign fluoride to a specific category of carcinogenicity (i.e., known, probable, or possible), the committee did not consider either "insufficient information" or "clearly not carcinogenic" to be applicable. The committee report (NRC 2006) includes a discussion of how EPA establishes drinking water standards for known, probable, or possible

carcinogens; such a discussion would not have been relevant had the committee not considered fluoride to be carcinogenic. The question becomes one of how strongly carcinogenic fluoride is, and under what circumstances.

The case-control study by Bassin et al. (2006) is the only published study thus far to have looked at age-dependent exposure to fluoride. This study reported a significantly elevated risk of osteosarcoma in boys as a function of estimated age-specific fluoride intake. Osteosarcoma is a bone cancer that commonly results in amputation of an affected limb and may result in death. At the very least, this study indicates that similar studies of pediatric osteosarcoma that have not looked at age-dependent intake cannot be considered to show "no effect."

While a few other studies (e.g., Gelberg et al. 1995) have looked at individual fluoride exposure (as opposed to group or ecologic measures of exposure), these have looked at total fluoride exposure until time of diagnosis or treatment. Given that there is a "lag time" of a few years between onset of a cancer and its diagnosis, use of cumulative fluoride exposure until time of diagnosis is potentially misleading, as fluoride exposure during the last several years (during the "lag time") cannot have contributed to the initiation of a cancer but could have a significant effect on the estimate of cumulative fluoride exposure.

The 1990 National Toxicology Program (NTP) study on sodium fluoride officially concluded that "there was *equivocal evidence of carcinogenic activity* of sodium fluoride in male F344/N rats, based on the occurrence of a small number of osteosarcomas in dosed animals" (NTP 1990; italics in the original). According to the published report, a "small number of osteosarcomas occurred in mid- and high-dose male rats. These neoplasms occurred with a significant dose response trend, but at a rate within the upper range of incidences previously seen in control male rats in NTP studies" (NTP 1990). It is important to realize that the historic controls from previous studies had not had the special low-fluoride diet used for this study, and therefore more properly constitute a low- to mid-range exposed group rather than a control group. This and other concerns were described in a memo within the Environmental Protection Agency (Marcus 1990) and reported in the press (Hileman 1990). These concerns and the testimony before the U.S. Senate of the union representing EPA scientists (Hirzy 2000) should be taken seriously by the EPA.

In humans, osteosarcomas tend to occur most commonly in young people (pediatric cases) or the very old (adult or geriatric cases), with a higher incidence in males than in females (Bassin et al. 2006). Sergi and Zwerschke (2008) indicate that 60-75% of cases are in patients between 15 and 25 years old. In the NTP 2-year study, fluoride exposure was begun when the animals were 6 weeks old, as is typical for NTP and similar studies (Hattis et al. 2004). Puberty in the rat typically occurs at about 32 days of age in females and 42 days in males (e.g., Gray et al., 2004; Evans 1986). Thus, the age of 6 weeks in the NTP study probably corresponds to pubertal or post-pubertal animals. The cases of osteosarcoma in the rats were reported in the late stages of the test, and probably corresponded to geriatric osteosarcomas in humans. In Bassin's study, the age range for which the fluoride-osteosarcoma association was most apparent was for exposures at ages 4-12 years, with a peak for exposures at age 6-8 years (Bassin et al. 2006). Very likely, the fluoride exposures in most of the animal studies have started after the age corresponding to the apparent most susceptible age in humans, and thus these animal studies may have completely missed the most important exposure period with respect to initiation of the majority of human osteosarcomas. Therefore, this animal study cannot be interpreted as showing no evidence of

causation for pediatric osteosarcoma, although, properly interpreted, it does show evidence for causation of geriatric osteosarcoma.

Genotoxicity

Genotoxicity, or the ability to damage the genetic material (genes and chromosomes) of cells, is considered indicative of potential carcinogenicity. A number of mammalian *in vitro* systems have shown dose-dependent cytogenetic or cell transformational effects from fluoride exposure (reviewed by NRC 2009). Several reports suggest an indirect or promotional mechanism, e.g., inhibition of DNA synthesis or repair enzymes, rather than a direct mutagenic effect (Lasne et al. 1988; Aardema et al. 1989; Aardema and Tsutsui 1995; Meng and Zhang 1997). Human cells seem to be much more susceptible to chromosome damage from fluoride than are rodent cells (Kishi and Ishida 1993).

A recent paper by Zhang et al. (2009) describes a new testing system for potential carcinogens, based on induction of a DNA-damage response gene in a human cell line. Sodium fluoride tests positive in this system, as do a number of other known carcinogens, representing a variety of genotoxic and nongenotoxic carcinogenic mechanisms. Known noncarcinogens—chemicals not associated with carcinogenicity—did not test positive. The system described by Zhang et al. (2009) is considerably more sensitive than the older systems for most chemicals examined; a positive effect was seen at a fluoride concentration of about 0.5 mg/L, or a factor of 10 lower than in other systems.

A fluoride concentration of 0.5 mg/L in urine will routinely be exceeded by many people consuming fluoridated water (NRC 2006); for people with substantial fluoride intake, serum fluoride concentrations may also reach or exceed 0.5 mg/L. Acute fluoride exposures (e.g., accidental poisoning, fluoride overfeeds in drinking water systems) have resulted in fluoride concentrations in urine well in excess of 5 mg/L in a number of cases (e.g., Penman et al. 1997; Björnhagen et al. 2003; Vohra et al. 2008). Urine fluoride concentrations can also exceed 5 mg/L if chronic fluoride intake is above about 5-6 mg/day (0.07-0.09 mg/kg/day for an adult; based on NRC 2006), right at the intake expected with EPA's new RfD of 0.08 mg/kg/day. Thus, at EPA's RfD, kidney and bladder cells are probably exposed to fluoride concentrations in the ranges at which genotoxic effects have been reported *in vitro*, especially when the more sensitive system of Zhang et al. (2009) is considered. Based on the results of Zhang et al. (2009), most tissues of the body are potentially at risk if serum fluoride concentrations reach or exceed 0.5 mg/L. In addition, cells in the vicinity of resorption sites in fluoride-containing bone are potentially exposed to very high fluoride concentrations in extracellular fluid (NRC 2006) and thus are also at risk for genotoxic effects.

Endocrine effects

The NRC (2006) concluded that fluoride is an endocrine disruptor. Endocrine effects include altered thyroid function or increased goiter prevalence (at fluoride intakes of 0.05-0.1 mg/kg/day, or 0.01-0.03 mg/kg/day with iodine deficiency), impaired glucose tolerance (at fluoride intakes above 0.07 mg/kg/day), a decrease in age at menarche in girls in fluoridated towns, and disruptions in calcium metabolism (calcitonin and parathyroid function, at fluoride intakes of

0.06-0.15 mg/kg/day or higher). ATSDR's toxicological profile for fluoride (ATSDR 2003) refers to an animal study of thyroid function that would give a lower MRL (value not given) than the MRL derived for bone fracture risk (0.05 mg/kg/day).

Thyroid dysfunction and Type II diabetes presently pose substantial health concerns in the U.S. (NRC 2006). Of particular concern is an inverse correlation between maternal subclinical hypothyroidism and the IQ of the offspring. In addition, maternal subclinical hypothyroidism has been proposed as a cause of or contributor to development of autism in the child (Román 2007; Sullivan 2009). Calcium deficiency induced or exacerbated by fluoride exposure may contribute to a variety of other health effects (NRC 2006).

Steingraber (2007) has described the decrease in age at puberty of U.S. girls and the associated increased risk of breast cancer and other problems. EPA (2010b, pp. 13, 87; 2010c, pp. 9-10) mentions that hormonal changes over recent decades, evidenced by earlier puberty (decreasing age of menarche) now in comparison with the 1940s, may affect the applicability of the study used to derive the RfD to today's population. EPA fails to consider the possibility that some of these hormonal changes may actually have been induced by fluoride exposure (reviewed by NRC 2006).

With respect specifically to thyroid effects, EPA should compare its approach for fluoride with that for perchlorate. EPA's recent press release on perchlorate (EPA 2011e) indicates that the regulation to be pursued for perchlorate is intended "to protect Americans from any potential health impacts." Perchlorate "may impact the normal function of the thyroid." "Thyroid hormones are critical to the normal development and growth of fetuses, infants and children." Perchlorate "may disrupt the thyroid's ability to produce hormones that are critical to developing fetuses and infants." As reviewed by NRC (2006), fluoride also "may impact the normal function of the thyroid" and "may disrupt the thyroid's ability to produce hormones that are critical to developing fetuses and infants." In addition, EPA (2011e) indicates that 5-17 million people may have perchlorate in their drinking water, due largely to unintentional contamination. In contrast, more than 184 million people, or more than 60% of the U.S. population (CDC 2009), have fluoride in their drinking water due to deliberate addition of the chemical.

Increased blood lead levels

An increased likelihood of elevated blood lead levels is associated with use of silicofluorides (usually H_2SiF_6 or Na_2SiF_6) as the fluoridating agent (NRC 2006; Coplan et al. 2007). Approximately 90% of people on fluoridated water in the U.S. are on systems using silicofluorides (NRC 2006). The chemistry and toxicology of these agents, especially at low pH (e.g., use of fluoridated water in beverages such as tea, soft drinks, or reconstituted fruit juices), have not been adequately studied (NRC 2006). Associations between silicofluoride use and biological effects in humans have been reported, in particular, elevated levels of blood lead in children and inhibition of acetylcholinesterase activity (reviewed by Coplan et al. 2007). A recent study in rats found significantly higher concentrations of lead in both blood and calcified tissues of animals exposed to both silicofluorides and lead (Sawan et al. 2010).

In addition to biological effects of silicofluorides, the interaction of silicofluorides (as the fluoridating agent) and disinfection agents (specifically, chloramines) increases the leaching of lead from plumbing fixtures into drinking water (Maas et al. 2005; 2007). A recent

Congressional investigation discussed the failure of the CDC to publicize information about high lead levels in drinking water and children's blood in Washington, D.C. (Leonnig 2010). The interaction of silicofluorides and chloramines is the probable explanation for the high lead levels (Maas et al. 2005; 2007). EPA considers lead to be a probable human carcinogen and to have no practical threshold with respect to neurotoxicity (EPA 2004b)—in other words, there is considered to be no safe level of lead exposure, and the MCLG for lead is zero (EPA 2009).

Additional adverse health effects

Fluoride intake is likely to affect the male reproductive-hormone environment, beginning at intakes of around 0.05 mg/kg/day (reviewed by NRC 2009). A "safe" intake with respect to male reproductive effects is probably somewhere below 0.03 mg/kg/day.

Grandjean and Landrigan (2006) list fluoride as an "emerging neurotoxic substance" that needs further in-depth studies. The major concern is neurotoxic effects during human development.

The NRC has reviewed the possible association between exposure to fluoridated water (approximately 0.02 mg/kg/day for adults) and increased risk of Down syndrome (trisomy 21) in children of young mothers, discussed a possible mechanism, and recommended further study (NRC 2006). Fetuses with Down syndrome are less likely to survive to birth, due both to higher natural fetal loss and to a high rate of pregnancy termination (Buckley and Buckley 2008; Forrester and Merz 1999; Siffel et al. 2004; Biggio et al. 2004).

Hypersensitivity or reduced tolerance to fluoride has been reported for exposure to fluoridated water (approximately 0.02 mg/kg/day for adults) or use of fluoride tablets (approximately 1 mg/day). Symptoms include skin irritation, gastrointestinal pain and symptoms (nausea, vomiting, diarrhea, constipation), urticaria, pruritus, stomatitis, chronic fatigue, joint pains, polydipsia, headaches, and other complaints (Waldbott 1956; 1958; Feltman and Kosel 1961; Grimbergen 1974; Petraborg 1977; Spittle 2008; reviewed by NRC 2006). Patients were often unaware that their drinking water contained fluoride. Symptoms improved with avoidance of fluoridated water and recurred with consumption of fluoridated water or with experimental challenge with sodium fluoride. Double-blind tests of patients have confirmed hypersensitivity to fluoride (Grimbergen 1974; Waldbott 1956; 1958). Many of the observed symptoms represent true allergic phenomena, while others (e.g., gastrointestinal symptoms) could be due to a lower level of tolerance for fluoride (intoxication at lower exposure; Waldbott 1956; 1958).

(2) Inclusion of benefit

The EPA has included an assumption of benefit in its risk assessment for fluoride, including the preservation of an intake of 0.05 mg/kg/day as desirable (based on IOM 1997) and exclusion of possible adverse health effects (in this case, with only severe dental fluorosis being considered) below an intake of 0.07 mg/kg/day (EPA 2010b). IOM (1997) based its recommended intake on an assumed cariostatic effect of ingested fluoride. A number of sources (reviewed by NRC 2006), including the CDC (2001), now indicate that any beneficial effect of fluoride on teeth is topical (e.g., from toothpaste), not from ingestion. Featherstone (2000) describes mechanisms by which topical fluoride has an anti-caries effect and states that "[f]luoride incorporated during tooth development [i.e., from ingested fluoride] is insufficient to play a significant role in caries

protection." "The fluoride incorporated developmentally—that is, systemically into the normal tooth mineral—is insufficient to have a measureable effect on acid solubility" (Featherstone 2000). "The prevalence of dental caries in a population is not inversely related to the concentration of fluoride in enamel, and a higher concentration of enamel fluoride is not necessarily more efficacious in preventing dental caries" (CDC 2001). Fluoride concentrations in drinking water or saliva are too low to be contributing significantly to a topical anti-caries effect, especially since most drinking water is not "swished" around the teeth before being swallowed. CDC (2001) states that "The concentration of fluoride in ductal saliva, as it is secreted from salivary glands, is low—approximately 0.016 parts per million (ppm) in areas where drinking water is fluoridated and 0.006 ppm in nonfluoridated areas. This concentration of fluoride is not likely to affect cariogenic activity." Thus, as pointed out by one of the reviewers of EPA's recent risk assessment (EPA 2010c), it is not correct to treat fluoride as a "nutrient" with a recommended intake.

The same reviewer (EPA 2010c) also pointed out that a risk assessment for adverse health effects should be separated from any assessment of benefits or recommended intake. The reasonable approach would be to set an RfD and MCLG based solely on the risks of adverse health effects, with an adequate margin of safety (EPA 2009) or an uncertainty factor that adequately reflects limitations of the data used (EPA 2011d). Then if EPA is required to consider presumed benefits, that requirement can be taken into account, together with the health risks, in setting an enforceable level (i.e., the Maximum Contaminant Level). However, before compromising its mission of protecting the public from adverse health effects due to contaminants in drinking water, EPA should critically review the available data (described below), which do not support a benefit from fluoride in drinking water.

EPA no doubt is aware that the U.S. Food and Drug Administration (FDA) considers fluoride in toothpaste to be a non-prescription drug (e.g., FDA undated-a; undated-b) and fluoride "supplements" (usually tablets or lozenges) to be prescription drugs (e.g., Medline Plus 2008). The goal of community water fluoridation is to provide a dental health benefit to individuals and to the population generally (Federal Register 2010), as acknowledged by EPA's recent reference (Federal Register 2010) to a "treated population" and by the present effort to include a recommended intake in the risk assessment for fluoride (EPA 2010b). This in effect puts local governments and water treatment personnel in charge of administering a chemical (i.e., a drug) to the population in an effort to improve individual and population health (Cross and Carton 2003; Cheng et al. 2007). EPA's own exposure assessment (EPA 2010a) demonstrates that fluoride from tap water exceeds that from either non-prescription (toothpaste) or prescription (tablets or lozenges) fluoride sources, yet this exposure occurs without any monitoring for either efficacy or side effects, without the "drug information" or warning labels generally provided for drugs, and without any semblance of informed consent.

The University of York has carried out perhaps the most thorough review to date of human studies on effects of fluoridation. Their work (McDonagh et al. 2000) is often cited as showing the safety and efficacy of water fluoridation, but it actually does neither (Wilson and Sheldon 2006; Cheng et al. 2007). The report mentions a surprising lack of high quality studies demonstrating benefits, and also finds little evidence that water fluoridation reduces socioeconomic disparities:

> Given the level of interest surrounding the issue of public water fluoridation, it is

> surprising to find that little high quality research has been undertaken. (McDonagh et al. 2000)
>
> Water fluoridation aims to reduce social inequalities in dental health, but few relevant studies exist. The quality of research was even lower than that assessing overall effects of fluoridation. (Cheng et al. 2007)
>
> Evidence relating to reducing inequalities in dental health was both scanty and unreliable. (Wilson and Sheldon 2006)

The apparent benefit is modest, about a 15% difference in the proportion of caries-free children (McDonagh et al. 2000). The American Dental Association (2005) states that "water fluoridation continues to be effective in reducing dental decay by 20-40%," which would translate to less than 1 decayed, missing, or filled permanent tooth (DMFT) in older children and adolescents (based on U.S. data from CDC 2005).

Neither McDonagh et al. (2000) nor the ADA (2005) mentions that fluoride exposure appears to delay the eruption of permanent teeth, although this has been known since the 1940s (Short 1944; NRC 2006). A delay in tooth eruption alters the curve of caries rates with respect to age and complicates the analysis of age-specific caries rates (Psoter et al. 2005; Alvarez 1995; Alvarez and Navia 1989). Komárek et al. (2005) have calculated that the delay in tooth eruption due to fluoride intake may explain the apparent reduction in caries rates observed when comparisons are made at a given age, as is usually done—in other words, the apparent dental benefit from fluoride intake shown in some studies is simply an artifact of fluoride-induced delay in tooth eruption. EPA should not consider benefit of fluoride intake without properly accounting for delayed tooth eruption.

Most studies of benefits of fluoride intake or fluoridation have failed to account for a number of important variables, including individual fluoride intakes (as opposed to fluoride concentrations in the local water supplies), sugar intake, socioeconomic variables, and the general decline in caries rates over the last several decades, independent of water fluoridation status. When World Health Organization data on oral health of children in various countries are compared, similar declines in caries over time are seen in all developed countries, regardless of fluoridation status (Cheng et al. 2007; Neurath 2005).

The only peer-reviewed paper to be published from California's major oral health survey in the 1990s reported no association between fluoridation status and risk of early childhood caries (Shiboski et al. 2003). The paper did not address other types of caries.

The single study that has examined caries experience in relation to individual fluoride intakes at various ages during childhood (the Iowa study) has found no association between fluoride intake and caries experience; caries rates (% of children with or without caries) at ages 5 and 9 were similar for all levels of fluoride intake (Warren et al. 2009). The authors state that "the benefits of fluoride are mostly topical" and that their "findings suggest that achieving a caries-free status may have relatively little to do with fluoride *intake*" (emphasis in the original). Most of the children with caries had "relatively few decayed or filled surfaces" (Warren et al. 2009). The authors' main conclusion:

> Given the overlap among caries/fluorosis groups in mean fluoride intake and extreme variability in individual fluoride intakes, firmly recommending an "optimal" fluoride intake is problematic. (Warren et al. 2009)

The national data set collected in the U.S. in 1986-1987 (more than 16,000 children, ages 7-17, with a history of a single continuous residence) shows essentially no difference in caries rates in the permanent teeth of children with different water fluoride levels (Table 1; Fig. 2; data obtained from Heller et al. 1997; similar data can be obtained from Iida and Kumar 2009). Analysis in terms of mean DMFS (decayed, missing, or filled tooth surfaces) for the group (Fig. 3), as opposed to caries prevalence, shows an apparent 18% decrease between the low-fluoride (< 0.3 mg/L) and fluoridated (0.7-1.2 mg/L) groups. In absolute terms, this is a decrease of about one-half (0.55) of one tooth surface per child. One possible explanation is delayed tooth eruption, which was not considered in the study. Note that the mean DMFS for the highest fluoride group is higher than for either of the two intermediate groups, also indicating that DMFS scores are not solely a function of water fluoride concentration. The increased DMFS score with the highest water fluoride concentration suggests that the increased susceptibility of fluorosed teeth to caries eventually surpasses the apparent decrease in caries attributable to fluoride-induced delay in tooth eruption. When the data are examined by the distribution of DMFS scores (Fig. 4), no real difference in caries experience with respect to water fluoride concentration is observed. In contrast, the same data set shows a clear dose response for both fluorosis prevalence and fluorosis severity with fluoride concentration (Heller et al. 1997; Table 1; Fig. 5).

The available data, responsibly interpreted, indicate little or no beneficial effect of water fluoridation on oral health. EPA should not assume or suppose beneficial effects of community water fluoridation in evaluating the health risks from fluoride in drinking water.

(3) Estimation of exposure

EPA's exposure estimate (EPA 2010a) excludes children up to 6 months old. Given that dental fluorosis is associated with exposures during the first 6 months of life (Hong et al. 2006a,b), as well as later periods, these children should also be included in the exposure estimate. EPA's risk assessment document (EPA 2010b, p. 96) indicates that "mineralization of the secondary teeth begins at about 6 ± 2 months," which should be sufficient justification to include the youngest children in the exposure estimate. For other adverse health effects such as thyroid or neurological effects, infancy could be a critical exposure period. In addition, it is important to distinguish between breast-fed and bottle-fed infants, and between bottle-fed infants fed ready-to-feed formula and those fed formula prepared with tap water. These constitute readily identifiable subgroups; considering them in one group could lead to underestimates of exposure for infants fed formula prepared with tap water.

EPA's exposure estimate (EPA 2010a) does not include sensitive population subgroups, although these are to be protected in setting an RfD or MCLG (see definitions above). Groups known to be at risk of high fluoride intake include those with high water intake (e.g., outdoor workers, athletes, and individuals with diabetes insipidus or other medical conditions) or exposure to other sources of fluoride intake (NRC 2006). In addition, people with impaired renal function are at

higher risk of adverse effects per unit intake of fluoride, due to impaired excretion of fluoride and consequent higher fluoride concentrations in the body.

(4) Characterization of uncertainty

EPA (2010b, p. 105) has used an uncertainty factor of 1 in establishing its new oral RfD for fluoride, based on defining a level of intake "that provides anticaries protection without causing severe dental fluorosis." A value of 1 for the uncertainty factor is inappropriate for a number of reasons.

First, as described above, severe dental fluorosis is not the most sensitive or even the most deleterious adverse health effect reported for fluoride exposure, merely one for which a good dose-response curve can be generated and which leads to an RfD high enough to "protect" the alleged benefits of fluoride intake. EPA surmises, but cannot demonstrate, that the RfD will also be protective for skeletal effects and for severe dental fluorosis in primary teeth. As described above, available information for a number of other adverse health effects or deleterious effects indicates that an intake of 0.08 mg/kg/day will not be protective.

Second, it is inappropriate to consider possible benefits in deriving a level of intake that will be protective for adverse effects. For one thing, the benefits, if real, might not involve the same individuals as those at risk for the adverse effects. More importantly, as described above, the benefits at best are small and are probably an artifact of a fluoride-induced delay in tooth eruption. Any benefit from fluoride exposure is from topical exposure, not systemic ingestion.

Third, EPA (2010b, p. 106) claims that its toxicity database for fluoride is complete. Given that the same report describes weaknesses in the database for skeletal effects, how can the database be considered complete? In addition, EPA has not considered a number of other health effects considered plausible by NRC (2006), many of which would occur at lower exposures than those required for severe dental fluorosis. The database on these "anticipated" effects is incomplete, as evidenced by the number of recommendations for further research listed by the NRC (2006). Again, how can EPA consider its database to be complete?

Fourth, the exposure assessment does not include the youngest age group, although this age is probably important for several adverse health effects (including severe dental fluorosis) and can include some of the highest exposures (due to use of fluoridated tap water in preparation of formula).

Fifth, the risk assessment and exposure assessment do not include known population subgroups that could be more sensitive to the effects of fluoride or that could have high fluoride exposures. The data set used to derive the RfD does not include individuals living in hot areas and does include only whites (EPA 2010b). The Centers for Disease Control and Prevention (CDC) has reported that the black population in the U.S. has higher rates of dental fluorosis than whites, including higher rates of moderate and severe dental fluorosis (CDC 2005). EPA (2010b) describes at least two studies reporting higher dental fluorosis rates in blacks than in whites. How can an uncertainty factor of 1 provide adequate protection for the black population? What about other minority populations? Economically disadvantaged populations?

Sixth, the definition for the MCLG (given above) includes allowing for an adequate margin of safety. How can there be an adequate margin of safety when EPA assumes both a recommended

intake of 0.05 mg/kg/day and a lower limit of harm at 0.08 mg/kg/day (0.07 from water, 0.01 from other sources)? Where is the adequate margin of safety? This is especially important since drinking water intake can vary by more than a factor of 10, depending on age, activity level, and the presence of certain health conditions such as diabetes insipidus (NRC 2006; EPA 2004a).

Seventh, EPA is basing its risk assessment on a decades-old study of drinking water containing natural fluoride. Close to two-thirds of the U.S. population is supplied with drinking water artificially fluoridated with silicofluorides. As discussed above, there is still too much unknown about the chemistry of silicofluorides in plumbing systems and about the differences in physiological or toxicological effects in people depending on the type of fluoridation chemical used. Is EPA confident that a risk assessment based on natural fluoride in water is adequately protective for populations whose water is treated with silicofluorides?

EPA needs a serious reevaluation of its uncertainty factor, in order to provide adequate protection against "known and anticipated adverse health effects" to all members of the U.S. population.

(5) Other comments

EPA's fact sheet (EPA 2011c) is misleading when it says "The NRC report does not question the beneficial effects for fluoride at levels practiced for fluoridation programs." The NRC report (NRC 2006) actually says "Assessing the efficacy of fluoride in preventing dental caries is not covered in this report" (p. 14) and "As noted earlier, this report does not evaluate nor make judgments about the benefits, safety, or efficacy of artificial water fluoridation" (p. 16). While several (at least) individual committee members do question the benefits, safety, and efficacy of artificial water fluoridation, the committee as a whole did not address the issue, as it was not part of our charge. In fact, information in the NRC report indicates that some adverse health effects can reasonably be expected at exposure levels anticipated for people drinking artificially fluoridated water. The NRC report also brings up the largely unstudied hazards that are associated with use of silicofluorides for fluoridation of drinking water.

The descriptions of the stages of skeletal fluorosis (EPA 2010b, pp. 64, 70-71) are incorrect. These descriptions should correspond to the description on pp. 170-171 of NRC (2006), which was taken from p. 46 of a Public Health Service report (PHS 1991). EPA appears to have copied the description from the prepublication version of the NRC report (p. 139 of the prepublication version). The description was corrected in the final published version of the NRC report. EPA should be certain that it is referring throughout to the final version of the NRC report.

EPA should also be careful that it is accurately reporting what the NRC report has said. For example, in one place EPA (2010b, p. 72) refers to an individual with skeletal fluorosis as having "excessive" water intake, citing the NRC report. The NRC report, citing the original paper, simply says that water intake may have been "increased." "Increased" water consumption in a hot area simply means higher than expected for moderate climates; it could be totally appropriate for the hot climate and not at all excessive. In the peer review document for the risk assessment, EPA (2010c, p. 8) refers to NRC having identified a water fluoride level of 4 mg/L as being the potential threshold for skeletal effects. In fact, the NRC report said that a water fluoride level of 4 mg/L was not protective for skeletal effects and that 2 mg/L might not be either. The NRC

report did not examine the whole dose response range and did not identify a threshold for skeletal effects.

On pp. 18-19 of the peer review response document for the risk assessment (EPA 2010c), EPA indicates that they have nominated fluoride for future biomonitoring efforts at CDC. EPA should greatly encourage CDC to obtain this information, something which the NRC (2006) also recommended.

Table 1. Caries prevalence and fluorosis prevalence with water fluoride concentration.[a]

Water fluoride concentration	Children with no caries	Mean DMFS score[b]	Children with fluorosis[c]	Mean severity of fluorosis[d]
mg/L	%		%	
< 0.3	53.2	3.08	13.5	0.30
0.3 - < 0.7	57.1	2.71	21.7	0.43
0.7 - 1.2	55.2	2.53	29.9	0.58
> 1.2	52.5	2.80	41.4	0.80

[a] Data for permanent teeth of children ages 5-17 (caries experience and DMFS score) or 7-17 (dental fluorosis), with a history of a single residence, from Tables 2 and 5 of Heller et al. (1997).
[b] Decayed, missing, or filled tooth surfaces (permanent teeth).
[c] Includes very mild, mild, moderate, and severe fluorosis, but not "questionable."
[d] Dean's Community Fluorosis Index.

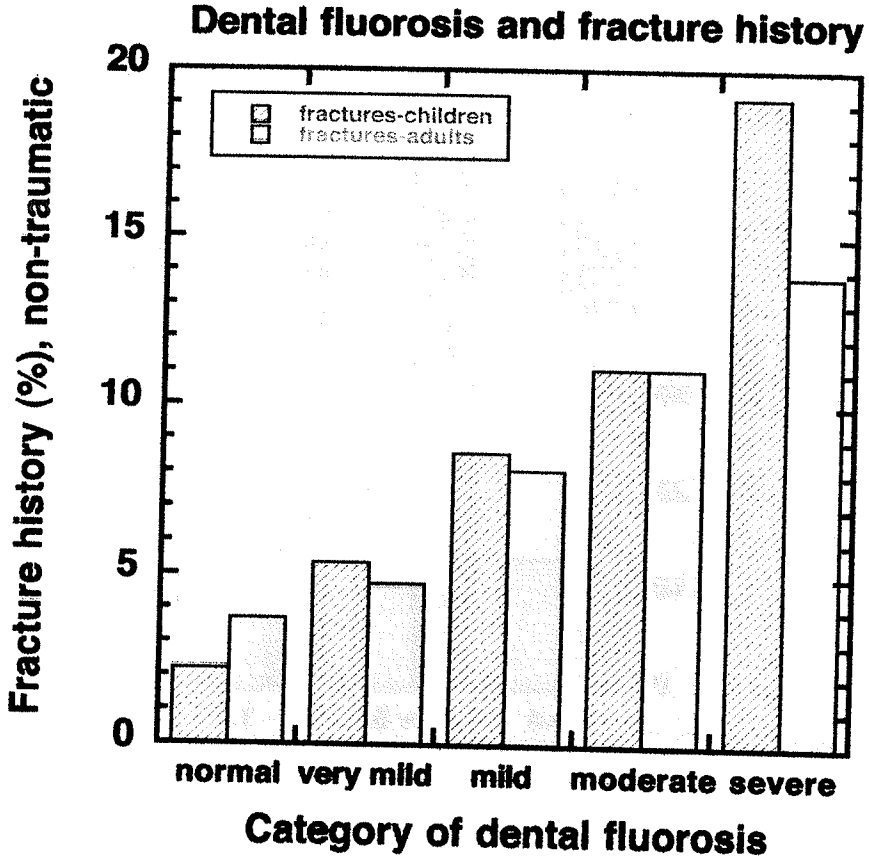


Fig. 1. Fracture history with category of dental fluorosis for children (ages 6-12) and adults (ages 13-60). Numerical values were obtained from information in Tables 5 and 6 of Alarcón-Herrera et al. (2001).

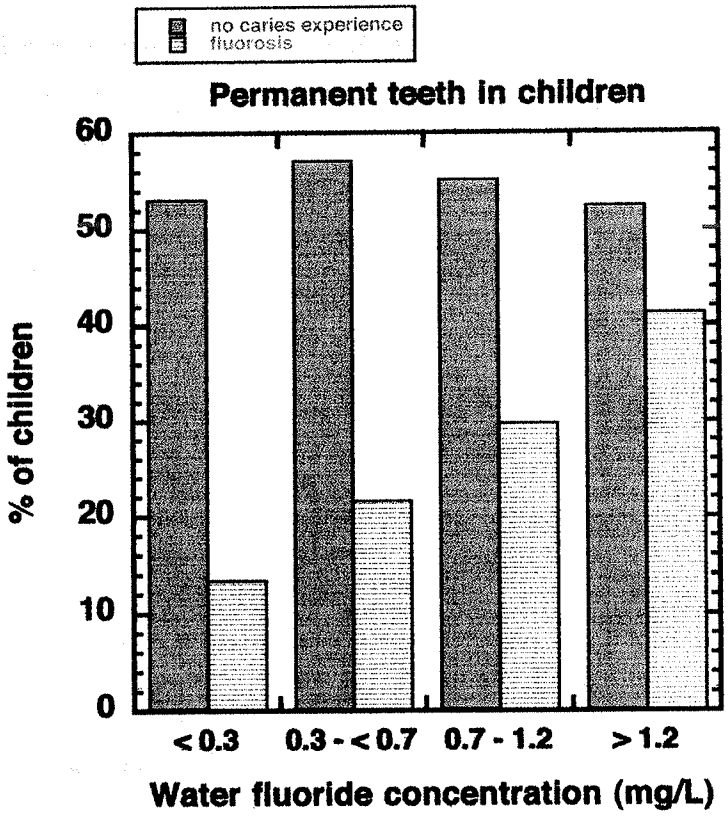


Fig. 2. Percent of children with no caries experience in the permanent teeth (DMFS = 0) and with fluorosis, with respect to water fluoride concentration. Data are shown as % of total children having no caries experience or having fluorosis (very mild, mild, moderate, or severe, but not questionable). Numerical values are provided in Table 1 of these comments and were obtained from Tables 2 and 5 of Heller et al. (1997).

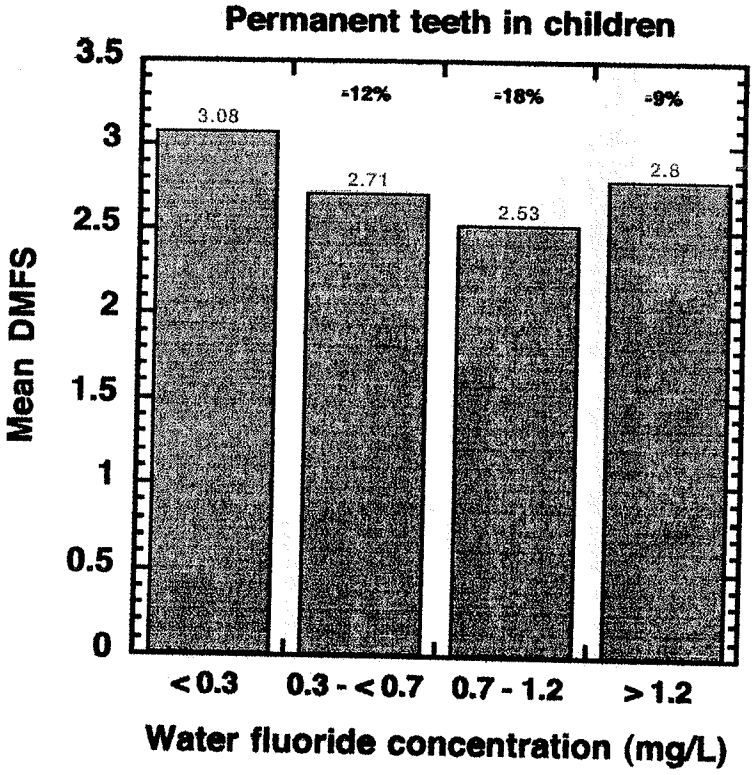


Fig. 3. Mean DMFS score (decayed, missing, or filled tooth surfaces in permanent teeth), with respect to water fluoride concentration. Numerical values are provided in Table 1 of these comments and were obtained from Table 2 of Heller et al. (1997). The percent difference with respect to the lowest fluoride group is also provided.

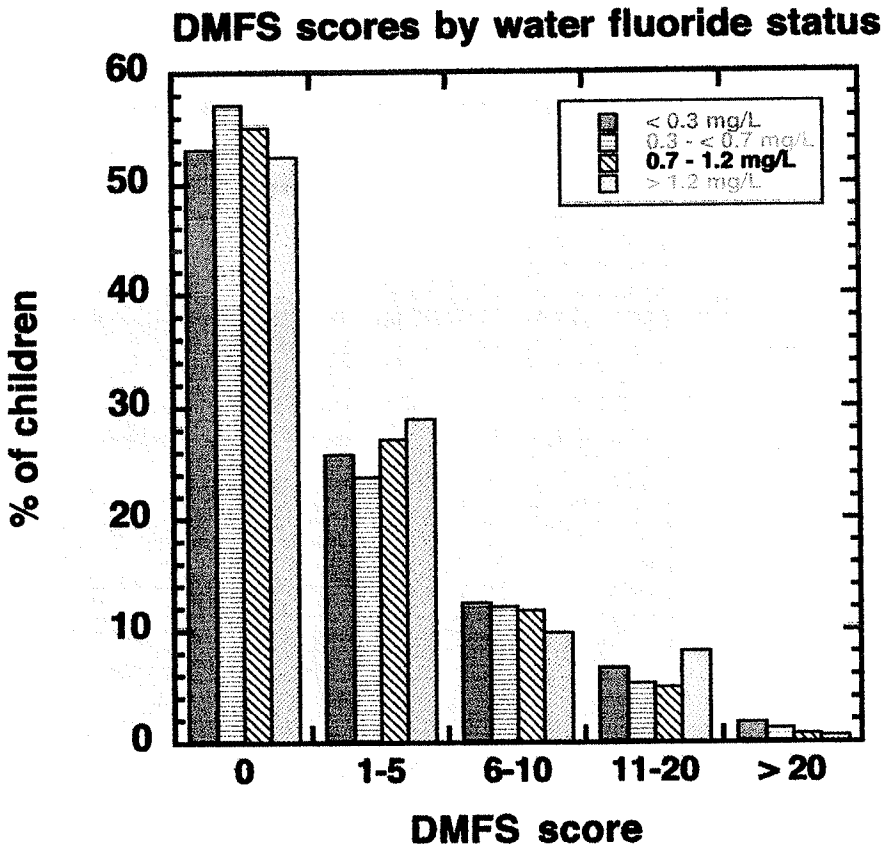


Fig. 4. Percent of children by DMFS score, with respect to water fluoride concentration. Data are shown as % of total children in a given group according to the number of decayed, missing, or filled tooth surfaces in the permanent teeth (DMFS). Data were obtained from Table 2 of Heller et al. (1997).

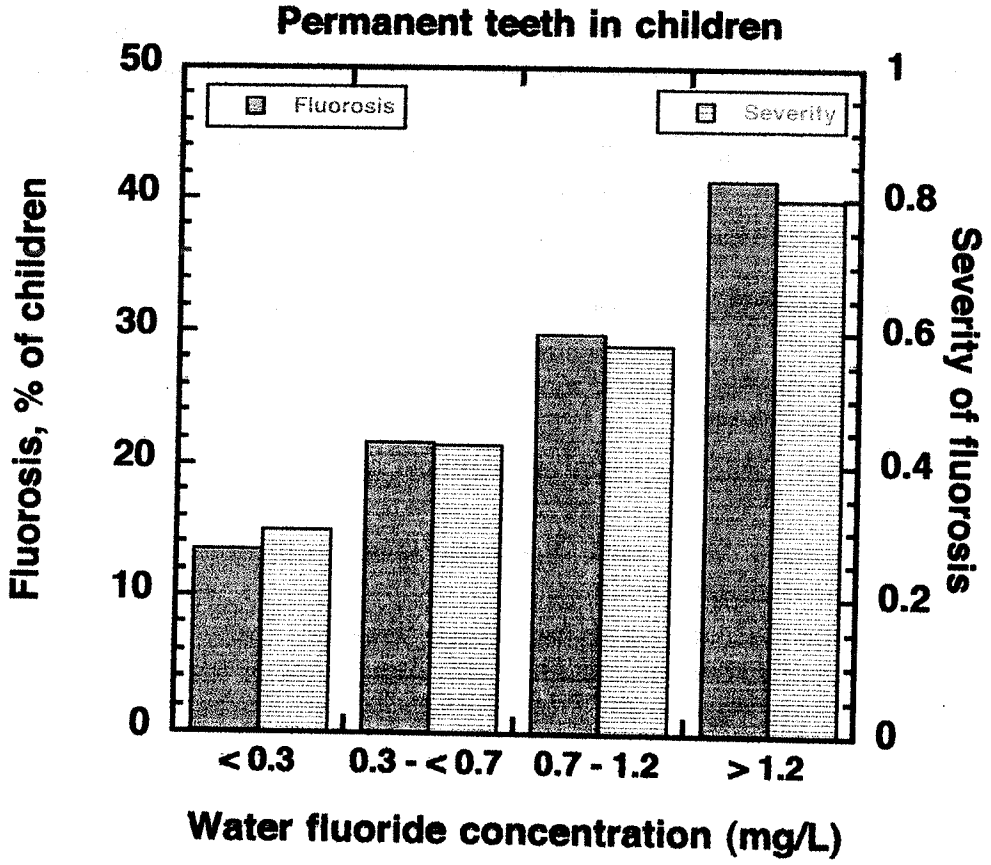


Fig. 5. Fluorosis prevalence and severity with water fluoride concentration for children ages 7-17 with a history of a single continuous residence. Data are shown as (left) % of total children having fluorosis (very mild, mild, moderate, or severe, but not questionable) or (right) severity of fluorosis by Dean's Community Fluorosis Index. Numerical values are provided in Table 1 of these comments and were obtained from Table 5 of Heller et al. (1997).

References

Aardema, M.J., Gibson, D.P., and LeBoeuf, R.A. 1989. Sodium fluoride-induced chromosome aberrations in different stages of the cell cycle: A proposed mechanism. Mutation Research 223:191-203.

Aardema, M.J., and Tsutsui, T. 1995. Sodium fluoride-induced chromosome aberrations in different cell cycle stages. Mutation Research 331:171-172.

ADA (American Dental Association). 2005. Fluoridation facts. Chicago, IL: American Dental Association. [Available: http://www.ada.org/sections/professionalResources/pdfs/fluoridation_facts.pdf]

Alarcón-Herrera, M.T., Martín-Domínguez, I.R., Trejo-Vázquez, R., and Rodriguez-Dozal, S. 2001. Well water fluoride, dental fluorosis, and bone fractures in the Guadiana Valley of Mexico. Fluoride 34:139-149.

Alvarez, J.O. 1995. Nutrition, tooth development, and dental caries. Am. J. Clin. Nutr. 61S:410S-416S.

Alvarez, J.O., and Navia, J.M. 1989. Nutritional status, tooth eruption, and dental caries: a review. Am. J. Clin. Nutr. 49:417-426.

ATSDR (Agency for Toxic Substances and Disease Registry). 2003. Toxicological Profile for Fluorides, Hydrogen Fluoride, and Fluorine. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Atlanta, GA, September 2003.

Bassin, E.B., Wypij, D., Davis, R.B., and Mittleman, M.A. 2006. Age-specific fluoride exposure in drinking water and osteosarcoma (United States). Cancer Causes Control. 17(4):421-428.

Biggio, J.R. Jr., Morris, T.C., Owen, J., and Stringer, J.S.A. 2004. An outcomes analysis of five prenatal screening strategies for trisomy 21 in women younger than 35 years. Am. J. Obstet. Gynecol. 190:721-729.

Björnhagen, V., Höjer, J., Karlson-Stiber, C., Seldén, A.I., and Sundbom, M. 2003. Hydrofluoric acid-induced burns and life-threatening systemic poisoning: Favorable outcome after hemodialysis. Clinical Toxicology 41(6):855-860.

Buckley, F., Buckley, S. 2008. Wrongful deaths and rightful lives—screening for Down syndrome. Down Syndrome Res Practice 12:79-86.

CDC (Centers for Disease Control and Prevention). 2001. Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States. Morbidity and Mortality Weekly Report 50(RR-14). Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

CDC (Centers for Disease Control and Prevention). 2005. Surveillance for Dental Caries, Dental Sealants, Tooth Retention, Edentulism, and Enamel Fluorosis—United States, 1988-1994 and 1999-2002. Morbidity and Mortality Weekly Report 54(SS3):1-43. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

CDC (Centers for Disease Control and Prevention). 2006. Prevalence of Doctor-Diagnosed

Arthritis and Arthritis-Attributable Activity Limitation—United States, 2003-2005. Morbidity and Mortality Weekly Report 55(40):1089-1092. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.

Chachra, D., Limeback, H., Willitt, T.L., and Grynpas, M.D. 2010. The long-term effects of water fluoridation on the human skeleton. J. Dent. res. 89(11):1219-1223.

Cheng, K.K., Chalmers, I., and Sheldon, T.A. 2007. Adding fluoride to water supplies. BMJ 335:699-702.

Clark, J.D., and Mann, E.H. 1938. A study of the occurrence of fluorine in the drinking water of New Mexico and the menace of fluorine to health. The University of New Mexico Bulletin, Chemistry Series 2(5):3-23.

Coplan, M.J., Patch, S.C., Masters, R.D., and Bachman, M.S. 2007. Confirmation of and explanations for elevated blood lead and other disorders in children exposed to water disinfection and fluoridation chemicals. NeuroToxicology 28:1032-1042.

Cross, D.W., and R.J. Carton. 2003. Fluoridation: A violation of medical ethics and human rights. Int. J. Occup. Environ. Health 9(1):24-29.

Danielson, C., Lyon, J.L., Egger, M., and Goodenough, G.K. 1992. Hip fractures and fluoridation in Utah's elderly population. JAMA 268:746-748.

Desai, V.K., Solanki, D.M., and Bansal, R.K. 1993. Epidemiological study on goitre in endemic fluorosis district of Gujarat. Fluoride 26:187-190.

EPA (Environmental Protection Agency). 1989. Fluorine (Soluble Fluoride) (CASRN 7782-41-4). Integrated Risk Information System, U.S. Environmental Protection Agency [online]. [Available: http://www.epa.gov/iris/subst/0053.htm]

EPA (Environmental Protection Agency). 2004a. Estimated Per Capita Water Ingestion and Body Weight in the United States—An Update: Based on Data Collected by the United States Department of Agriculture's 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals. EPA-822-R-00-001. Office of Water, U.S. Environmental Protection Agency. October 2004.

EPA (Environmental Protection Agency). 2004b. Lead and compounds (inorganic) (CASRN 7439-92-1). Integrated Risk Information System, U.S. Environmental Protection Agency [online]. [Available: http://www.epa.gov/ncea/iris/subst/0277.htm]

EPA (Environmental Protection Agency). 2009. 2009 Edition of the Drinking Water Standards and Health Advisories. Washington, DC: U.S. Environmental Protection Agency, Office of Water, EPA 822-R-09-011. [Available: http://water.epa.gov/action/advisories/drinking/drinking_index.cfm]

EPA (Environmental Protection Agency). 2010a. Fluoride: Exposure and Relative Source Contribution Analysis. EPA-820-R-10-015. Office of Water, U.S. Environmental Protection Agency. December 2010.

EPA (Environmental Protection Agency). 2010b. Fluoride: Dose-Response Analysis for Non-cancer Effects. EPA-820-R-10-019. Office of Water, U.S. Environmental Protection Agency. December 2010.

EPA (Environmental Protection Agency). 2010c. Comment-Response Summary Report for the Peer Review of the *Fluoride: Dose-Response Analysis for Non-cancer Effects* Document. EPA-820-R-10-016. Office of Water, U.S. Environmental Protection Agency. November 2010.

EPA (Environmental Protection Agency). 2011a. Fluoride Risk Assessment and Relative Source Contribution. U.S. Environmental Protection Agency. January 7, 2011. [Available: http://water.epa.gov/action/advisories/drinking/fluoride_index.cfm]

EPA (Environmental Protection Agency). 2011b. EPA and HHS Announce New Scientific Assessments and Actions on Fluoride/Agencies working together to maintain benefits of preventing tooth decay while preventing excessive exposure. U.S. Environmental Protection Agency. Press release, January 7, 2011. [Available: http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/86964af577c37ab285257811005a8417!OpenDocument]

EPA (Environmental Protection Agency). 2011c. New Fluoride Risk Assessment and Relative Source Contribution Documents. EPA-822-F-11001. Office of Water, U.S. Environmental Protection Agency. January 2011. [Available: http://water.epa.gov/action/advisories/drinking/upload/fluoridefactsheet.pdf]

EPA (Environmental Protection Agency). 2011d. Glossary. [Available: http://www.epa.gov/IRIS/help_gloss.htm]

EPA (Environmental Protection Agency). 2011e. EPA to Develop Regulation for Perchlorate and Toxic Chemicals in Drinking Water. U.S. Environmental Protection Agency. Press release, February 2, 2011. [Available: http://yosemite.epa.gov/opa/admpress.nsf/d0cf6618525a9efb85257359003fb69d/2470d9783262565e8525782b007395f0!OpenDocument]

Evans, A.M. 1986. Age at puberty and first litter size in early and late paired rats. Biology of Reproduction 34:322-326.

FDA (U.S. Food and Drug Administration). Undated-a. Medicines in My Home. Information for students on the safe use of over-the-counter medicines. [Available: http://www.fda.gov/downloads/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingOver-the-CounterMedicines/UCM093965.pdf or http://www.fda.gov/downloads/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingOver-the-CounterMedicines/UCM094872.pdf]

FDA (U.S. Food and Drug Administration). Undated-b. Medicines in My Home. Information for adults on using over-the-counter medicines safely. [Available: http://www.fda.gov/downloads/Drugs/ResourcesForYou/Consumers/BuyingUsingMedicineSafely/UnderstandingOver-the-CounterMedicines/UCM094872.pdf]

Featherstone, J.D.B. 2000. The science and practice of caries prevention. JADA 131:887-899.

Federal Register. 2010. National Primary Drinking Water Regulations; Announcement of the Results of EPA's Review of Existing Drinking Water Standards and Request for Public Comment and/or Information on Related Issues. Federal Register 75(59):15500-15572, March 29, 2010.

Feltman, R., and Kosel, G. 1961. Prenatal and postnatal ingestion of fluorides—Fourteen years

of investigation. Final report. J. Dent. Med. 16:190-198.

Forrester, M.B., and Merz, R.D. 1999. Prenatal diagnosis and elective termination of Down syndrome in a racially mixed population in Hawaii, 1987-1996. Prenat. Diagn. 19:136-141.

Franke, J., Rath, F., Runge, H., Fengler, F., Auermann, E., and Lenart, G.L. 1975. Industrial fluorosis. Fluoride 8:61-85.

Gelberg, K.H., Fitzgerald, E.F., Hwang, S., and Dubrow, R. 1995. Fluoride exposure and childhood osteosarcoma: A case-control study. American Journal of Public Health 85(12):1678-1683.

Graham, J.R., and Morin, P.J. 1999. Highlights in North American litigation during the twentieth century on artificial fluoridation of public water supplies. J. Land Use & Environmental Law 14(2):195-242.

Grandjean, P., and Landrigan, P.J. 2006. Developmental neurotoxicity of industrial chemicals. Lancet 368:2167-2178.

Gray, L.E., Jr., Wilson, V., Noriega, N., Lambright, C., Furr, J., Stoker, T.E., Laws, S.C., Goldman, J., Cooper, R.L., and Foster, P.M.D. 2004. Use of the laboratory rat as a model in endocrine disruptor screening and testing. ILAR Journal 45(4):425-437.

Grimbergen, G.W. 1974. A double blind test for determination of intolerance to fluoridated water. Preliminary Report. Fluoride 7:146-152.

Hattis, D., Goble, R., Russ, A., Chu, M., and Ericson, J. 2004. Age-related differences in susceptibility to carcinogenesis: A quantitative analysis of empirical animal bioassay data. Environmental Health Perspectives 112:1152–1158.

Health Canada. 2009. Fluoride in Drinking Water. Document for public comment. September 2009.

Heller, K.E., Eklund, S.A., and Burt, B.A. 1997. Dental caries and dental fluorosis at varying water fluoride concentrations. J. Public Health Dentistry 57(3):136-143.

Hileman, B. 1990. Fluoride bioassay study under scrutiny. Chemical & Engineering News 68(38):29-30 (September 17, 1990).

Hirzy, J.W. 2000. Statement of Dr. J. William Hirzy, National Treasury Employees Union Chapter 280, before the Subcommittee on Wildlife, Fisheries and Drinking Water, United States Senate, June 29, 2000. [Available http://www.nteu280.org/Issues/Fluoride/629FINAL.htm or http://www.fluoridealert.org/HirzyTestimony.pdf]

Hong, L., Levy, S.M., Broffitt, B., Warren, J.J., Kanellis, M.J., Wefel, J.S., and Dawson, D.V. 2006a. Timing of fluoride intake in relation to development of fluorosis on maxillary central incisors. Community Dent. Oral Epidemiol. 34:299-209.

Hong, L., Levy, S.M., Warren, J.J., Broffitt, B., and Cavanaugh, J. 2006b. Fluoride intake levels in relation to fluorosis development in permanent maxillary central incisors and first molars. Caries Research 40:494-500.

Iida, H., and Kumar, J.V. 2009. The association between enamel fluorosis and dental caries in U.S. schoolchildren. JADA 140:855-862.

IOM (Institute of Medicine). 1997. Dietary Reference Intakes for Calcium, Phosphorus, Magnesium, Vitamin D, and Fluoride. National Academy Press, Washington, DC.

Jooste, P.L., Weight, M.J., Kriek, J.A., and Louw, A.J. 1999. Endemic goitre in the absence of iodine deficiency in schoolchildren of the Northern Cape Province of South Africa. Eur. J. Clin. Nutr. 53:8-12.

Khosla, S., Melton, L.J. III, Dekutoski, M.B., Achenbach, S.J., Oberg, A.L., Riggs, B.L. 2003. Incidence of childhood distal forearm fractures over 30 years. JAMA 290:1479-1485.

Kishi, K., and Ishida, T. 1993. Clastogenic activity of sodium fluoride in great ape cells. Mutation Research 301:183-188.

Komárek, A., Lesaffre, E., Härkänen, T., Declerck, D., and Virtanen, J.I. 2005. A Bayesian analysis of multivariate doubly-interval-censored dental data. Biostatistics 6(1):145-155.

Lasne, C., Lu, Y.-P., and Chouroulinkov, I. 1988. Transforming activities of sodium fluoride in cultured Syrian hamster embryo and BALB/3T3 cells. Cell Biology and Toxicology 4(3):311-324.

Leonnig, C.D. 2010. CDC misled District residents about lead levels in water, House probe finds. The Washington Post, May 20, 2010 [Available: http://www.washingtonpost.com/wp-dyn/content/article/2010/05/19/AR2010051902599_pf.html]

Levy, S.M., Eichenberger-Gilmore, J., Warren, J.J., Letuchy, E., Broffitt, B., Marshall, T.A., Burns, T., Willing, M., Janz, K., and Torner, J.C. 2009. Associations of fluoride intake with children's bone measures at age 11. Community Dent. Oral Epidemiol. 37:416-426.

Li, X.S., Zhi, J.L., and Gao, R.O. 1995. Effect of fluoride exposure on intelligence in children. Fluoride 28:189-192.

Lin, F.F., Aihaiti, Zhao, H.X., Lin, J., Jiang, J.Y., Maimaiti, and Aiken. 1991. The relationship of a low-iodine and high-fluoride environment to subclinical cretinism in Xinjiang. IDD Newsletter 7:24-25.

Maas, R.P., Patch, S.C., and Smith, A.M. 2005. Effects of Fluorides and Chloramines on Lead Leaching from Leaded-Brass Surfaces. Technical Report 05-142. Environmental Quality Institute, University of North Carolina, Asheville, NC. June 2005.

Maas, R.P., Patch, S.C., Christian, A.-M., and Coplan, M.J. 2007. NeuroToxicology 28:1023-1031.

Marcus, W.L. 1990. Fluoride Conference to review the NTP Draft Fluoride Report. Memorandum to A.B. Hais, Acting Director, Criteria & Standards Division, Office of Drinking Water, Environmental Protection Agency.

McDonagh, M., Whiting, P., Bradley, M., Cooper, J., Sutton, A., Chestnutt, I., Misso, K., Wilson, P., Treasure, E., and Kleijnen, J. 2000. A Systematic Review of Public Water Fluoridation. NHS Centre for Reviews and Dissemination, University of York, York, UK.

Medline Plus. 2008. Fluoride. U.S. National Library of Medicine and National Institutes of Health. [Available: http://www.nlm.nih.gov/medlineplus/druginfo/meds/a682727.html]

Meng, Z., and Zhang, B. 1997. Chromosomal aberrations and micronuclei in lymphocytes of workers at a phosphate fertilizer factory. Mutation Research 393:283-288.

Neurath, C. 2005. Tooth decay trends for 12 year olds in nonfluoridated and fluoridated countries. Fluoride 38:324-325.

NRC (National Research Council). 2006. Fluoride in Drinking Water: A Scientific Review of EPA's Standards. [Available: http://www.nap.edu/catalog/11571.html]

NRC (National Research Council). 2009. Emergency and Continuous Exposure Guidance Levels for Selected Submarine Contaminants: Volume 3. [Available: http://www.nap.edu/catalog.php?record_id=12741]

NTP (National Toxicology Program). 1990. Toxicology and carcinogenesis studies of sodium fluoride (CAS No. 7681-49-4) in F344/N rats and B6C3F$_1$ mice (drinking water studies). National Toxicology Program Technical Report Series No. 393.

Penman, A.D., Brackin, B.T., and Embrey, R. 1997. Outbreak of acute fluoride poisoning caused by a fluoride overfeed, Mississippi, 1993. Public Health Reports 112:403-409.

Petraborg, H.T. 1977. Hydrofluorosis in the fluoridated Milwaukee area. Fluoride 10:165-169.

PHS (Public Health Service). 1991. Review of Fluoride Benefits and Risks: Report of the Ad Hoc Subcommittee on Fluoride Committee of the Committee to Coordinate Environmental Health and Related Programs. Public Health Service, U.S. Department of Health and Human Services, Washington, DC.

Psoter, W.J., Reid, B.C., and Katz, R.V. 2005. Malnutrition and dental caries: A review of the literature. Caries Res. 39:441-447.

Román, G.C. 2007. Autism: Transient in utero hypothyroxinemia related to maternal flavonoid ingestion during pregnancy and to other environmental antithyroid agents. J. Neurological Sciences 262:15-26.

Sawan, R.M.M., Leite, G.A.S., Saraiva, M.C.P., Barbosa, F. Jr., Tanus-Santos, J.E., and Gerlach, R.F. 2010. Fluoride increases lead concentrations in whole blood and in calcified tissues from lead-exposed rats. Toxicology 271(1-2):21-26.

Sergi, C., and Zwerschke, W. 2008. Osteogenic sarcoma (osteosarcoma) in the elderly: Tumor delineation and predisposing conditions. Experimental Gerontology 43:1039-1043.

Shiboski, C.H., Gansky, S.A., Ramos-Gomez, F., Ngo, L., Isman, R., Pollick, H.F. 2003. The association of early childhood caries and race/ethnicity among California preschool children. J. Public Health Dentistry 63:38-46.

Short, E.M. 1944. Domestic water and dental caries: VI. The relation of fluoride domestic waters to permanent tooth eruption. J. Dent. Res. 23:247-255.

Siffel, C., Correa, A., Cragan, J., Alverson, C.J. 2004. Prenatal diagnosis, pregnancy terminations and prevalence of Down syndrome in Atlanta. Birth Defects Res. A Clin. Mol. Teratol. 70:565-571.

Spittle, B. 2008. Dyspepsia associated with fluoridated water. Fluoride 41(1):89-92.

Steingraber, S. 2007. The Falling Age of Puberty in U.S. Girls: What We Know, What We

Need to Know. San Francisco: The Breast Cancer Fund.

Sullivan, K.M. 2009. Iodine deficiency as a cause of autism. J. Neurological Sciences 276:202.

Susheela, A.K., Bhatnagar, M., Vig, K., and Mondal, N.K. 2005. Excess fluoride ingestion and thyroid hormone derangements in children living in Delhi, India. Fluoride 38:98-108.

Tickner, J., and Coffin, M. 2006. What does the precautionary principle mean for evidence-based dentistry? Journal of Evidence-Based Dental Practice 6(1):6-15.

Turner, C.H., Garetto, L.P., Dunipace, A.J., Zhang, W., Wilson, M.E., Grynpas, M.D., Chachra, D., McClintock, R., Peacock, M., and Stookey, G.K. 1997. Fluoride treatment increased serum IGF-1, bone turnover, and bone mass, but not bone strength, in rabbits. Calcif. Tissue Int. 61:77-83.

Turner, C.H., Hinckley, W.R., Wilson, M.E., Zhang, W., and Dunipace, A.J. 2001. Combined effects of diets with reduced calcium and phosphate and increased fluoride intake on vertebral bone strength and histology in rats. Calcif. Tissue Int. 69:51-57.

Vohra, R., Velez, L.I., Rivera, W., Benitez, F.L., and Delaney, K.A. 2008. Recurrent life-threatening ventricular dysrhythmias associated with acute hydrofluoric acid ingestion: Observations in one case and implications for mechanism of toxicity. Clinical Toxicology 46:79-84.

Waldbott, G.L. 1956. Incipient chronic fluoride intoxication from drinking water. II. Distinction between allergic reactions and drug intolerance. Int. Arch. Allergy 9:241-249.

Waldbott, G.L. 1958. Allergic reactions from fluorides. Int. Arch. Allergy 12:347-355.

Warren, J.J., Levy, S.M., Broffitt, B., Cavanaugh, J.E., Kanellis, M.J., and Weber-Gasparoni, K. 2009. Considerations on optimal fluoride intake using dental fluorosis and dental caries outcomes—A longitudinal study. J. Public Health Dentistry 69:111-115.

Wilson, P.M., and Sheldon, T.A. 2006. Muddy waters: evidence-based policy making, uncertainty and the "York review" on water fluoridation. Evidence & Policy 2(3):321-331.

Yang, Y., Wang, X., and Guo, X. 1994. Effects of high iodine and high fluorine on children's intelligence and the metabolism of iodine and fluorine [in Chinese]. Zhonghua Liu Xing Bing Xue Za Zhi 15:296-298.

Zhang, R., Niu, Y., Du, H., Cao, X., Shi, D., Hao, Q., and Zhou, Y. 2009. A stable and sensitive testing system for potential carcinogens based on DNA damage-induced gene expression in human HepG2 cell. Toxicology in Vitro 23:158-165.

Zhao, L.B., Liang, G.H., Zhang, D.N., and Wu, X.R. 1996. Effect of a high fluoride water supply on children's intelligence. Fluoride 29:190-192.

I'm Dr. Malgosia Cegielski. I am a licensed psychologist in the state of Oregon specializing in the treatment of children, young people and their families. Although I am very concerned about the impact of fluoride on young brains given the mounting evidence of its neuro toxicity today I will testify from a more personal stand point. Those who are rushing to put fluorocilicates in our water insist that they will not harm anyone. I am here to state that this is simply not true.

I have been diagnosed with Multiple Chemical Sensitivities. The American Academy of Environmental Medicine explains MCS as "a very real chronic medical condition Recent estimates suggest that chemical sensitivity, meaning hyper-reactivity to various environmental agents (known as incitants), may afflict something like 10-15% of the American population." Fluoride-containing water is considered an incitant. The American Academy of Environmental Medicine is an international association of physicians and scientists in the forefront of treating people with chemical sensitivity and researching the relationship between health and the environment. In their position paper on fluoride, they state that "fluoride is a known neurotoxin and carcinogen even at the levels added to public water supplies," they support "banning the addition of fluoride or products containing fluoride to public water supplies." _

Recently, after allowing my dentist to put topical fluoride on my teeth I mentioned this to my medical doctor, a highly respected physician in Portland and Vancouver. He stated that he did not want me to ever put fluoride in my mouth again. We have begun to talk about the deleterious impact of fluoride on my health, which is always challenged by the MCS.

For me this is a frightening prospect.

My doctor has a very expensive water filtration system in his home and office in order to protect his patients from fluoride.

MCS is considered a disability by the Americans with Disabilities Act of 1990. The intent of this law is to create permanent civil rights law protections for people with disabilities that could only be strengthened,never weakend. I believe therefore that it is my legal right not to be forced to consume fluoride.

Chemical sensitivity in MCS means tiny exposures lead to big health problems. I am the famous "canary in the coal mine". Extrapolating from the statistics provided by the American Academy of Environmental Medicine means that in Portland alone fluoride will seriously adversely affect the health of approximately 60, 000 citizens.

Malgosia Cegielski Ph.D.

185612

To Portland City Council,
I am against fluoride in Portland water. You have no right making a decision of this importance for all of Portland. This should be voted on by all of portland and surrounding areas where the fluoride will go. This takes three votes this is not democracy. you have NO right taking away our democracy.

How about a real solution to tooth decay. Here is a idea. You already have free fluoride tablets at grade school.Offer free at all pre-school. Offer the fluoride drop with the WIC program. In fact offer both drops and tablets at all government programs. Allow toothpaste for food stamps.
We need to have an event four times a year" prevent tooth decay day." (put on by the Dental association) have a little fair at community center , schools, churches , boy & Girls clubs, at any organization that deals with children. have clowns balloons etc (something to draws the children their). Have a booth where children can get free toothbrushes & toothpaste have dentist show the children how to brush their teeth. Have a skit on the importance brushing their teeth. Have a health booth where you can do dental checkup and even fill cavities.
A lot of these kids you are targeting have never been shown the importance of this. The is being proactive showing this kids you really care. Kids brushing their teeth is the solution to prevent tooth decay not adding fluoride to our water.

Sincerely
Cheryl Ellis
Portland Oregon 97216
971-409-0367

Fluoride, 1003 185612 497 152,000 pop served

Department of Utilities
Office of the Director

CITY OF SACRAMENTO
CALIFORNIA

1395 35th Avenue
Sacramento, CA 95822-2911
phone (916) 808-1400
fax (916) 808-1497

July 1, 2010

MEMORANDUM

TO: Mayor Kevin Johnson
City Council Members

FROM: Marty Hanneman, Director, Department of Utilities

SUBJECT: Council Report Back re: Fluoride

This memo is in response to Council's discussion at the June 22nd budget hearing requesting information regarding fluoridation of the city's water supply. Council expressed interest in having the County Public Health official discuss the health benefits of fluoride and in having a policy discussion regarding rate payers having a choice whether fluoride is added to their water. Staff recommends a future Council workshop to discuss these issues.

The Department of Utilities' concern with water fluoridation is strictly from a fiscal stand point and not from a health benefit perspective. Fluoridation of the water supply is not a State or Federal mandated service, unlike the majority of the services provided by the Department of Utilities. Fluoride is an additive to the water for dental health purposes and is not essential for the production of safe drinking water and costs the department approximately $1 million annually.

The Department of Utilities was notified earlier this year by Ms. Debra Payne, First 5 of Sacramento, that grant funds were available from her organization for a consultant study of our current fluoridation system to reduce our Operations and Maintenance costs, as well as grants for capital improvements. Subsequently, the Department met with Ms. Payne and representatives from the Dental Association to learn more about grant funding opportunities. As was mentioned during the DOU budget hearing, Utilities has begun the application process to receive a study grant, as there is no commitment to continue fluoridation required. **The "capital improvement" grants provided by First 5 Sacramento require a 20 year commitment to continue fluoridation regardless of cost or financial status, with no funding for operational or maintenance costs.** Staff does not intend to apply for any capital grant funds pending study results and Council direction.

The Department of Utilities will continue water fluoridation unless directed otherwise by City Council. Please see attached information for additional background.

Cc: Gus Vina, Interim City Manager
John Dangberg, Assistant City Manager
Attachment

Fluoride in City of Sacramento's Water Treatment

185612

History

City Council adopted a resolution in February 1998 stating that if another party would cover initial funding for purchase and installation of the fluoridation equipment, the Department of Utilities would cover the operational and maintenance costs, estimated at approximately $350,000 per year at the two water treatment plants and 28 groundwater well sites. In 1999 the City Council authorized the City Manager to negotiate a $1.41 million grant contract with the representatives of Fluoridation 2000 Work Group to fund the purchase and installation of the equipment necessary to add fluoride to the city's water supplies.

The City of Sacramento has been fluoridating its water supply for just over 10 years. Within that time, the actual cost of operating and maintaining the fluoridation systems has proven to be considerably more than the initial estimate of $350,000 per year. In addition to the rising costs of chemicals, there are also escalating costs associated with labor, replacement parts, and other supplies needed for essential system operation and maintenance.

Recently all City of Sacramento departments were instructed to review the programs and services they provide and were asked to categorize each as mandatory, essential or existing. Of the many services provided by the Department of Utilities, fluoridation of the water supply is one that is not an EPA requirement and therefore would fall in the existing category. Fluoride is an additive to the water for dental health purposes and is not essential for the production of safe drinking water for the public. Therefore, fluoridation of the water supply has been identified as a service that should be suspended during the current budget crisis. While there is grant funding available to cover capital expenses of necessary infrastructure replacement, on-going operating and maintenance expenses will continue to impact our operating budgets. At this time it does not make fiscal sense to continue fluoridation at the expense of deferring mandated or essential services.

Contractual & Regulatory Obligations

- Title 22 of the California Health and Safety Code requires the fluoridation of all public water system that have at least 10,000 service connections, if funding is made available from outside sources. Section 64433 (f) of these regulations also establishes the criteria for suspending fluoridation if there are not sufficient funds for operation and maintenance.
- The contract between the City of Sacramento and Fluoridation 2000 Work Group (WG) states that the agreement can be terminated by either the City of Sacramento or Fluoridation 2000 WG with or without cause, by providing written notice of termination. If the City of Sacramento is the terminating party, reimbursement to Fluoridation 2000 WG was required only if termination occurred prior to installation of the fluoridation facilities. Therefore, the City has met its obligation consistent with the terms of the agreement and is no longer obligated to continue the service nor provide reimbursement.
- According to the Department of Health & Human Services, Center for Disease Control & Prevention, if a utility suspends fluoridation it must notify the state drinking water administrator and dental director. They also recommend alerting public health professionals and the public as well through local media.

Cost Factor	FY 2008/2009	FY 2009/2010 Projected	FY 2010/2011 Projected (7% Inc for chemicals)	2012 Projected
Crystalline Sodium Fluoride	$ 55,100	$ 60,000	$ 64,200	$ 68,695
Fluorosilicic Acid	$ 403,500	$ 438,750	$ 469,460	$ 502,325
Operations & Maintenance*	$ 400,000	$ 400,000	$ 400,000	$ 400,000
Capital Improvement Project - Replacement of Equipment at E.A.WTP				$ 450,000
Total	**$ 858,600**	**$ 898,750**	**$ 933,660**	**$ 1,421,020**

*Note: Operations and maintenance costs are estimates based on limited CMMS data.

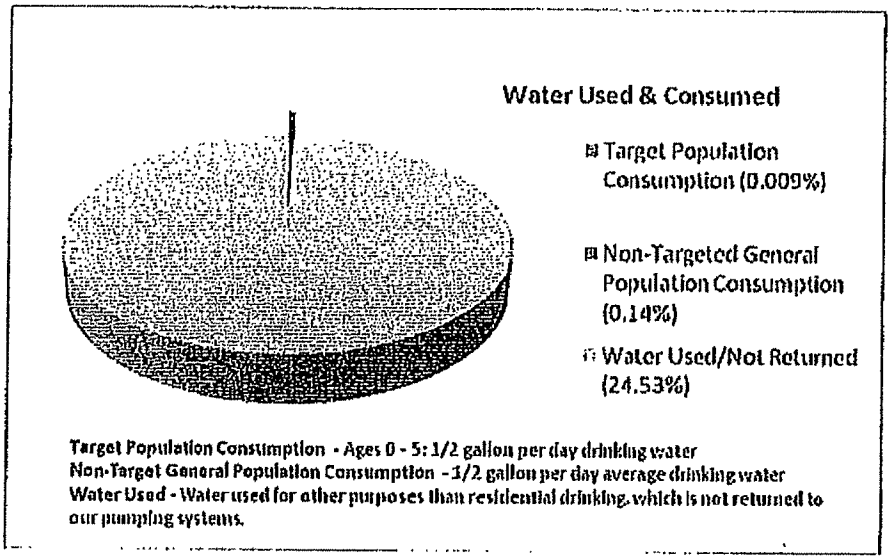
Fluoride in City of Sacramento's Water Treatment

Current Issues

- Crystalline sodium fluoride is no longer produced in the USA and now is only available from import manufacturers in China, Japan, and Belgium. It should be noted that Center for Disease Control (CDC) made strong recommendations that only the US product be used due to quality control and efficient operation of the saturator system.
- The Japan and China manufactured supplies have been found to be of a lower quality, causing costly equipment problems and failures. Shipments of sodium fluoride often have damaged bags that are leaking product through punctures or failed seals as well.
- The movement of suppliers away from domestically produced sodium fluoride is adversely affecting the fluoridation feed equipment of our 28 wells, primarily due to clogged fluoride injector pumps. Much of the loss of ground water well production is due to fluoride related issues.
- The fluoridation infrastructure at the E.A. Fairbairn Water Treatment Plant is overdue for replacement and will be very expensive to replace. Sacramento River Water Treatment Plant's fluoridation system will be due for replacement in 2014.
- Grant funding is available for capital costs, but in order to take advantage of this grant, all the operations and maintenance costs must be covered by the city and ultimately the rate payers. Such a contract would also obligate the city to fluoridate its water supply for 20 years regardless of the economic condition or budgetary constraints.

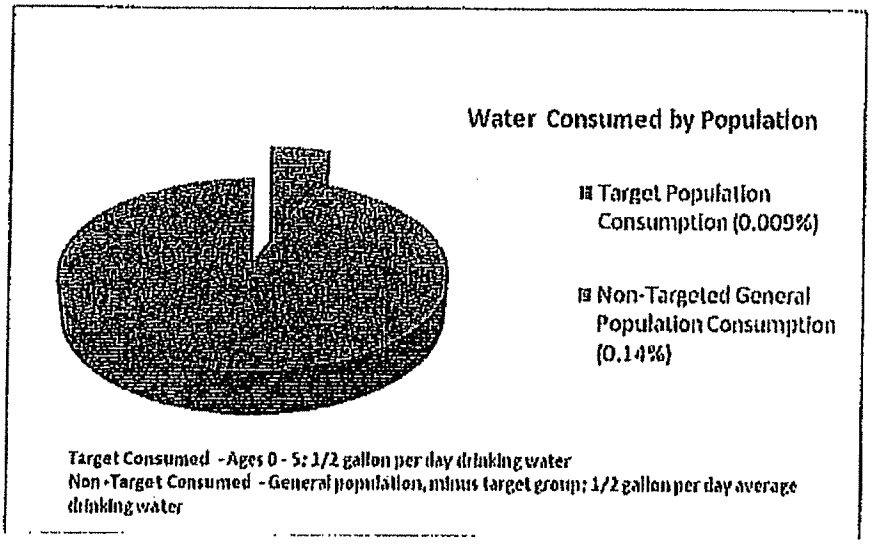
Water Production and Usage

Fluoridating water is a very costly and labor intensive process and requires constant monitoring of fluoride concentrations to ensure proper dosages. The chemical is very corrosive, so all equipment that is used in the fluoridation process has a very short life expectancy and needs to be replaced frequently. The crystalline sodium fluoride that is used at the 28 well sites not only causes the need for frequent equipment replacement, but also causes frequent and complex system failures. Such system failures mean that while wells are out of service and until the problem has been identified and resolved, the wells are not being used to deliver potable water to rate payers. Well shut downs also affect our ability to meet water pressure requirements, which are mandated in Title 22.



Fluoride in City of Sacramento's Water Treatment

When looking at the amount of water that is used, compared to the amount that is consumed, it does not make economic sense to continue to fluoridate the entire water supply. The target population of fluoridated drinking water is infants and small children. According to the 2000 US Census, Sacramento had a population of 407,018 people. The number of children age five and under, living in Sacramento at that time was 29,066, which is 7.1% of Sacramento's population. This means that of the 58 billion gallons the City of Sacramento is producing and treating annually, only 14 billion gallons are used by residential and commercial customers and .009 % of that is potentially consumed by the targeted group. (That would be comparable to taking one gallon of milk, using six and one half drops of it and pouring the rest of the gallon in the sink.)



Conclusions

Title 22 requires fluoridation for larger service agencies such as the city, but it also allows fluoridation to be suspended when it proves too costly to maintain. The Department of Utilities continues to search for ways to reduce costs and improve efficiency. Per direction from the City Manager's Office and the City Council, departments have been asked to identify services and programs that are not mandated and can be eliminated. Due to continued escalating costs and a severe budget deficit, the City of Sacramento should consider suspending fluoridation of the water, raising utility rates to cover escalating costs, or identify an alternate source to fund the capital costs as well as continued operation and maintenance costs to provide this non-essential service.

185612

September 6, 2012

Comments by Joseph Miller, 1030 SW Jefferson St., Apt. 534, Portland, Oregon, opposing an ordinance introduced by Commissioner Leonard to authorize and direct the Portland Water Bureau to fluoridate the City of Portland's public drinking water supply.

===

1. When fluoridation began in the 40s and 50s, the belief was that fluoride had to be swallowed to be effective. The current evidence indicates that to the extent that fluoride is effective, it is only effective when applied topically to the outside of the tooth after it has erupted into the mouth, not when it is ingested and distributed systemically to the whole body. (Thiessen, 2011; National Research Council, 2006)

2. When fluoridation began in the 40's and 50's, the only fluoride that humans and animals were exposed to was the fluoride that was naturally in water and soil. Things are very different now, and humans and animals are exposed to many different sources of cumulative aggregate exposure to fluoride:

-- many dental products (toothpaste, rinses, etc.) now contain fluoride
-- because many communities have fluoridated water, many retail foods, juices, and beverages produced in these communities with fluoridated water now contain residual levels of fluoride
-- many crops that are processed into food for humans and animals are grown with fluoridated pesticides and fumigants, e.g., cryolite and sulfuryl fluoride. Some of these crops have surprisingly high levels of fluoride residues. (Environmental Working Group, 2011, 2005; Fluoride Action Network)
-- other sources as well

3. This escalating cumulative aggregate exposure is creating various types of problems. The problem that has received the most attention is dental fluorosis "a defect of tooth enamel caused by too much fluoride intake during the first 8 years of life." Dental fluorosis has gone from a rare condition to a situation where an average of 41% of 12 - 15 year olds in the United States show some level of fluorosis according to the most recent statistics from the CDC. (Fluoride Action Network, Thiessen, 2011; Environmental Working Group)

There's also a rapidly growing literature on many other health problems associated with excessive fluoride exposure: reduced bone strength and increased risk of fracture, risk of bone cancer, reduced thyroid activity (especially in those with low-iodine intake), risk to people with kidney disease because of reduced ability to excrete fluoride from the body, risk to the brain, hypersensitivity (reduced tolerance) to fluoride, increased blood lead levels. (Fluoride Action Network, Thiessen, 2011; Environmental Working Group)

Re increased blood levels of lead, Thiessen (2011) notes that "approximately 90% of people on fluoridated water in the U.S. are on systems using silicofluorides." Such fluorides are industrial waste products from the phosphate fertilizer industry. There is some evidence that such silicofluorides combine with "disinfection agents (specifically, chloramines) increas[ing] the leaching of lead from plumbing fixtures into drinking water. (Thiessen, 2011).

4. There's more and and more research and professional concern about the effects of excessive fluoride on infants and children:

"The American Dental Association recommends fluoride-free toothpaste for children under 2. For children under 6, the CDC recommends "child-strength" toothpastes with half the fluoride of adult toothpaste." (Environmental Working Group) Numerous groups and professional organizations note the importance of using fluoride-free water to mix with concentrated or powdered infant formula.

5. Thiessen (2011) has a very good review of the research on the effects of water fluoridation on oral health.

She notes that:

[...] The University of York has carried out perhaps the most thorough review to date of human,studies on effects of fluoridation. Their work (McDonagh et al. 2000) is often cited as showing the safety and efficacy of water fluoridation, but it actually does neither (Wilson and Sheldon,2006; Cheng et al. 2007). The report mentions a surprising lack of high quality studies demonstrating benefits, and also finds little evidence that water fluoridation reduces socioeconomic disparities [...] [page 10]

Thiessen (2011) also notes that:

[...] most studies of benefits of fluoride intake or fluoridation have failed to account for a number of important variables including individual fluoride intakes (as opposed to fluoride concentrations in the local water supplies), sugar intake, socioeconomic variables, and the general decline in caries rates over the last several decades, independent of water fluoridation status. When World Health Organization data on oral health of children in various countries are compared, similar declines in caries over time are seen in all developed countries, regardless of fluoridation status (Cheng et al. 2007; Neurath 2005). [...] [page 11]

She also notes that:

[...] fluoride exposure appears to delay the eruption of permanent teeth ... A delay in tooth eruption alters the curve of caries rates with respect to age and complicates the analysis of age-specific caries rates (Psoter et al. 2005; Alvarez 1995;,Alvarez and Navia 1989). Komárek et al. (2005) have calculated that the delay in tooth eruption due to fluoride intake may explain the apparent reduction in caries rates observed when comparisons are made at a given age, as is usually done -- in other words, the apparent dental benefit from fluoride intake shown in some studies is simply an artifact of fluoride-induced delay in tooth eruption. [...] [page 11]

This is important, because the difference in caries prevalence between low-fluoride (< 0.3 mg/L) and fluoridated (0.7-1.2 mg/L) groups in several studies is about one-half (0.55) of one decayed, missing, or filled tooth surface per child.

Thiessen concludes by stating "the available data, responsibly interpreted, indicate little or no beneficial effect of water fluoridation on oral health." [page 12]. Thiessen's report includes lots of other information and graphs to support that conclusion.

6. Time is short, so I'll just say that there is evidence that some of the same medical problems that occur as a result of excessive fluoride exposure to humans, also occur with other animals, dogs and horses, for instance. And their no reason to believe that the same would not be true of cats, chickens, and other animals. I've included two evidence based links in references 8 and 9 below.

In closing:
-- given that our cumulative aggregate exposure from many different sources of fluoride is excessive;
-- given the many documented health problems resulting from this exposure;
-- given that the only beneficial way to use fluoride is topically, not systemically by ingestion;
-- why would we want to subject our children, animals, and ourselves to fluoridating our water supply, and everything we grow or create with that water supply?

It's true that the best way to avoid health problems is upstream, and that all children deserve healthy teeth. Let's use our funds to expand professional dental care to under-served populations of children, and to reduce the many sources of harmful and excessive exposure to fluoride in their and our lives. Let's not fund solutions -- fluoridation of our water -- that are non-solutions, and that just create more problems.

##########

References:

1. Kathleen M. Thiessen: Comments on EPA's Fluoride Risk Assessment and Relative Source Contribution Documents, Prepared for the U.S. Environmental Protection Agency, Submitted at the request of the International Academy of Oral Medicine and Toxicology (IAOMT) by Kathleen M. Thiessen, Ph.D 4/19/11
http://www.fluoridealert.org/uploads/thiessen.4-19-11.pdf

"The author of [the above] comments is a professional in the field of risk analysis, including exposure assessment, toxicity evaluation, and risk assessment. She has recently served on two subcommittees of the National Research Council's Committee on Toxicology that dealt with fluoride exposure and toxicity, including the NRC's Committee on Fluoride in Drinking Water. She has also authored an Environmental Protection Agency report on fluoride toxicity." [page 1]

2. Fluoride in Drinking Water: A Scientific Review of EPA's Standards - National Research Council 2006
http://www.nap.edu/catalog/11571.html

3. Health/Toxics: Fluoride - Environmental Working Group
http://www.ewg.org/fluoride

An excellent overview of EWG work on the health/toxic effects of fluoride in water and pesticides from 2005 - 2011. EWG worked in collaboration with Beyond Pesticides and the Fluoride Action Network in all their work.

4. U.S. Catches Up with Science On Fluoride in Drinking Water - Environmental Working Group 1/7/11
http://www.ewg.org/release/us-catches-science-fluoride-drinking-water

"Health and Human Services Secretary Kathleen Sebelius lowered the agency's maximum recommended fluoride level from 1.2 milligrams per liter of water to 0.7. The recommended range had been 0.7 to 1.2 milligrams per liter since 1962."

5. EPA to Bar Fluoride-Based Pesticide - Environmental Working Group 1/10/11
http://www.ewg.org/release/epa-bar-fluoride-based-pesticide

"EPA's reversal upholds the environmental groups' position that children's aggregate fluoride exposures are unsafe and that any additional exposure through pesticide residues is unlawful. According to EPA officials, the decision appears to be the first time the agency has granted substantive formal objections to a pesticide tolerance rule based on public health advocates' evidence that a particular chemical's use violates the safety standard for aggregate exposures under federal law."

6. Environmental groups petition EPA to retract fluoride pesticide tolerances on food - Environmental Working Group 9/21/05
http://www.ewg.org/release/environmental-groups-petition-epa-retract-fluoride-pesticide-tolerances-food

"Two national environmental organizations, Environmental Working Group and Beyond Pesticides, joined today with the Fluoride Action Network in challenging the safety of new food tolerances issued by the EPA for the fluoride based pesticide, sulfuryl fluoride. This action marks growing concern among mainstream scientists and environmental organizations that total exposure to fluoride, from water, food, and dental uses like toothpaste and rinses, is not safe for vulnerable populations, particularly young children."

7. Fluoride Action Network
http://www.fluoridealert.org/
http://www.fluoridealert.org/issues/

Despite the attempted smears by proponents of fluoridation, the Fluoride Action Network offers citizens and officials one of the most honest, comprehensive, up-to-date and evidence-based resources on the web on all issues related to fluoridation of water and sources and effects of fluoride exposure. Included are major sub-pages on water fluoridation, dental products, tooth decay, dental fluorosis, other health effects, the many sources of fluoride, infant exposure, environmental justice, and many other issues and topics.

8. Dog Food Comparison Shows High Fluoride Levels - Environmental Working Group 6/09
http://www.ewg.org/pets/fluorideindogfood

"An independent laboratory test of popular dog food brands, commissioned by Environmental Working Group, revealed that the food we buy for our pets contains high levels of fluoride ... Eight major national brands marketed for both puppies and adults contained fluoride in amounts between 1.6 and 2.5 times higher than the Environmental Protection Agency's maximum legal dose in drinking water, and higher than amounts associated with bone cancer in young boys in a 2006 study by Harvard scientists (Bassin 2006). All 8 brands contain bone meal and animal byproducts, the likely source of the fluoride contamination."

9. Poisoned Horses - Dr. David Kennedy 33:56 7/25/11
http://www.youtube.com/watch?feature=player_embedded&v=7TwwNZyRVOA#!

Dr. David Kennedy, dentist and researcher, presents an amazing video story of tremendous courage and resolve. Cathy and Wayne Justus of Pagosa Springs, Colorado experience incredible debilitating symptoms in their world class quarter horses and their dogs with seemingly no source or reason. After the death of Cathy's prize horse, the local veterinarian tested for every known possibility for the cause, but could not come up with an explanation. It was not until Dr. Lennart Krook, Professor Emeritus of Cornell University College of Veterinary Medicine tested for fluoride toxicity that Wayne and Cathy knew for certain what was killing their horses. They had been poisoned by fluoride in their drinking water.

Because of Cathy's tenacious insistence with the local water department concerning the science of the issue, and because citizens of Pagosa Springs had educated themselves, fluoridation was eventually stopped in their community.

We are very happy to report that Wayne and Cathy's horses and dogs are now living healthy happy lives with no fluoride symptoms whatsoever now that fluoridation has been stopped in Pagosa Springs. [...]

Note: Links to several published and peer reviewed articles supporting the assertions in the above video are available in the description section beneath the video.

American Dental Hygienists' Association
Oregon

185612

Council Members,

I am here today as a Portland resident, a proud parent, a dental hygienist and member of the Oregon Dental Hygienists' Association. I speak in favor of Community Water Fluoridation (CWF).

As a dental hygienist, I have worked in many areas in and around Portland and I have seen the difference that CWF can make. When I work in Salem, which does have CWF, I am always surprised at how few cavities and fillings I see. Twenty year olds without one filling or need for it, because they grew up and live in an area with CWF.

Then there is the extreme contrast of working in other areas nearby without CWF. When I worked in Sandy with WIC patients, there would be entire families coming in with multiple and frequently severe dental needs; the kind in which the severity affected their overall health and quality of life. Many of these families had no idea that they did not have the preventative measure of fluoride in their water. These families were trying to do the right thing and bring their children to have their teeth cleaned, sealants placed, and a topical fluoride treatment. It was often too late to call it prevention.

It is my opinion that you not only have the right to implement CWF but you also have the duty to your citizens. The Portland Water Bureau's vision statement even addresses the notion that they are to "enhance the public health" of the region. Miriam-Webster Dictionary defines public health as "the art and science dealing with the protection and improvement of community health by organized community effort and including preventive medicine and sanitary and social science."

Thank you for all of your time and hard work to research the science of this subject. I ask for you to do what is best for the majority of your community. It will be greatly appreciated by those of us who see the overwhelming benefits on a routine basis.

Sincerely,

Heidi Jo Grubbs, BSDH, RDH, EPDH

ODHA Immediate Past President

2995 Ryan Dr. SE, Suite 100 Salem, OR 97301 503.584.1696

Resources:

http://www.portlandoregon.gov/water/article/328185

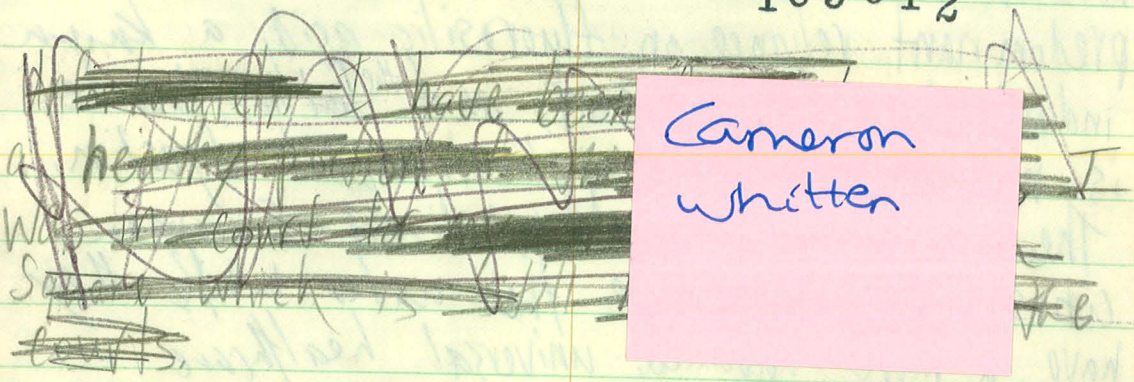
Vision

The Portland Water Bureau provides the highest quality water, customer service and stewardship of the critical infrastructure, fiscal, and natural resources entrusted to our care. We enhance public health and safety and contribute to the economic viability and livability of the Portland metropolitan region. We are a recognized leader among water service agencies across the country.

http://www.merriam-webster.com/dictionary/public+health?show=0&t=1346820154

Good afternoon, Mayor Adams, Commissioner Fritz, Commissioner Fish, Commissioner Saltzman, and Commssioner Leonard.

185612



Cameron Whitten

As you can tell, I wear the emblems from both the opposing and supporting positions of fluoride. I am torn, because I have friends on each side of the aisle, each with valuable arguments. Most importantly, I want all of us to remain this passionate about the issues of health and equity, because this passion is what leads to a vibrant and prosperous society. I'm proud of you all, truly.

I have deep empathy for fluoride, having first hand experience as a low-income African American, I believe that fluoride can be used as a tool to help poor families, many of whom are racial minorities, to fight tooth decay at a low cost to the city.

But I also have reservations with fluoride, being an ardent environmentalist, vegan, and health critic. I am uncomfortable with the predominant reliance on fluorosilic acid, a known industrial waste byproduct, and the fact that fluoride is most effective by application, not digestion. The majority of industrialized European cities do not fluoride their water. While they have a more advanced, universal healthcare coverage, they also have a more strict and credible set of medical ethics, for example their warnings to GMO foods from Monsanto.

Personally, my ultimate support would go to the fluoridation of our water, but my loudest objection is that this decision does not belong in the hands of anyone in this room, it belongs to the 1 million residents of the metropolitan area who have earned their right to a fair and democratic process.

In 2009, the City pioneered the Portland Plan, which prioritized the integration of public dialogue into shaping the common future of our society. We went so far as to spend

3 million taxpayer dollars to ensure the success of this plan. Developing the four pillars of Prosperous, Educated, Healthy, and Equitable reinforced my confidence that we live in a Progressive, world class city.

I unfortunately believe that this fluoridation process is a violation of the values of civic responsibility that we have always prided ourselves for.

Whereas fluoridation in Portland is a tradition of being a popular vote, I find the unreasonably rushed actions of this council have undermined the defining principles of Educated and Equitable.

I honor and admire the integrity of Amanda Fritz, who understands that she is not the gatekeeper to the doors of democracy, as agreed by Mayors Shane Bemis and Lou Ogden, who have both been excluded from the conversation.

185612

The fluoridation of our reservoirs will affect over 29 jurisdictions outside the City of Portland's limits. The Water Bureau has established such an aggressive timeline for this process, that even a referendum by the people could not overturn this decision before construction begins in 2024.

I appreciate your first steps to an open process by having us here to testify, but I am disappointed that many of you have announced your inclination to approve of this before using the proper channels to consult your constituents.

It is imperative that you consider putting this decision on the ballot, where it belongs. 2012 will already be a tough year for the citizens of America, as the Republican National Party attempt to jeopardize our unalienable rights with a purge of voting records. Consent is important.

Please don't deny the people the right to vote.
Thank you.

185612

Fluoride testimony
Portland City Council
September 6, 2012
Tamsin Taylor

Fluoride, i.e., is actually a phosphate mining industrial product which the EPA says must be labeled as hazardous waste; as such it has a well heeled constituency.

It is about my bones. I am under treatment for severe osteoporosis. Quite simply, fluoride thickens but hollows out bones. Here is the documentation. JAMA, 1990-1995, Mayo Clinic New England Journal of Medicine, March 22, 1990

But you might say that my bones and your bones are less important than kids and their teeth especially poor kids. Right? No. Fluoride not only interacts badly with calcium, it also interacts badly with lead which means that fluoridation actually lowers kids' IQs, especially the IQs of the kids you are concerned about, i.e., kids who have greater exposures to lead. Here is the relevant recent Harvard study documenting that.* in short, fluoride is an unapproved drug with quite negative other medical consequences: thyroid, potential genetic damage, aging, and cancer risk.

When I heard about this issue, I figured, I'll just filter the stuff out. But there is no reasonable technology to do that short of distillation. So you are forcing us not only to drink it, you are forcing us to bathe in it (and it does absorb through the skin) as well as adding to our rivers. At best, fluoride is supposed a topical medicine in very very small doses, not swallowed. Look at the directions on a tube of toothpaste. How exactly have you measured and insured that we are not going to be subjected to toxic levels? At least, more study is needed for our safety.

But you must know how toxic this stuff is. You must also know that Portland doesn't want it, never has wanted it. This must be why you are trying to sneak it through, especially you two who won't be around very long. You are leaving Nick Fish, Amanda Frisk, Dan Saltzman and the others with the $5 million expense and the liabilities.

Please reconsider your wrongful action and let the citizens decide.

"Fluoridation is the greatest case of scientific fraud of this century."
- Robert Carlton, Ph.D, former EPA scientist, 1992

*Results: The standardized weighted mean difference in IQ score between exposed and reference populations was -0.45 (95% CI -0.56 to -0.35) using a random-effects model. Thus, children in high fluoride areas had significantly lower IQ scores than those who lived in low fluoride areas. July 20, 2012
http://ehp03.niehs.nih.gov/article/fetchArticle.action;jsessionid=5C98A897B6946
4FD44D98698EE9FC4A1?articleURI=info%3Adoi%2F10.1289%2Fehp.1104912

Emily Firman, Senior Program Officer, of the Washington Dental Service Foundation invited here to speak to the benefits of community water fluoridation, in particular for our region. The Foundation is the charitable arm of the largest dental benefit company in Washington State. Its mission is to prevent oral disease and improve overall health.

The Foundation supports community water fluoridation because it is the best and most cost-effective way to provide fluoride's dental health benefits to everyone in a community, including children, adults, and seniors and those without access to dental care. We simply drink water and receive fluoride's benefits.

Sixty-~~two~~ four percent of Washington is fluoridated. This includes Seattle, Everett, Tacoma, Bellevue, and Yakima among other major cities. Tens of millions of Americans have been drinking fluoridated water regularly for over 40 years. Seattle has been fluoridated for the past 50 years.

If all of the supposed harms cited by opponents were truly credible, we would be seeing these health effects in millions of people. But we haven't.

The fact is fluoridation is a strategy used worldwide, in Australia, Irelend, Signapore, Chile, Canada for example. The World Health Organization agrees optimal fluoridation is good for oral health. Most European countries simply find it impractical to fluoridate because of their numerous water sources and complex water systems. As an alternative to water fluoridation, much of Europe fluoridates with salt. It is not appropriate nationally to use both salt and water fluoridation. In America, we benefit from the more modern infrastructure of our water systems and have chosen the method that makes the most common sense for us.

Members of the Council, thank you for providing this opportunity to be heard and to learn from each other. You face a grand opportunity to improve the health of your citizens. I commend you for considering this important benefit for the Portland community.

58% had a history of decay

2007 Oregon 3rd graders
20% had rampant decay
36% had untreated decay
64% had a history of decay

185612

Sept. 4, 2012

TO: Mayor Sam Adams
Nick Fish
Amanda Fritz
Randy Leonard
Dan Saltzman

FROM: Rick North, Clean Water Portland

RE: Fluoridation issue

Last Wednesday, August 29, I e-mailed to all of you my comments regarding fluoridation. I realize you've received thousands of e-mails on this issue and may not have had the chance to read it, so I would ask you to find it and look at my comments if you haven't already done so.

Attached are two sheets. One cites public comments from four members of the blue-ribbon committee of 12 scientists that produced the landmark National Academy of Science's 2006 report Fluoride in Drinking Water. These four are among the top scientists in the nation on this subject and all of them expressed deep concern about water fluoridation due to human health risks.

One concern cited by these scientists was a possible lowering of IQ caused by water fluoridation, based on four studies in China. They recommended further research. This research had not been done in the U.S. and six years after this report, it still hasn't been done.

But just over a month ago, a Harvard meta-analysis by Choi et al examined 27 studies. Out of these, 26 showed that children in villages with higher fluoride in their water tested lower in IQ. The weighted average was 7 IQ points. Please review the attached FAQ on this for the details. Our children's ability to think and reason is unquestionably a major issue and you did not have this information when some of you announced your support for fluoridation.

From my August 29 memo and from these two one-pagers, one thing is clear: there is obviously no consensus that fluoridation is safe for human health. To the contrary, there is compelling evidence that it is not. I would hope you consider this new information and vote NO to this practice.

Thank you.

THE NATIONAL RESEARCH COUNCIL'S REPORT ON FLUORIDE IN DRINKING WATER (2006) NATIONAL ACADEMY OF SCIENCES

QUOTES FROM COMMITTEE SCIENTISTS*

"The thyroid changes do worry me. There are some things there that need to be explored. What the committee found is that we've gone with the status quo regarding fluoride for many years—for too long, really—and now we need to take a fresh look."

- **Dr. John Doull**
http://www.waterloowatch.com/Index_files/Second%20Thoughts%20About%20Fluoride,%20Scientific%20American%20Jan-08.pdf
University of Kansas Medical Center
NRC Committee Chair

(The possible effects on endocrines and hormones from water fluoridation are) "something that I wouldn't want to happen to me if I had any say in the matter." (The report) "should be a wake-up call."

- **Dr. Robert Isaacson** http://s4780.sites.pressdns.com/news/fluoride-foes-get-validation/
Binghamton (NY) University
NRC Committee Member

"In my opinion, the evidence that fluoridation is more harmful than beneficial is now overwhelming . . . "

- **Dr. Hardy Limeback** http://www.offgridaustralia.com/articles/water-fluoridation/statement-water-fluoridation-dr-hardy-limeback-phd-dds
University of Toronto
NRC Committee Member

"I personally feel that the NRC report is relevant to many aspects of the water fluoridation debate. . . groups with different fluoride concentrations in their drinking water may still have overlapping distributions of individual fluoride exposure. . . the margin of safety between 1 and 4 mg/L is very low."
http://www.fluoridealert.org/health/epa/nrc/thiessen-2006.pdf

"Speaking as a scientist, based on the information I have looked at, we're dealing with uncontrolled and unmonitored exposures to an agent that is known to have adverse effects on humans."
http://www.fluoridealert.org/conference/2006/thiessen.aspx

"I think you can look at most chapters of this report and say 'Whoa.'"

- **Dr. Kathleen Thiessen** http://s4780.sites.pressdns.com/news/fluoride-foes-get-validation/
Specialists in Energy, Nuclear, and Environmental Services (SENES), Oak Ridge, TN
NRC Committee Member

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*The above are four members of a blue-ribbon committee of 12 scientists who reviewed toxicologic, epidemiologic, and clinical data on orally ingested fluoride from drinking water and other sources. The committee concluded unanimously that the maximum contaminant level goal (MCLG) for fluoride of 4 mg/L did not protect public health and the EPA should lower it.

THE CHOI et al IQ STUDY

185612

DEVELOPMENTAL FLUORIDE NEUROTOXICITY: A SYSTEMATIC REVIEW AND META-ANALYSIS

FREQUENTLY ASKED QUESTIONS

Who were the researchers? Anna Choi, from the Harvard School of Public Health, was lead author. The other authors were Guifan San and Ying Zhang from China Medical University in Shenyang, China and Philippe Grandjean of Harvard and the Institute of Public Health at the University of Southern Denmark

Who funded the study? Harvard and the National Institutes of Health (NIH)

Who published the study? Environmental Health Perspectives, a highly respected peer-reviewed journal published by the National Institute of Environmental Health Sciences, a division of NIH

What's a meta-analysis? A systematic method that takes data from a number of independent studies and integrates them using statistical analysis. (Dorland's Medical Dictionary for Health Consumers)

What studies did it review? Twenty-seven studies that examined the effects of fluoride exposure on IQ in children. Twenty-five were in China and two in Iran. The studies were published between 1989 and 2011.

Twenty-one measured fluoride from drinking water, three from coal burning and three from comparing fluorosis rates. Fluorosis, a mottling of the teeth, is caused by excessive fluoride.

What did it find? In 26 of 27 studies, children with increased exposure to higher levels of fluoride tested lower for IQ, typically 5-10 points. The summary finding of the Choi study was highly statistically significant.

Didn't the paper say the difference in IQ scores between the high-fluoride and low-fluoride groups was only .45 of an IQ point? No, although it's understandable why so many people could misinterpret this. The .45 refers to a standard deviation from normal IQ, not the IQ scores themselves. This standard deviation figure translates into about 7 IQ points. In a large population like Portland, a shift of 5 IQ points would halve the number of geniuses and double the number of mentally handicapped.

Were the fluoride levels in the water for the villages studied higher than fluoridation levels for U.S. cities? For the most part, yes. For U.S. cities that fluoridate, the standard level is 0.7 – 1.2 milligrams per liter (mg/L). The villages in the studies that had the high fluoride/lower IQ's had water levels ranging from .88 mg/L to 11.5 mg/L. Nine of the high fluoride/low IQ test villages had levels below 3 mg/L. Five had levels between 3 mg/L and 5 mg/L.

Since the levels in the high fluoride/low IQ villages were usually higher than the 0.7 – 1.2 mg/L range in the U.S., does that mean there isn't a problem here? No. There is no margin of safety for variations between individuals. Some people, such as those with iodine deficiency, are more susceptible to fluoride's toxicity than others. Other people, such as athletes, manual laborers and those with kidney disease, simply drink more water. The dose can be just as big a factor as the level of fluoride.

To take into account these variations when determining a margin of safety for the entire range of a population, toxicologists typically figure in a factor of at least 10. For example, if children drinking water with a fluoride level of 2.5 mg/L are showing lower IQ's, the margin of safety to protect the entire range of a population would be .25 mg/L, lower than the 0.7 – 1.2 mg/L.

-OVER-

There is another major factor that is often neglected. U.S. children in a 1 mg/L area consuming drinks using fluorinated water, eating food processed with fluoride, taking fluoride supplements, etc. will likely receive as much fluoride as Chinese children drinking water with 2-3 mg/L of fluoride.

Choi noted that **"each of the articles reviewed had deficiencies, in some cases rather serious, which limit the conclusions that can be drawn."** Does this make the study invalid? No. Choi also noted **"most deficiencies relate to the reporting, where key information is missing."** Most epidemiological studies have weaknesses and none are perfect – it's virtually impossible to control for every variable when comparing two communities.

One of the main variables can be arsenic, which can lower intelligence. However, many of the individual studies controlled for arsenic and Choi stated that **"From the geographical distribution of the studies, it seems unlikely that fluoride-attributed neurotoxicity could be due to other water contaminants."**

Actually, China is a favorable country to carry out these studies, because it has many villages with a stable population and water supplies and fluoride levels that haven't varied for many years.

The main point is this: After considering all the variables, Choi concluded **"our results support the possibility of adverse effects of fluoride exposures on children's neurodevelopment."** Also, noting the consistency of results of the studies (26 out of 27 is quite extraordinary), Choi stated that **"potential developmental neurotoxicity of fluoride should be a high research priority."**

Are there any other studies that have been done since Choi? Yes, one in India in 2012 and another in China in 2011.

What did they find? The same results – the higher the fluoride exposure, the lower the IQ. Choi commented on the 2011 study (Ding et al), which used a different measurement. It showed the higher the level of fluoride in the urine, the lower the IQ. This individual measurement is even stronger than simply comparing the high and low fluoride villages. Choi said that the Ding study **"suggested that low levels of water fluoride (range 0.24 to 2.84 mg/L) had significant negative associations with child's intelligence."**

Have there been any similar studies done in the U.S.? No, even after the landmark 2006 study done by the National Research Council of the National Academy of Science's Fluoride in Drinking Water recommended it.

What about animal studies? There have been over 80 animal studies that found fluoride causing harmful effects on memory, learning and behavior. There really is no question – the National Academy of Science's 2006 report said that **"it is apparent that fluorides have the ability to interfere with the functions of the brain and the body by direct and indirect means."** Also, **"these changes have a bearing on the possibility that fluorides act to increase the risk of developing Alzheimer's disease."**

What can we conclude? Even with all the information cited above, there isn't 100% proof that fluoridating water at 0.7 – 1.2 mg/L can lower IQ's in children. However, there are significant compelling data pointing in that direction. The trend has been consistent over 23 years of studies.

The consistency of these results in both human and animal studies and the margin of safety factor noted above point to the unequivocal need for further research. On the question of lowering IQ's in children, it is obvious that water fluoridation can not be declared safe beyond a reasonable doubt.

Clean Water Portland
August 30, 2012

My name is Mary Daly and I am the program manager for the mobile dental van affectionately known as the Tooth Taxi. The Tooth Taxi travels the state of Oregon providing free dental care to school children K-12. It is apparent when we are in a community with fluoridated water; levels of tooth decay are definitely less.

Some of the worst tooth decay that we have encountered has been within Portland and surrounding communities. Take for example this photo on my name badge. This young girl had not been to the dentist in years, she has holes in her teeth and black teeth deep with decay. These are her front teeth. Her father lost all his teeth at 28 yrs old; she was on that same path. Fluoridated water would have been especially helpful to stem this tide of decay. This student's oral health story demonstrates all the facts - Tooth decay is the most common childhood disease, often causing pain and infection in turn affecting school attendance and success, nutrition, and self-esteem.

Fluoridated water would affect the oral health of all of us positively; however the greatest benefit would be to children and those in low income brackets, those not seeking dental treatment due to their economic status. 32% of families seen on the Tooth Taxi have an annual income of less than $10,000. 10% of students we see on the Tooth Taxi have never been to the dentist; these aren't preschoolers. The majority are between the ages of 7 & 18. For every $1 invested in water fluoridation it saves a minimum of $30 in dental treatment costs.

Let us disregard the junk science and focus on 60 years of research and practical experience, the overwhelming weight of credible scientific evidence has consistently indicated that fluoridation of community water supplies is safe. Fluoride is proven to be safe and effective.

Let's bring fluoridated drinking water, one of the 10 greatest public health achievements of the 20th century to Portland.

185612

clean water portland

Protecting Portland and its world-class drinking water

September 6, 2012

Mayor Sam Adams
City of Portland Commissioners
Portland City Hall
1221 SW 4th Avenue Room 110
Portland, OR 97204

RE: Proposed Fluoridation ordinance

Dear Mayor Adams and Portland City Commissioners:

I am writing on behalf of Clean Water Portland and Oregon Citizens for Safe Drinking Water to strongly object to Commissioner Leonard's proposed ordinance to add fluoridation chemicals to Portland's drinking water. While we are opposed to adding fluoridation chemicals to what we believe is some of the best drinking water in the world, the method and manner by which the City Council is attempting to rush this ordinance through is equally if not more disturbing. In light of three separate public votes against fluoridation in Portland, your decision to overturn the will of the voters and deprive us of a chance to vote on fluoridation shows a great lack of respect for the democratic process.

Furthermore, the attempt to fast-track *implementation* of fluoridation prior to any public vote on the ballot measure is an egregious attempt to make an end run around the will of the public.

Given the controversy and importance of this decision, the need for fair and thoughtful public involvement could not be greater. The Public Involvement statement provided by Commissioner Leonard supports that the process for considering this bill has completely disregarded the City's public involvement policy. The only "public involvement" Commissioner Leonard can cite to is the one-sided advocacy work of the fluoridation proponents. The idea that their behind-the-scenes campaign organizing somehow complies with the public involvement policies and goals of the City is without merit and makes a mockery of stated goals for public involvement. The City should re-start the process since the lack of a public process to date violates the City's public involvement policy.

We are also concerned that the City Council appears to have already reached a decision prior to even hearing input from the public or fluoridation opponents. We have serious

concerns that in addition to being a poor policy decision, that this closed door decision making violates both the requirements and goals of Oregon's public meeting laws.

Our substantive concerns with the proposed fluoridation ordinance include:

1. Background

Since the 1950's, many dentists have promoted the addition of fluoridation chemicals to drinking water as a way of combating tooth decay in children. But as with many substances we once thought were safe and effective, current scientific research supports that water fluoridation is neither.

This was underscored in January, 2011 when the U.S. Department of Health and Human Services (DHHS) called for the lowering of the maximum fluoride levels in municipal drinking water by 40% (max of 1.2 ppm to max of 0.7 ppm) due to wide-scale overexposure in children that was resulting in dental fluorosis. [1] This significant change in the level of fluoride in water that is considered "safe" was driven by the 2006 National Academy of Sciences report on fluoride in drinking water which highlighted both the potential risks of fluoride exposure in drinking water and the significant lack of scientific understanding about actual or "biologically plausible" health threats from fluoride. [2]

While fluoridation boosters, like DHHS, continue to tout fluoridation's claimed benefits, the lowering of the maximum fluoride levels in drinking water is only the latest sign of a changing scientific understanding about the impacts of fluoridation chemicals.

2. **Fluoridation Chemicals are Byproducts of Industrial Fertilizer production**

There is no factual dispute that fluoridation chemicals are byproducts of the phosphate fertilizer industry. Adding such chemicals to some of the best water in the world does not make sense regardless of whether the council believes in the real and well-documented risks from "fluoride" itself. We have attached a reference sheet that provides citations and source document excerpts that clearly support that this is factually accurate.

The chief fluoridation engineer for the U.S. Centers for Disease Control (CDC), which is the highest profile fluoridation proponent in the United States, has plainly explained:

> "All of the fluoride chemicals used in the U.S. for water fluoridation, sodium fluoride, sodium fluorosilicate, and fluorosilicic acid, are byproducts of the phosphate fertilizer industry. [3] (*See* Ref. Sheet Attachment 1)

The National Research Council of the National Academy of Sciences similarly stated in its 2004 report on fluoride in drinking water:

> "The most commonly used [drinking water] additives are silicofluorides .... Silicofluorides are one of the by-products from the manufacture of

phosphate fertilizers." [4] (*See* Ref. Sheet Attachment 2)"

The CDC's website today similarly states that:

> Most fluoride additives used in the United States are produced from phosphorite rock. Phosphorite is used primarily in the manufacture of phosphate fertilizer....Approximately 95% of FSA [Fluorosilicic acid] used for water fluoridation comes from this process. The remaining 5% of FSA is generated during the manufacture of hydrogen fluoride or from the use of hydrogen fluoride in the manufacturing of solar panels and electronics.[5] (*See* Ref. Sheet Attachment 3)

The CDC in describing risks to the supply of water fluoridation chemicals plainly acknowledges that severe weather events that affect fertilizer manufacturers can reduce the supply of water fluoridation chemicals stating:

> Shortages or disruptions can also result from inclement weather in fluoride-producing areas. Florida is the largest producer of fluoride products, and hurricanes or other severe weather events can cause phosphate fertilizer manufacturers to suspend operations for several weeks at a time.[6] (*See* Ref. Sheet Attachment 3)

Dr. Kurt Ferre, one of Oregon's most ardent fluoridation backers[7] has referred to fluoridation chemicals as "a useful byproduct of the phosphate fertilizer industry" and defended the addition of fertilizer manufacturing byproducts by saying, "If you look at the side of a soda can, the fourth ingredient is phosphoric acid - that too is a byproduct of the phosphate fertilizer industry." [8] (*See* Ref. Sheet Attachment 4)

There is no rationale basis for adding an industrial byproduct to Portland drinking water in light of what we know in 2012 about the importance of clean water.

3. Fluoridation chemicals contain arsenic, lead and other toxic contaminants

Because of the industrial origin of fluoridation chemicals, such chemicals contain contaminants including arsenic, lead, mercury and a host of other heavy metals that are known to bio-accumulate and have serious adverse health effects at even minute levels.[9] Key excerpts of the fact sheet from NSF, which is relied on and cited to by the U.S. CDC in acknowledging the presence of contaminants in fluoridation chemicals, are included as Attachment 5 to the Reference Sheet and clearly show that 43% of the fluoridation chemicals they tested contained arsenic and with 2% of samples containing lead and another 3% containing copper.[10] While NSF and fluoridation proponents assert the levels of these toxics are too low to pose a health threat, EPA has plainly found that there is no safe exposure level for

Figure A

Excerpt from NSF Fact Sheet 1

lead or arsenic and thus has set a maximum contaminant level goal as zero for both.[11]

The risks of such contaminants is only increased by the fact that adding fluorosilicic acid to Portland's drinking water would make the water more acidic and thus increase the levels of lead that leach from plumbing into the drinking water. Knowingly adding any additional arsenic, lead and mercury to our drinking water as a result of fluoridation does not make sense in light of the impacts of these toxics even at very low levels.

4. The National Academy of Sciences report on fluoride in drinking water highlights the real health risks of fluoridation

In March 2006, the National Research Council(NRC) of the National Academy of Sciences published a major report that detailed a large collection of new scientific studies linking fluoride to a broad range of human health ailments ranging from dental fluorosis, increased bone fractures, and thyroid disorders, to neurological damage, such as, decreased childhood IQ and Alzheimer's.[12] While fluoridation supporters have passionately dismissed for decades any claims that fluoridation posed adverse health effects, the NRC report told U.S. EPA that its maximum contaminant level goal for fluoride in drinking water of 4 parts per million did not protect human health.

Many aspects of the report, however, are also relevant to the effects of fluoride at concentrations as low as the 0.7 parts per million which is the level at which Portland's water would be fluoridated.

After an exhaustive review of published scientific literature on the health effects of fluoride in drinking water, the report concluded that EPA's previous standard did not protect public health and that there was a significant need for additional research about the neurological, skeletal and immune system impacts of fluoride. The report identified the real lack of a comprehensive understanding about the impacts of fluoride on the human body and specified a range of serious scientific questions that needed to be answered about the health threats of fluoride in drinking water.

The report for example stated:

- "More research is needed to clarify fluoride's biochemical effects on the brain." p. 222
- "[M]ore studies are needed on fluoride concentrations in soft tissues (e.g., brain, thyroid, kidney) following chronic exposure." p. 102
- "Further research on a possible effect of fluoride on bladder cancer risk should be conducted." P 338
- "[T]he relationship between fertility and fluoride requires additional study." p.193
- "Fluoride can increase the uptake of aluminum into bone (Ahn et al. 1995) and brain (Varner et al. 1998)." p. 91
- "[S]tudies of populations exposed to different concentrations of fluoride in drinking water should include measurements of reasoning ability, problem solving, IQ,

and short- and long-term memory." p.205

- "The effect of low doses of fluoride on kidney and liver enzyme functions in humans needs to be carefully documented in communities exposed to different concentrations of fluoride in drinking water." p. 303
- "More studies of communities with drinking water containing fluoride at 2 mg/L or more are needed to assess potential bone fracture risk at these higher concentrations." p.12
- "Studies of populations exposed to different concentrations of fluoride should be undertaken to evaluate neurochemical changes that may be associated with dementia. Consideration should be given to assessing effects from chronic exposure, effects that might be delayed or occur late-in-life, and individual susceptibility." p.205.

The argument that there is no evidence supporting scientific concern about the effects of water fluoridation is wrong and directly at odds with the current and evolving scientific understanding about fluoride.

5. Harvard study finds fluoridated water increases risk of bone cancer by over 500%

While fluoridation promoters like to say there is not a single study showing adverse health effects from water fluoridation this is absolutely false as there are numerous studies showing serious adverse affects on everything from childhood IQ to the risk of bone cancer in boys.

For example, a multi-year Harvard study funded by the U.S. National Institute of Health and published in Harvard's prestigious Cancer Causes journal in April 2006 found that water fluoridation at the "optimum level" used in drinking water increased the risk of bone cancer in young boys by over 500%.[13] While this was a major new scientific study that led to stories in the Wall Street Journal and many other newspapers, the finding was not surprising in that scientists have known for many years that fluoride can increase cellular growth in bones. Fluoride was even used to treat osteoporosis until most doctors recognized that while it increased bone density, it also made bones more brittle and likely to fracture.

While fluoridation promoters have tried to dismiss the findings of this study, even the leading water fluoridation proponent at the U.S. Center for Disease Control, Dr. William Maas, publicly called the Harvard study "great shoe leather epidemiology." [14]

6. Fluoridating Portland's water would put infants at direct risk of excessive fluoride exposure

In another fairly recent development, the American Dental Association (ADA), the U.S. CDC and even the Oregon Dept. of Human Services have issued warnings against the use of fluoridated water for infant formula.[15] This presents a major issue for low-income children who live in fluoridated communities and cannot afford to buy bottled water that is un-fluoridated.

The 2006 warning by the ADA was based on the National Research Council finding that infants drinking baby formula mixed with fluoridated water were likely receiving excessive amounts of fluoride. The ADA warning also cited to a recent U.S. FDA ruling that bottled watered companies could no longer market fluoridated bottled water as reducing cavities in infants since infants did not have teeth and fluoride is now recognized as only having a topical effect.

The City's decision to add fluoridation chemicals to the water poses a direct threat to over exposing infants to fluoridation chemicals. Without any realistic or affordable way for many low-income infants to avoid exposure to excessive fluoride levels the City's action will mean that many infants are exposed to excessive fluoride levels. While we believe there would be a broad diversity of impacts from such exposure, the National Academy of Science's report on fluoride in drinking water clearly supports that fluoridation will cause excessive fluoride exposure and fluorosis in many infants' teeth whom consume fluoridated infant formula. Fluorosis can cost many thousands of dollars in aesthetic damage as well as serious emotional harm and both of these impacts would directly result from the City's decision to fluoridate. The City is therefore exposing itself to significant liability if it proceeds with the fluoridation of Portland's water despite its awareness of the risks of causing excessive fluoride exposure in infants.

7. Fluoride does not provide a systemic benefit but only a topical one, so swallowing fluoride to prevent carries is like swallowing sunscreen to avoid a sunburn

For over 50 years fluoridation promoters claimed that swallowing fluoridated water provided a "systemic benefit" for teeth. They asserted that drinking fluoride would result in the excretion of fluoridated saliva through salivary glands and protectively concentrate fluoride in tooth enamel.

In July 2000, however, the cover article of the Journal of the American Dental Association acknowledged that this theory was not supported by scientific evidence.[16] The U.S. Centers for Disease Control (CDC), which continues to support water fluoridation, has itself admitted that this new science has created a "better understanding" that fluoride works through "predominantly topical" mechanisms.[17]

While fluoridation promoters have claimed that drinking fluoridated water does provide a topical benefit they ignore the fact that there is not a single double-blind study(FDA's scientific study standard) showing that fluoridated water containing 0.7 parts per million of fluoride would provides any topical effect whatsoever. Toothpaste, for example, which does work topically, contains fluoride levels of 1,000 parts per million.

In light of the clear evidence that fluoride lacks a systemic benefit, swallowing fluoride in drinking water to prevent cavities makes as much sense as swallowing sunscreen to prevent sunburn.

8. Fluoridation proponents' are misrepresenting dental health data to support the claim of a "dental health crisis" in Portland

The Everyone Deserves Health Teeth Coalition is making numerous claims to support their argument that there is a "dental health crisis" in Portland but they are basing the claim on statewide numbers for Oregon instead of available data for Portland. But if they want to add fluoridation chemicals to Portland's water then shouldn't we consider Portland's dental health numbers?

Fluoridation promoters claim: *"One third of Oregon's children suffer from untreated dental decay"* ranking Oregon the *"fifth-worst in the nation."*

But Portland's dental health numbers are much better than the rest of Oregon and when Portland child cavity rates are compared to the rates in other states, including many highly fluoridated states, it makes clear that there is not the "dental health crisis" in Portland that fluoridation proponents claim. We need to be clear, however, that we believe Portland could and should significantly improve children's dental health using effective strategies such as low-income children's access to care and prevention education. There are not, however, the facts to support that Portland has a crisis that somehow justifies the current rush to force fluoridation chemicals into Portland's water without a public vote or a real public input process.

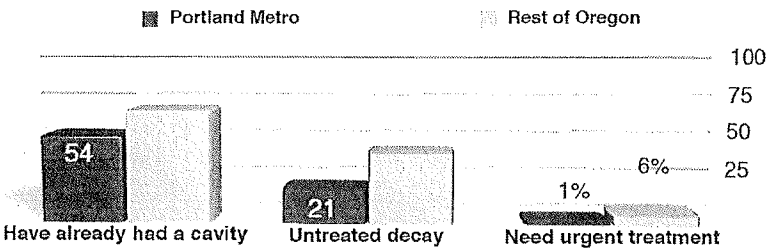
This is supported by data from both the CDC and the 2007 Oregon Smile Survey relied on heavily by fluoridation proponents. This data shows:

- The percentage of Portland metro children that have had a cavity is 54%, compared to 70% of children outside of Portland. (2007 Smile survey at p. 12) This is true even though only 8% of the Portland area is fluoridated where as 33% of Oregon residents outside Portland metro is fluoridated. [18] Portland metro's cavity rate brings down the cavity rate outside Portland to a statewide to 66.3%.[19]

How does Portland compare nationally?

- Fluoridation promoters like to compare Oregon to other states, but if Portland was compared to other states **Portland's children would rank as having the 15th lowest rate of "cavities experiences" in the U.S.** (CDC Caries Experience data[20], New York state ranked 15th with 54.1%). This is true despite the high fluoridation rates in many states.

- The percentage of Portland metro children with untreated decay is 21%, compared to a 44% outside of Portland and



35.4% statewide. (2007 Smile survey at p. 12) While there's always room for improvement, the Portland metro area has already met the 2010 National Oral Health Objectives for rates of untreated decay (21%). That said, "untreated" decay highlights the real need for increased access to basic dental care and does nothing to support a need to fluoridate.

- With a untreated decay rate of 21% **Portland's rate of untreated decay would also be the 15th lowest in the United States** if compared to other states including many with high rates of fluoridation. (CDC Caries Experience data[21], Iowa ranked 15th with 21.9%).

Again, while we strongly support real and effective measures to increase children's dental health, there is no rationale argument that adding industrial byproducts to the drinking water with known high-impact contaminants such as arsenic and lead is a good way to protect children's health.

9. The City's fluoridation ordinance would violate a number of state and federal laws

Fluoride meets every legal and medical definition of a drug since it is clearly intended to treat, mitigate or cure cavities. Fluoride, however, has never been approved by the U.S. Food and Drug Administration for distribution through a public drinking water system. As a result, the intentional addition of any fluoridation chemical to Portland's drinking water would violate a host of state and federal laws including both the U.S. Food and Drug Act, as well as, Oregon drug control statutes and regulations that prohibit the City from administering, distributing, handling and otherwise adding an un-approved drug such as fluoride into the public drinking water. The City is not a qualified physician or other medical provider and cannot even legally purchase, handle or store an unapproved and unlabeled drug such as fluoride. Contracting for the purchase and transfer of fluoride would also be illegal.

This is an especially significant concern since the City has no control over the dose of fluoride that any given person obtains or the unique medical circumstances of people who would ingest fluoride. Infants who would receive fluoridated infant formula as a result of the proposed ordinance as well as people with kidney or liver diseases, multiple chemical sensitivities, and other medical diseases and disabilities would be seriously impacted by the addition of fluoridation chemicals to the City's water. The City should closely consider the impacts of fluoridation on these and other groups since there is little factual dispute that the impacts on these subparts of the population would be significant. We believe the City would have direct liability to the impacts it causes as a result of fluoridation to these subgroups.

Conclusion:

For these reasons, we urge the City not to continue in its current effort to rush fluoridation chemicals into Portland's water without a full and fair public debate and public vote.

Sincerely

Kim Kaminski, Director

Clean Water Portland &
Oregon Citizens for Safe Drinking Water
(503) 421-9197
kim@safewateroregon.org

REFERENCES

[1] http://www.hhs.gov/news/press/2011pres/01/20110107a.html; US Says Too Much Fluoride Causing Splotchy Teeth," ABC News. http://abcnews.go.com/Health/wireStory?id=12562835.

[2] Fluoride in Drinking Water, National Research Council of the National Academy of Sciences, Committee on Fluoride in Drinking Water Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Academies Press, at p. 15 (2006), (download online at http://www.nap.edu/catalog.php?record_id=11571)

[3] Thomas Reeves, National Fluoridation Engineer, U.S. Center for Disease Control. The Manufacture of The Fluoride Chemicals, Refer: FL-143 (see online: *www.cdphe.state.co.us/pp/oralhealth/fluoridation/fl-143.pdf)*

[4] Fluoride in Drinking Water, National Research Council of the National Academy of Sciences, Committee on Fluoride in Drinking Water Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Academies Press, at p. 15 (2006), (download online at http://www.nap.edu/catalog.php?record_id=11571)

[5] http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#2

[6] http://www.cdc.gov/fluoridation/fact_sheets/engineering/shortages_faq.htm

[7] http://thetoothofthematter.org/fluoride-nature-thought-of-it-first/

[8] Oregonians Long Skeptical of Fluoridation. The Register-Guard, July 27, 2004; page C1 (see online: http://www.fluoridealert.org/Alert/United-States/Oregon/Oregonians-long-skeptical-of-fluoridation.aspx)

[9] Letter from National Sanitation Foundation, to Rep. Ken Calvert Chairman U.S. Subcommittee on Energy and the Environment Committee on Science. July 7, 2000.

[10] NSF Fact Sheet on Fluoridation Chemicals, at p. 5, 6, June 2012, as cited and linked to by U.S. Centers for Disease Control website, Water Fluoridation Additives, Measured Levels of Impurities. http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#2

[11] http://water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm; http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm

[12] Fluoride in Drinking Water, National Research Council of the National Academy of Sciences, Committee on Fluoride in Drinking Water Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Academies Press, at p. 15 (2006), (download online at http://www.nap.edu/catalog.php?record_id=11571)

[13] Bassin, E, Wypij D, Davis RB, Mittleman MA (2006). Age-specific fluoride exposure in drinking water and osteosarcoma (United States). Cancer Causes Control 2006. 17:421–428.

[14] Sharon B. Fluoridation, Cancer: Did Researchers Ask The Right Questions? Wall Street Journal, Friday 22 July 2005; Page B1.

[15] American Dental Association E-Gram. Nov. 9, 2006. Interim Guidance on Reconstituted Infant Formula; Oregon Department of Human Services, "Recommendations for Use of Fluoridated Water for Mixing Infant Formula." December 20, 2006.

[16] Featherstone, J. (2000). The Science and Practice of Caries Prevention, Journal American Dental

Association 2000, Vol. 131.

[17] U.S. Centers for Disease Control (2001). Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States. Morbidity and Mortality Weekly Report, August 17, 2001. Vol. 50 No. RR-14.

[18] Beaverton, Tualatin and Forest Grove are fluoridated and have combined population of 136,940 (2010 census). This is equal to roughly 8% of the total population of the Portland metro area of Multnomah, Washington and Clackamas Counties as defined by the 2007 Oregon Smile Survey at 12. Proportional representation of these towns in the survey is assumed. The number of fluoridated people (FP) in Oregon is 833,227 (CDC 2010). Of those, approximately 136,940 FP live in Portland metro, the remaining approximately 696,287 FP live in the rest of Oregon. These 696,287 FP in the rest of Oregon comprise 31.8% of the population outside of Portland metro. Oregon population outside Portland metro is 2,190,038 (2010 Census).

[19] CDC Oral Health webpage: http://apps.nccd.cdc.gov/nohss/IndicatorV.asp?Indicator=2&OrderBy=2

[20] CDC Oral Health webpage: http://apps.nccd.cdc.gov/nohss/IndicatorV.asp?Indicator=2&OrderBy=2

[21] CDC Oral Health webpage: http://apps.nccd.cdc.gov/nohss/IndicatorV.asp?Indicator=3&OrderBy=2

185612

clean water portland

For more information contact: Kim Kaminski (503) 282-5449

Key references showing fluoridation chemicals are industrial byproducts that would add arsenic, lead and other toxics to Portland's drinking water

As Portland's City Council rushes forward with its stealth attempt to fluoridate Portland's drinking water there is good reason to learn more about what fluoridation chemicals would actually be used to "fluoridate" Portland's drinking water, what the source of these chemicals is, and what contaminants these chemicals would add to our drinking water.

What fluoridation chemical would Portland use?

As has been reported in the Oregonian, Portland would use a chemical called fluorosilicic acid to "fluoridate" Portland's water.[1] Fluorosilicic acid is known as a silicofluoride and is one of three fluoridation chemicals used to fluoridate drinking water.

Where does fluorosilicic acid and other fluoridation chemicals come from?

There is no factual dispute that fluorosilicic acid and the two other chemicals (sodium fluoride and sodium fluorosilicate) commonly used to fluoridate drinking water are industrial byproducts of phosphate fertilizer manufacturing and this is acknowledged by highly credible sources as well as even the most ardent fluoridation proponents.[2] Because the idea of adding industrial byproducts into our drinking water is so difficult to believe we provide the following references, attached excerpts and on-line links to relevant source documents.

Factual support that fluoridation chemicals are industrial byproducts

The chief fluoridation engineer for the U.S. Centers for Disease Control (CDC), which is the highest profile fluoridation proponent in the United States, has plainly explained:

> "All of the fluoride chemicals used in the U.S. for water fluoridation, sodium fluoride, sodium fluorosilicate, and fluorosilicic acid, are byproducts of the phosphate fertilizer industry. [3] (*See* Attachment 1)

The National Research Council of the National Academy of Sciences similarly stated in its 2004 report on fluoride in drinking water:

> "The most commonly used [drinking water] additives are silicofluorides .... Silicofluorides are one of the by-products from the manufacture of phosphate fertilizers." [4] (*See* Attachment 2)"

The CDC's website today similarly states that:

> Most fluoride additives used in the United States are produced from phosphorite rock. Phosphorite is used primarily in the manufacture of phosphate fertilizer....Approximately 95% of FSA [Fluorosilicic acid] used for water fluoridation comes from this process. The remaining 5% of FSA is generated during the manufacture of hydrogen fluoride or from the use of hydrogen fluoride in the manufacturing of solar panels and electronics.[5] (Attachment 3)

The CDC in describing risks to the supply of water fluoridation chemicals plainly acknowledges that severe weather events that affect fertilizer manufacturers can reduce the supply of water fluoridation chemicals stating:

> Shortages or disruptions can also result from inclement weather in fluoride-producing areas. Florida is the largest producer of fluoride products, and hurricanes or other severe weather events can cause phosphate fertilizer manufacturers to suspend operations for several weeks at a time.[6] (*See* Attachment 3)

Dr. Kurt Ferre, one of Oregon's most ardent fluoridation backers[7] has referred to fluoridation chemicals as "a useful byproduct of the phosphate fertilizer industry" and defended the addition of fertilizer manufacturing byproducts by saying, "If you look at the side of a soda can, the fourth ingredient is phosphoric acid - that too is a byproduct of the phosphate fertilizer industry."[8] (*See* Attachment 4)

Factual support that fluoridation chemicals would add arsenic and other high toxics to Portland's drinking water

The problem of adding industrial byproducts to Portland's drinking water is not just hypothetical or philosophical. Fluoridation chemicals are well documented to contain contaminates such as arsenic, lead and copper and this is acknowledged by the U.S. Centers for Disease Control(CDC) and other fluoridation advocates who claim that the levels of such contaminants are too low to be of concern.[9] While there is good scientific evidence that any increased level of arsenic and lead brings increased health risks, it is critical to note that there are not any facts to support a claim that fluoridation chemicals do not contain any toxic contaminates.

While claiming these contaminant levels are too small to matter, fluoridation promoters ignore the reality that U.S. EPA's health based Maximum Contaminant Level Goals (MCLGs) for arsenic and lead are zero since these toxics cause increased risks related to cancer and childhood IQ (respectively) at even the smallest of concentrations.[10] As EPA otherwise states EPA's MCLGs are "the level of contaminants in drinking water at which no adverse health effects are likely to occur."[11]

As EPA explains, "The MCLG for arsenic is zero. EPA has set this level of protection based on the best available science to prevent potential health problems."[12] "The MCLG for lead is zero. EPA has set this level based on the best available science which shows there is no safe level of exposure to lead."[13]

The presence of arsenic, lead, copper and other toxic contaminants, such as mercury and chromium, in fluoridation chemicals has been clearly documented by NSF (National Sanitation Foundation) in a study and fact sheet (see excerpts here as Attachment 5) which the CDC cites to and relies on in describing what it calls "measured levels of impurities" in fluoridation chemicals.[14] While NSF and CDC discount the potential that fluoridation chemical contaminates pose any health risk it justifies its conclusion by comparing contaminant levels

not to EPA's health based MCLGs of zero or the actual health effects of arsenic, but to EPA's Maximum Contaminant Level (MCLs) criteria. These criteria, which are significantly weaker than the health based MCLG, reflect the high economic costs of removing contaminates that are already in the drinking water but are hardly a reasonable reference point for contaminates that are knowingly *added* to the drinking water.[15]

NSF tested contaminant levels in fluoridation chemicals and the fact sheet explains the results stating:

> "The results in Table 1 indicate that the most common contaminant detected in these products [fluoridation chemicals] is arsenic, which is detected in 43% of the product samples."[16] (*See* Attachment 5 at p. 4)

While NSF also notes that, "the highest recorded arsenic level was 6% of the US EPA MCL" again, this ignores the reality that EPA's MCL is not based on health impacts alone but reflects the economic compromise EPA makes given the high cost of removing toxics such as arsenic. (*See* Attachment 5 at p. 4).

NSF's same study documented lead, which is well documented to cause decreased childhood IQ at extremely low levels, in 2% of fluoridation chemicals it sampled as well as copper in 3% of samples.[17] The NSF study further documented mercury, cadmium, chromium and other toxics in fluoridation chemicals that are listed with their concentrations and frequency at Table 1 of NSF's fact sheet attached here.

We want to be clear, that while NSF and fluoridation promoters[18] have had little choice but to acknowledge that adding fluoridation chemicals to water means adding arsenic, lead, chromium, mercury and other toxics to the drinking water, they vigorously assert that the levels of contaminates are too small to be a concern. The policy choice, however, of whether Portland should add any additional levels of arsenic, lead, mercury or other toxics to our drinking water is a real one that is directly related to Portland's choice about whether to add fluoridation chemicals to our water.

ATTACHMENT 1

Refer: FL-143
September 2000

THE MANUFACTURE OF THE FLUORIDE CHEMICALS

All of the fluoride chemicals used in the U.S. for water fluoridation, sodium fluoride, sodium fluorosilicate, and fluorosilicic acid, are useful byproducts of the phosphate fertilizer industry. The manufacturing process produces two byproducts: (1) a solid, calcium sulfate (sheetrock, $CaSo_4$); and (2) the gases, hydrofluoric acid (HF) and silicon tetrafluoride (SiF_4). A simplified explanation of the manufacturing process follows: Apatite rock, a calcium mineral found in central Florida, is ground up and treated with sulfuric acid, producing phosphoric acid and the two byproducts, calcium sulfate and the two gas emissions. These gases are captured by product recovery units (scrubbers) and condensed into 23% fluorosilicic acid. Sodium fluoride and sodium fluorosilicate are made from this acid.

The question of toxicity, purity, and risk to humans from the addition of fluoride chemicals to the drinking water sometimes arises. Almost all of the over 40 water treatment chemicals that may be used at the water plant are toxic to humans in their concentrated form, e.g., chlorine gas and the fluoride chemicals are no exception. Added to the drinking water in very small amounts, the fluoride chemicals dissociate virtually 100% into their various components (ions) and are very stable, safe, and non-toxic.

Opponents of water fluoridation have argued that the silicofluorides do not completely dissociate under conditions of normal water treatment and thus may cause health problems. To counter these claims, the basic chemistry of this dissociation has been carefully reviewed. Scientists at the U.S. Environmental Protection Agency (EPA) and CDC epidemiologists have examined the research that opponents of water fluoridation cite. Both groups have concluded that these charges are not credible.

The claim is sometimes made that no health studies exist on the silicofluoride chemicals used in water fluoridation. We, the scientific community, do not study health effects of concentrated chemicals as put into water, we study the health effects of the treated water, i.e., what those chemicals become: the fluoride ion, silicates and the hydrogen ion. The health effects of fluoride have been analyzed by literally thousands of studies over 50 years and have been found to be safe and effective in reducing tooth decay. The EPA has not set any Maximum Contaminant Level (MCL) for the silicates as there is no known health concerns for them at the low concentrations found in drinking water. And, of course, the measurement of the pH of the water determines the concentration of the hydrogen ion. Many earlier papers did study the health effects of water fluoridation when the silicofluoride chemicals were used, but did not identify the silicofluorides because that was not an issue at the time. These studies have consistently shown that water fluoridation, using one of the silicofluoride chemicals, was safe to our health and effective in reducing tooth decay. Finally, many, if not most, of the numerous toxicological studies on the health effects of fluoridation were on large cities, which, because of cost, were using one of the silicofluoride chemicals.

Concern has been raised about the impurities in the fluoride chemicals. The American Water Works Association (AWWA), a well-respected water supply industry association, sets standards for all chemicals used in the water treatment plant, including fluoride chemicals. The AWWA standards are ANSI/AWWA B701-99 (sodium fluoride), ANSI/AWWA B702-99 (sodium fluorosilicate) and ANSI/AWWA B703-00 (fluorosilicic acid). The National Sanitation

Foundation (NSF) also sets standards and does product certification for products used in the water industry, including fluoride chemicals. ANSI/NSF Standard 60 sets standards for purity and provides testing and certification for the fluoride chemicals. Standard 60 was developed by NSF and a consortium of associations, including the AWWA and the American National Standards Institute (ANSI). This standard provides for product quality and safety assurance to prevent the addition of harmful levels of contaminants from water treatment chemicals. More than 40 states have laws or regulations requiring product compliance with Standard 60. NSF tests the fluoride chemicals for the 11 regulated metal compounds that have an EPA MCL. In order for a product [for example, fluorosilicic acid] to be certified to meet the NSF Standard 60, the regulated metal contaminants must be present at the tap [in the home] at a concentration of less than ten percent of the EPA MCL when added to drinking water at the recommended maximum use level. This NSF Standard 60 level [10% of the EPA MCL] is called Maximum Allowable Level (MAL). The EPA has not set any MCL for the silicates as there is no known health concerns, but Standard 60 has a MAL of 16 mg/L for sodium silicates as corrosion control agents primarily for turbidity reasons. NSF tests have shown the silicates in the water samples from public water systems that are fluoridated to be well below these levels.

In tests by NSF, the majority of samples of fluorosilicic acid showed no detectable level of arsenic in the finished water. Of those that did have a detectable level, the average arsenic concentration in the finished water was 0.43 ug/L [parts per billion]. Opflow, a monthly magazine from the AWWA, has found the arsenic level in the finished water from the fluorosilicic acid to be 0.245 ug/L [Opflow,Vol 26, No. 10, October, 2000]. The NSF Standard 60 for arsenic has a Maximum Allowable Level (MAL) of 2.5 ug/L [one half of their normal MAL] and EPA has a MCL for arsenic of 50 ug/L, although it will be lowered to 10 ug/L by 2004. As can be seen, the average arsenic is less that 1/10th of even the proposed EPA MCL and less than 1/2 the proposed NSF Standard 60 MAL of 1 ug/L.

Tests by NSF and other independent testing laboratories have shown no detectable levels of radionuclides in product samples of fluoride chemicals. There is no evidence that any of the known impurities in the fluoride chemicals have failed to meet any of these standards.

Opponents of water fluoridation have sometimes charged that "industrial grade fluoride" chemicals are used at the water plant instead of pharmaceutical grade chemicals. All the standards of AWWA, ANSI, and NSF apply to these industrial grade fluoride chemicals to ensure they are safe. Pharmaceutical grade fluoride compounds are not appropriate for water fluoridation; they are used in the formulation of prescription drugs.

Finally, it is sometimes alleged that the fluoride from natural sources, like calcium fluoride, is better than fluorides added "artificially", such as from the fluoride chemicals presently used. There is no difference. There is no reason to change the opinion of CDC that water fluoridation is safe and effective.

Thomas G. Reeves, P.E.

National Fluoridation Engineer
Program Services Branch
Division of Oral Health
National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention

ATTACHMENT 2

185612

FLUORIDE IN DRINKING WATER

A SCIENTIFIC REVIEW OF EPA'S STANDARDS

Committee on Fluoride in Drinking Water

Board on Environmental Studies and Toxicology

Division on Earth and Life Studies

NATIONAL RESEARCH COUNCIL
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Washington, D.C.
www.nap.edu

below, a narrow concentration range of 0.7 to 1.2 mg/L is recommended when decisions are made to intentionally add fluoride into water systems. This lower range also occurs naturally in some areas of the United States. Information on the fluoride content of public water supplies is available from local water suppliers and local, county, or state health departments.

Artificial

Since 1945, fluoride has been added to many public drinking-water supplies as a public-health practice to control dental caries. The "optimal" concentration of fluoride in drinking water for the United States for the prevention of dental caries has been set at 0.7 to 1.2 mg/L, depending on the mean temperature of the locality (0.7 mg/L for areas with warm climates, where water consumption is expected to be high, and 1.2 mg/L for cool climates, where water consumption is low) (PHS 1991). The optimal range was determined by selecting concentrations that would maximize caries prevention and limit enamel fluorosis, a dose-related mottling of teeth that can range from mild discoloration of the surface to severe staining and pitting. Decisions about fluoridating a public drinking-water supply are made by state or local authorities. CDC (2002a) estimates that approximately 162 million people (65.8% of the population served by public water systems) received optimally fluoridated water in 2000.

The practice of fluoridating water supplies has been the subject of controversy since it began (see reviews by Nesin 1956; Wollan 1968; McClure 1970; Marier 1977; Hileman 1988). Opponents have questioned the motivation for and the safety of the practice; some object to it because it is viewed as being imposed on them by the states and as an infringement on their freedom of choice (Hileman 1988; Cross and Carton 2003). Others claim that fluoride causes various adverse health effects and question whether the dental benefits outweigh the risks (Colquhoun 1997). Another issue of controversy is the safety of the chemicals used to fluoridate water. The most commonly used additives are silicofluorides, not the fluoride salts used in dental products (such as sodium fluoride and stannous fluoride). Silicofluorides are one of the by-products from the manufacture of phosphate fertilizers. The toxicity database on silicofluorides is sparse and questions have been raised about the assumption that they completely dissociate in water and, therefore, have toxicity similar to the fluoride salts tested in laboratory studies and used in consumer products (Coplan and Masters 2001).

It also has been maintained that, because of individual variations in exposure to fluoride, it is difficult to ensure that the right individual dose to protect against dental caries is provided through large-scale water fluoridation. In addition, a body of information has developed that indicates

ATTACHMENT 3

Excerpts from: http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#8m

Community Water Fluoridation

E-mail this page
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Oral Health Home > Community Water Fluoridation Home > Fact Sheets

View by Topic

Water Fluoridation Additives

Sources of Fluoride Additives

Most fluoride additives used in the United States are produced from phosphorite rock. Phosphorite is used primarily in the manufacture of phosphate fertilizer. Phosphorite contains calcium phosphate mixed with limestone (calcium carbonates) minerals and apatite—a mineral with high phosphate and fluoride content. It is refluxed (heated) with sulfuric acid to produce a phosphoric acid-gypsum (calcium sulfate-CaSO4) slurry.

The heating process releases hydrogen fluoride (HF) and silicon tetrafluoride (SiF4) gases which are captured by vacuum evaporators. These gases are then condensed to a water-based solution of 23% FSA with the remainder as water.

Approximately 95% of FSA used for water fluoridation comes from this process. The remaining 5% of FSA is generated during the manufacture of hydrogen fluoride or from the use of hydrogen fluoride in the manufacturing of solar panels and electronics.

Since the early 1950s, FSA has been the chief additive used for water fluoridation in the United States. The favorable cost and high purity of FSA make it a popular source. Sodium fluorosilicate and sodium fluoride are dry additives that come largely from FSA.

FSA can be partially neutralized by either table salt (sodium chloride) or caustic soda to get sodium fluorosilicate. If enough caustic soda is added to neutralize the fluorosilicate completely, it results in sodium fluoride. Sodium fluoride is also produced by mixing caustic soda with hydrogen fluoride, although approximately 90% of the sodium fluoride used in the United States comes from FSA.

How common are shortages or disruptions of fluoride products?

Shortages or disruptions of fluoride product deliveries are not common. However, there have been periods of shortages and disruptions resulting in difficulties obtaining fluoride additives for water fluoridation. Most shortages and disruptions tend to be of short duration, on the order of several weeks. Shortages or disruptions are usually regional. Fluoride products are produced in only a few areas of the country, and then must be transported to regional depots, typically by rail tanker car. Therefore, there may be sufficient fluoride products nationally, but a particular region may have shortages or disruptions. Shortages or disruptions can also result from inclement weather in fluoride-producing areas. Florida is the largest producer of fluoride products, and hurricanes or other severe weather events can cause phosphate fertilizer manufacturers to suspend operations for several weeks at a time. Seasonal disruptions, such as manufacturing plant maintenance periods, also may delay operations in entire production facilities for weeks to months at a time. Because the supply of fluoride products is related to phosphate fertilizer production, fluoride product production can also fluctuate depending on factors such as unfavorable foreign exchange rates and export sales of fertilizer. Other causes of fluoride shortages have been phosphorite rock ore quality with lower fluoride yields, labor disputes involving the rail or truck transport industry, and other causes.

ATTACHMENT 4

185612

The Register Guard
07/27/2004

Oregonians long skeptical of fluoridation

By Winston Ross

Today, less than a quarter of Oregon residents drink fluoridated water. Only two other states have lower percentages of use.

Despite the fervent efforts of dentists to persuade water districts and city councils to add the substance, the chemical additive is in decline. Portland is the largest city in the United States without fluoridated water.

Some states have passed laws mandating fluoride in all public drinking water systems. In Oregon, such an effort failed to make it out of a legislative committee in 2001 and hasn't been attempted since.

Still, dentists in some of the state's cities remain undaunted.

In 2000, a Scappoose dentist convinced city councilors to add fluoride to the drinking water. In November 2002, citizens in Beaverton passed a measure to add fluoride to the city's water, and two weeks later, the Tualatin Valley Water District - which covers 170,000 residents in Beaverton, Hillsboro and Aloha - decided to add the substance.

Currently, dentists in Medford are working to gather signatures to add fluoride to that city's water, but they haven't gotten enough support after a year and a half of trying.

Nationally, the debate has played out a thousand times since cities across America took the advice of public health officials and started pumping fluoride - a byproduct of industrial waste - into municipal water systems.

If pharmaceutical fluoride is good for the teeth, the government reckoned, so must be the fluoride created from the mining of phosphate ore - which emits fluoride as the ore is cooked for use in the phosphate fertilizer industry. Another fluoride source comes from the production of aluminum.

But some people didn't trust the notion that this kind of fluoride ingestion had the same benefits as the stuff the dentist smears on teeth. For one thing, industrial fluoride has been shown to accompany harmful substances such as arsenic, even after it's diluted in the water. In 2000, a union of 200 Environmental Protection Agency scientists, lawyers, engineers and other professionals called for a nationwide moratorium on the addition of fluoride to public drinking water.

The group cited studies that linked fluoride to cancer in lab rats, weakening of bone density in older Americans and a growing number of citizens suffering from fluorosis, a condition that causes yellowing of the teeth after overexposure to fluoride, said William Hirzy, a senior scientist with the EPA's risk assessment division since 1981.

The group believes that the government is sticking to outdated theories about fluoride and ignoring new science that shows the dangers of fluoride, Hirzy said in an interview.

"What you have is the government investing its credibility - prematurely and erroneously," he said, "and now, having done that, it's very difficult to say, 'You know what we said 60 years ago? It's not really so.' It's amazing to me that we persist in this practice."

What's amazing to dentists is that people would question the long-standing practice.

According to the American Dental Association, research about the beneficial effects of fluoride dates to the early 1900s, when a young dentist named Frederick McKay opened a practice in Colorado Springs, Colo., and discovered that many

local residents had strange brown stains on their permanent teeth.

McKay and another dentist discovered the cause to be mottled enamel, which is known today as fluorosis.

But McKay noted that these teeth, however stained, were surprisingly resistant to decay, thanks to high levels of naturally occurring fluoride in the drinking water.

That led to a series of studies and the first community water fluoridation program, in Grand Rapids, Mich., in 1945. The ADA claims water fluoridation can reduce the amount of cavities children get in their baby teeth by as much as 60 percent; it can reduce tooth decay in permanent adult teeth by nearly 35 percent.

"The opposition will say it's toxic waste of the phosphate fertilizer industry," said Kurt Ferre, a Portland dentist who has led fluoridation efforts in different parts of the state. "It's a useful byproduct of the phosphate fertilizer industry.

"If you look at the side of a soda can, the fourth ingredient is phosphoric acid - that too is a byproduct of the phosphate fertilizer industry."

While Ferre says it's "difficult to quantify" whether states such as Oregon suffer higher rates of cavities, he argues that states with low fluoridation rates show a greater disparity in dental health between rich and poor citizens. Those with adequate dental benefits or money can afford fluoride treatments and don't have problems as a result. Those who can't afford it have higher cavity rates.

"From a public health standpoint, it's a benefit to all members of the community," Ferre said. "It doesn't discriminate on the basis of race, status, religion or age."

ATTACHMENT 5

June 2012

NSF Fact Sheet on Fluoridation Chemicals

Introduction

This fact sheet provides information on the fluoride containing water treatment additives that NSF has tested and certified to NSF/ANSI Standard 60: Drinking Water Chemicals - Health Effects. According to the latest Association of State Drinking Water Administrators Survey on State Adoption of NSF/ANSI Standards 60 and 61, 47 U.S. states require that chemicals used in treating potable water must meet Standard 60 requirements. If you have questions on your state's requirements, or how the NSF/ANSI Standard 60 certified products are used in your state, you should contact your state's Drinking Water Administrator.

Water fluoridation is the practice of adjusting the fluoride content of drinking water. Fluoride is added to water for the public health benefit of preventing and reducing tooth decay and improving the health of the community. The U.S. Centers for Disease Control and Prevention is a reliable source of information on this important public health intervention. For more information please visit www.cdc.gov/fluoridation/.

NSF certifies three basic products in the fluoridation category:

1. Fluorosilicic Acid (aka Fluosilicic Acid or Hydrofluosilicic Acid).
2. Sodium Fluorosilicate (aka Sodium Silicofluoride).
3. Sodium Fluoride.

NSF Standard 60

Products used for drinking water treatment are evaluated to the criteria specified in NSF/ANSI Standard 60. This standard was developed by an NSF-led consortium, including the American Water Works Association (AWWA), the American Water Works Association Research Foundation (AWWARF), the Association of State Drinking Water Administrators (ASDWA), and the Conference of State Health and Environmental Managers (COSHEM). This group developed NSF/ANSI Standard 60, at the request of the US EPA Office of Water, in 1988. The NSF Joint Committee on Drinking Water Additives continues to review and maintain the standard annually. This committee consists of representatives from the original stakeholder groups as well as other regulatory, water utility and product manufacturer representatives.

Standard 60 was developed to establish minimum requirements for the control of potential adverse human health effects from products added directly to water during its treatment, storage and distribution. The standard requires a full formulation disclosure of each chemical ingredient in a product. The standard requires testing of the treatment chemical products, typically by dosing these in water at 10 times the maximum use level, so that trace levels of contaminants can be detected. An evaluation of test results is required to determine if any contaminant concentrations have the potential to cause adverse human health effects. The standard sets criteria for the establishment of single product allowable concentrations (SPAC) of each respective contaminant. For contaminants regulated by the U.S. EPA, this SPAC has a default level not to exceed ten-percent of the regulatory level to provide protection for the consumer in the unlikely event of multiple sources of the contaminant, unless a lower or higher number of sources can be specifically identified. To address the health effects of the substances, Standard 60 requires that if EPA has not established a Maximum Contaminant Level for a substance, then the toxicology review and evaluation procedures contained in Annex A of NSF 60 should be followed to establish a SPAC.

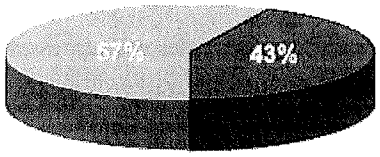
effectiveness of NSF/ANSI Standard 60 and the NSF certification program for drinking water treatment additives, and demonstrates the effectiveness of the program. The reduction in impurities is further attested to by an article in the Journal of the American Water Works Association entitled, "Trace Contaminants in Water Treatment Chemicals."[1]

Arsenic

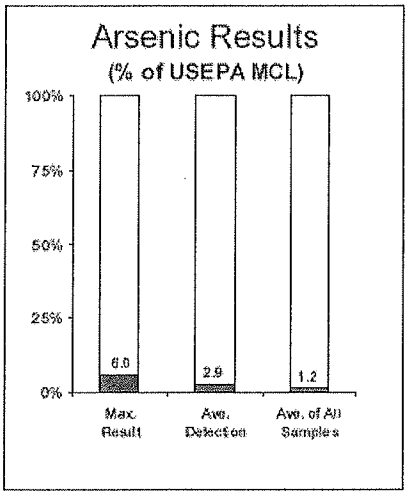
The results in Table 1 indicate that the most common contaminant detected in these products is arsenic, which is detected in 43% of the product samples. This means that levels of arsenic in 57% of the samples were non-detectable. Products were tested at 10 times their maximum use level in accordance to NSF/ANSI Standard 60. All detections were at levels below the Single Product Allowable Concentration (SPAC) if the product is added to drinking water at (or below) its maximum use level. The SPAC, as defined in NSF/ANSI Standard 60, is one tenth of the US EPA's MCL. The current MCL for arsenic is 10 ppb, the highest detection of arsenic from a fluoridation chemical was 0.6 ppb (shown on Table 1), and the average concentration was 0.12 ppb. The highest concentration of 0.6 ppb was detected because NSF/ANSI standard 60 requires testing the chemical at 10 times its maximum use level to detect these trace levels of contaminants.

Figure A

Arsenic was not detectable in 57% of Fluoride products.



Arsenic was detected in 43% of fluoride products; however, the highest recorded arsenic level was 6% of the US EPA MCL.



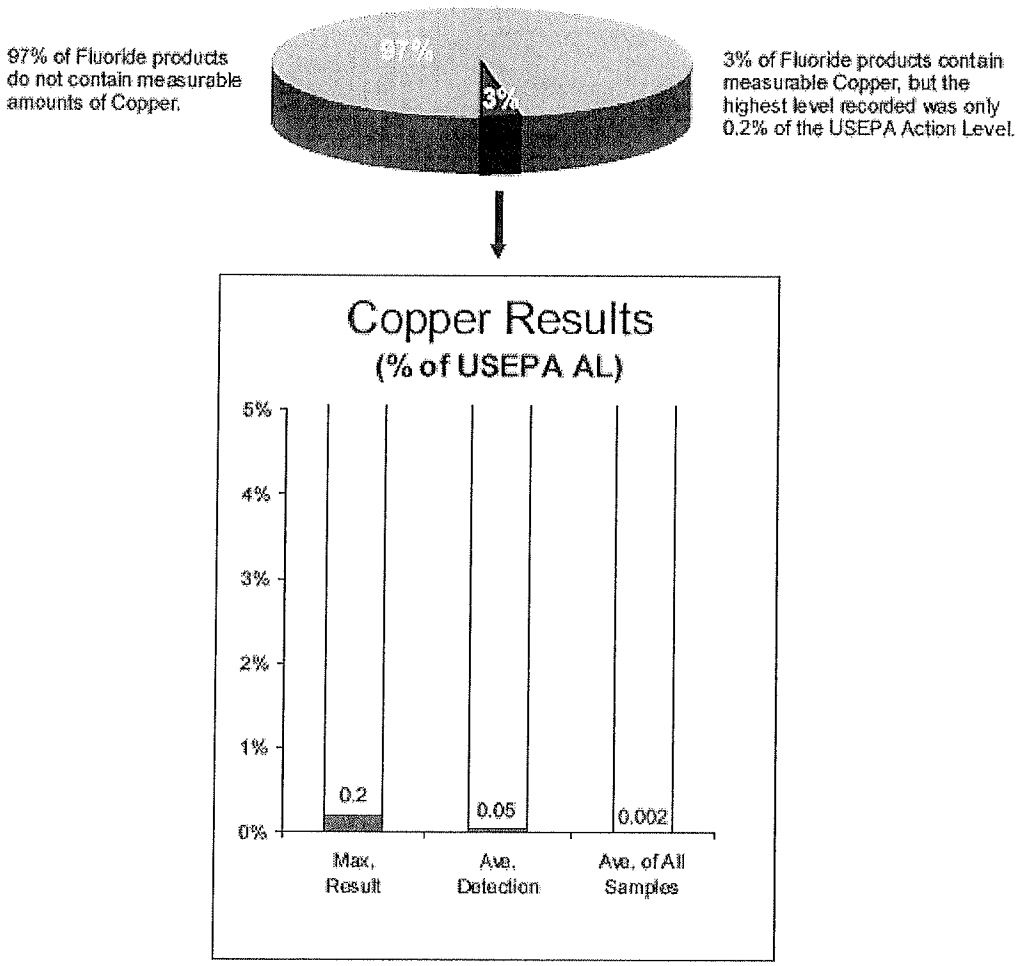
[1] Brown, R., et al., "Trace Contaminants in Water Treatment Chemicals: Sources and Fate." Journal of the American Water Works Association 2004: 96:12:111.

June 2012

Copper

The second most common contaminant found, and on a much less frequent basis, is copper, and 97% of all samples tested had no detectable levels of copper. The average concentration of copper has been 0.02 ppb with 2.6 ppb being the highest concentration detected. This is well below the 130 ppb SPAC requirement of NSF 60.

Figure B



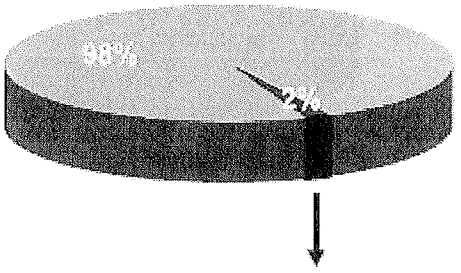
June 2012

Lead

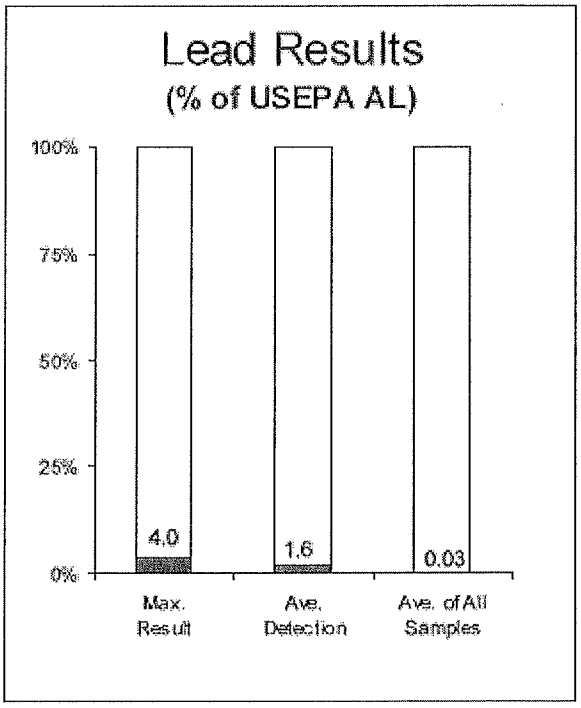
The third most common contaminant found is lead. It occurs on a much less frequent basis, and 98% of all samples tested had no detectable levels of lead. The average concentration of lead ha been 0.005 ppb with 0.6 ppb being the highest concentration detected. This is well below the 1. ppb SPAC requirement of NSF 60.

Figure C

98% of Fluoride products do not contain measurable amounts of Lead.



2% of Fluoride products contain measurable Lead, but the highest level recorded was only 4% of the USEPA Action Level of 15ppb.



Radionuclides
Fluoridation products are also tested for radionuclides. All samples tested have not had any detectable levels of alpha or beta radiation.

Summary
In summary, the majority of fluoridation products as a class, based on NSF test results, do not add measurable amounts of arsenic, lead, other heavy metals, or radionuclide contamination to drinking water.

Additional information on fluoridation of drinking water can be found on the following web sites:

American Water Works Association (AWWA) Fluoridation Chemical Standards
http://www.awwa.org/Bookstore/producttopicsresults.cfm?MetaDataID=121&navItemNumber=5093

American Water Works Association (AWWA) position
http://www.awwa.org/Advocacy/pressroom/fluoride.cfm

American Dental Association (ADA) http://www.ada.org/public/topics/fluoride/index.asp

U.S. Centers for Disease Control and Prevention (CDC) http://www.cdc.gov/fluoridation

Table 1

	Percentage of Samples with Detectable Levels	Mean Contaminant Concentration in all samples (ppb)	Mean Contaminant Concentration in detectable samples (ppb)	Maximum Contaminant Concentration in detectable samples (ppb)	NSF/ANSI Standard 60 Single Product Allowable Concentration	US EPA Maximum Contaminant or Action Level
Antimony	0%	ND	ND	ND	0.6	6
Arsenic	43%	0.12	0.29	0.6	1	10
Barium	<1%	0.001	0.3	0.3	200	2000
Beryllium	0%	ND	ND	ND	0.4	4
Cadmium	1%	0.001	0.08	0.12	0.5	5
Chromium	<1%	0.001	0.15	0.2	10	100
Copper	3%	0.02	0.68	2.6	130	1300
Lead	2%	0.005	0.24	0.6	1.5	15
Mercury	<1%	0.0002	0.04	0.04	0.2	2
Radionuclides – alpha pCi/L	0%	ND	ND	ND	1.5	15
Radionuclides – beta mrem/yr	0%	ND	ND	ND	0.4	4
Selenium	<1%	0.016	1.95	3.2	5	50
Thallium	<1%	0.0003	0.04	0.06	0.2	2

While the attachments here include quoted excerpts of the referenced documents, we encourage reading of the complete documents referenced here.

REFERENECES

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[1] "Fluoride group secures second vote on Portland City Council for $5 million project," by Brad Schmidt, Oregonian. August 16, 2012. (see online at: http://www.oregonlive.com/portland/index.ssf/2012/08/fluoride_group_secures_second.html

[2] http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#2

[3] Thomas Reeves, National Fluoridation Engineer, U.S. Center for Disease Control. The Manufacture of The Fluoride Chemicals, Refer: FL-143 (see online: www.cdphe.state.co.us/pp/oralhealth/fluoridation/fl-143.pdf)

[4] Fluoride in Drinking Water, National Research Council of the National Academy of Sciences, Committee on Fluoride in Drinking Water Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Academies Press, at p. 15 (2006), (download online at http://www.nap.edu/catalog.php?record_id=11571)

[5] http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#2

[6] http://www.cdc.gov/fluoridation/fact_sheets/engineering/shortages_faq.htm

[7] http://thetoothofthematter.org/fluoride-nature-thought-of-it-first/

[8] Oregonians Long Skeptical of Fluoridation. The Register-Guard, July 27, 2004; page C1 (see online: http://www.fluoridealert.org/Alert/United-States/Oregon/Oregonians-long-skeptical-of-fluoridation.aspx)

[9] NSF Fact Sheet on Fluoridation Chemicals, June 2012, as cited and linked to by U.S. Centers for Disease Control website, Water Fluoridation Additives, Measured Levels of Impurities. *See* http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#2

[10] While EPA weakens the health based MCLGs after considering the economic costs of removing such contaminants to obtain EPA's enforceable Maximum Contaminant Levels(MCLs), which are 15 parts per billion for lead and 10 parts per billion for arsenic, these numbers represent an economic based compromise but do not support that knowingly *adding* concentrations of arsenic or lead above is somehow safe. http://water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm; http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm

[11] http://water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm

[12] http://water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm

[13] http://water.epa.gov/drink/contaminants/basicinformation/lead.cfm

[14] The NSF sets standards for fluoridation chemicals and other water additives. See CDC link to NSF study results and fact sheet at http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#2

[15] EPA explains the difference between MCLs and MCLGs stating, "MCLs are set as close to the health goals [MCLGs] as possible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies." http://water.epa.gov/drink/contaminants/basicinformation/arsenic.cfm

[16] NSF Fact Sheet on Fluoridation Chemicals, at p. 4, June 2012, as cited and linked to by U.S. Centers for Disease Control website, Water Fluoridation Additives, Measured Levels of Impurities.

http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#2

[17] NSF Fact Sheet on Fluoridation Chemicals, at p. 5, 6, June 2012, as cited and linked to by U.S. Centers for Disease Control website, Water Fluoridation Additives, Measured Levels of Impurities.
http://www.cdc.gov/fluoridation/fact_sheets/engineering/wfadditives.htm#2

[18] Pollick, HF, "Water Fluoridation and the Environment: Current Perspective in the United Int J Occup Environ Health, 10:343-350, 346 (2004) stating, "Following dilution with water, the calculated range of arsenic concentrations in the finished water contributed by fluorosilicic acid feed is 0.10 to 0.24 µg/L (parts per billion, ppb)."

Parsons, Susan

185612

From: Charles (Charlie) T. LaTourette [charlie@smileonoregon.org]
Sent: Monday, September 10, 2012 8:32 AM
To: Moore-Love, Karla
Subject: copy of Testimony
Attachments: Council Testimony.docx

Attached is a copy of my testimony from the Fluoridation hearing.

Thank you,

Charlie LaTourette
Executive Director
The Dental Foundation of Oregon
503-594-0881
www.SmileOnOregon.org

"We make a living by what we get; we make a life by what we give."
Winston Churchill


Friend us on Facebook

185612

DFO Council Testimony 9/6/2012

Charlie LaTourette
Executive Director
The Dental Foundation of Oregon
PO Box 2448
Wilsonville, OR 97070

The Dental Foundation of Oregon has been working to improve the oral health of Oregon's children since it was founded in 1982. We deliver care on our mobile dental clinic, support nonprofit dental clinics all over the state, including Portland, and promote oral health curriculum in our public schools, there isn't any. We also help educate the public about the importance of good oral hygiene and the benefits of community water fluoridation.

Thousands of low-income children in Portland are suffering dental decay that causes real pain and suffering. They are missing school. And they are ending up in hospital emergency rooms with severe infections that can be life threatening. It doesn't have to be this way.

Decades of research and experience has shown that community water fluoridation reduces dental decay by 25% or more. It is affordable. It is safe. Every major public health organization in the country, from the CDC to the American Academy of Pediatrics recommends community water fluoridation. We have joined the Healthy Teeth Coalition and call for community water fluoridation in Portland so that all children, regardless of their ability to pay, can enjoy this important public health benefit. Thank you.

Parsons, Susan

185612

From: Benjamin Hoffman [benjyhoffman@gmail.com]
Sent: Saturday, September 08, 2012 11:09 AM
To: Moore-Love, Karla
Subject: my testimony-
Attachments: Every time she laughed bh.docx

Good morning- here is a copy of the testimony I was honored to present before the commissioners regarding fluoride.
Thanks!

Ben

Every time she laughed, she put her hand up to cover her mouth.

As her new pediatrician, I had worked hard to make this precocious four-year-old girl feel comfortable with me. I soon realized why she would not show her teeth; she didn't have any; only remnants of them, decayed into grey stumps that blighted her otherwise radiant grin. She was ashamed to show them.

She was born and raised in Portland, and although her single mother did the best she possibly could,, she was raising the girl alone, working two jobs and, by her own admission giving fluoride drops was yet another thing she had to worry about.

My family and I moved to Portland last summer. My wife and I have spent our entire pediatric careers working in underserved communities on reservations and urban safety net clinics. We thought we had seen severe dental disease. It turns out we had seen nothing yet. We were shocked to learn that our new community was so backwards in its approach to community water fluoridation. How could we be so fearful of a proven, safe and effective public health intervention that has been recognized as the gold standard for over 60 years? Our water already has naturally occurring fluoride, just in insufficient concentrations to optimally protect our teeth. Our water department already optimizes the levels of other naturally occurring minerals including sodium and chlorine. . We already accept many nutritional supplements in our food and drink, including iodine in salt, folic acid in bread, and vitamin D in milk. Why is fluoridation treated so differently?

If you review the facts about community water fluoridation, you will find a robust scientific literature spanning decades and conclusively demonstrating the safety, efficacy and cost- effectiveness of fluoridated water. Every dollar invested by the city in fluoridation will save $38 in medical and dental costs and we will decrease the number of childhood cavities, and the consequent fillings, caps and oral surgery by 15-40%. Over 3000 peer-reviewed scientific studies show the unquestioned safety and efficacy of community water fluoridation programs. And none even hints that fluoridated water, as proposed, causes any harm.

I have lived 45 out of my 46 years, and practiced 19 of my 20 as a pediatrician in communities with fluoridated water. If fluoride was indeed a dangerous toxin with adverse health effects- do you not think we would not see differences in health outcomes between our city and those that fluoridate? In fact, the data show only one difference: Children who grow up in communities without fluoridated water have significantly higher rates of dental disease, and the consequent adverse effects thereof. No higher rates of cancer, autism, birth defects, or any other category of illness or disability.

The true cost of fear around water fluoridation is bourn by our entire community, but is paid most dearly by our children, who have neither choice, nor voice, in the matter. We are better than that.

No child should ever have to hide her smile.

185612

Testimony re: Fluoridation; Portland City Council; September 6, 2012

I am Dr. Robert Mendelson. I was born and raised in Portland and have practiced Pediatrics here for over 40 years. I am the father of four and the grandfather of 8 all of whom received supplemental oral fluoride.

Every child health organization to which I belong strongly supports fluoridation at 0.7 ppm for all drinking water. These include:

American Academy of Pediatrics (National Spokesperson); Oregon Pediatric Society (Board Member); Children's Health Alliance /Children's Health Foundation (Board Member).

Our fluoridation coalition now has 77 organizations interested in the dental and medical health of our children. They are in full support of the proposed fluoridation of our water.

I prescribed oral fluoride for all my patients who lived in non fluoridated areas. Some of my patients were fortunate enough to live in fluoridated communities such as Vancouver and Beaverton so did not require the supplement. During my 40+ years in practice I did not see one case of fluorosis because the doses of Fluoride prescribed were at the recommended level.

I am most concerned about the unfortunate children who do not receive adequate medical or dental care and those who can't afford oral or topical fluoride. I also want to mention that there is no effect of fluoride on thyroid function suppression as was mention in earlier testimony.

I currently live in the West Slope Water District which is contiguous with Beaverton. I believe that residents of WSWD would endorse fluoridation if asked. It is embarrassing to practice in the largest community in the U.S. which has not made arrangements to fluoridate it's (our) water.

I urge you to implement fluoridation of our water as soon as possible.

Robert A. Mendelson MD, FAAP

Parsons, Susan 185612

From: Sally.J.Little@kp.org
Sent: Friday, September 07, 2012 4:07 PM
To: Moore-Love, Karla
Subject: Pro Water fluoridation testimony follow-up

Mayor Sam Adams and Commissioners

Last night when I testified it was well after 7:00 and I ended up shortening my brief written testimony to 30 seconds and did not clearly state what I had written. I am providing this brief written testimony in hopes you will review it and contact me should you be at all concerned with any opposition to water fluoridation based on the study mentioned in my testimony for which I am a co-author. I left a copy of the study last night with the clerk and would be happy to answer any questions you have. You may contact me on my cell (503) 734-8456 or work (503) 813 3446.

Thank you for your consideration,

Sally Jo Little

Water Fluoridation Testimony:

My name is Sally Jo Little. I am a dental hygienist with a Master's in Public Health. I worked for Kaiser Permanente Center for Health Research for 17 years. I co-authored a study that is frequently misrepresented by opponents to fluoridation. It compared dental treatment costs in fluoridated and nonfluoridated areas in the Portland metropolitan, Marion county and Clark county areas. "A comparison of dental treatment utilization and costs by HMO members living in fluoridated and non-fluoridated areas". (Maupomé G, Gullion CM, Peters D, Little SJ Journal of Public Health Dentistry 2007, 67(4): 224-233).

We studied people who had dental insurance and access to dental care, and found that most age groups in fluoridated sites had fewer restorations and thus lower dental costs. Elders appeared to have the greatest difference in need for dental treatment – older people living in fluoridated areas needed fewer services, and had lower costs than older people living in non-fluoridated areas.

Some anti-fluoridation activists have selected pieces of data from this paper in an attempt to discredit water fluoridation's impact in reducing tooth decay and saving money. This is simply misapplication of the study and using pieces of the findings out of the context.

There are many factors in this study that played into minimizing the effects of fluoridated water on need for restorative dental care and associated costs. I would be happy to discuss these with you if you are interested. Said simply, If we had accounted for total fluoride intake or living consistently long-term in a fluoridated or nonfluoridated water community, I expect the outcome would have shown an even stronger correlation between fluoridation and lower need for dental treatment.

In a non-insured population with limited access to dental care, water fluoridation is even more important.

I've treated patients as a volunteer. I've seen the worst dental disease in people who cannot afford dental care and have not had protection of optimally fluoridated water. These children and adults could have avoided much of the suffering and pain of tooth decay if they lived in a city with fluoridated water.

I trust your intelligence to rationally weigh the evidence and trust your integrity as Mayor and Commissioners to make the decision to fluoridate our city's drinking water for the greater good of our citizens.

Sally J Little RDH, MS
Dental Service Consultant, Dental Care Program
Kaiser Foundation Health Plan of the Northwest
500 NE Multnomah St
Portland, Oregon 97232-2009

Sally.J.Little@KP.org
office: 503 813-3446 tie; (49) 3446
cell: 503 250-0976

185612

185612

Testimony Before the Portland City Council
In Support of Fluoridating Portland's Drinking Water
September 6, 2012

My name is Grayson Dempsey and I am the mother of two girls, ages 2 and 4, both of whom are native Portlanders. It is appalling to me our city's water is not fluoridated. Both of my daughters are still learning to properly brush their teeth, and only began receiving prescription fluoride supplements about a year ago when their pediatrician and dentist highly recommended it. Prior to that, I was unaware of the critical role that fluoride supplements play in the lives of Portland children because of the fact that we live in a city without fluoridated water. Both my husband and I grew up in towns where the water was fluoridated and we have strong, healthy teeth, and I fear that my naivete during the years when my children's teeth were developing may have set the stage for future dental problems.

I have heard parents talk about their opposition to fluoridated water and have done my own research, as well as listened closely to the pediatricians and dentists that my family trusts. To me it seems that the benefits of fluoride far outweigh the unproven risks. Without fluoridated water, I am concerned that too many parents, like myself in the early years of my children's life, will forego giving fluoride supplements because they are not educated about the benefits or are unable to obtain the prescription and administer it consistently. Even though I am fortunate in that my family has dental insurance and a flexible schedule, it can still be hard to get all four of us in for our regularly scheduled dental appointments, and I am very aware that many families lack insurance and/or the ability to leave work to get their children in to the dentist for regular check ups and cleaning – which results in more cases of untreated and rampant decay, as well as Emergency Room visits and missed school and work days to deal with pain and treatment. Knowing that tooth decay is the most common childhood disease, and knowing that over 35% of Oregon children have untreated tooth decay (putting us at the bottom of almost all states in the nation for children's dental health), I feel it would be *irresponsible* of us not to take this opportunity to fluoridate our water and have a positive effect on our children's health that will last them a lifetime.

Thank you for your time and commitment to this important issue.

Grayson Dempsey
5239 NE Garfield Ave
Portland, Oregon 97211

185612

Nancy Crumpacker
2351 NW Westover Rd, #701
Portland, OR 97210

Phone: 503-292-1035
Fax: 503-297-0754
nancycrumpacker@comcast.net

September 6, 2012

Mayor Adams and Commissioners Fish, Fritz, Leonard, and Saltzman;

Though dental and medical groups maintain the safety of water fluoridation, there is strong evidence to the contrary.

I am a retired cancer physician and want to share with you some alarming risks to our health and the supporting science.

Carcinogenicity – the ability to produce cancer
The National Research Council's (NRC) committee on fluoride toxicology unanimously concluded in 2006, "Fluoride appears to have the potential to initiate or promote cancers, particularly of the bone, but the evidence to date is tentative and mixed."[1]

Human studies show conflicting results with some finding no association between fluoride and cancer. But some studies raise concern. In 1992 the New Jersey Department of Health reported a statistically significant higher incidence of osteosarcoma in young men in fluoridated vs. non-fluoridated municipalities.[2] Osteosarcoma is a bone cancer that may result in amputation of an affected limb and even death. A 2006 study from the Harvard School of Dental Medicine showed a statistically significant association between tap water fluoride at levels common in US water supplies and osteosarcoma in boys.[3] In this study, the age range for which this association was most apparent was for exposures at ages 4-12 years, with a peak at ages 6-8 years. At the very least, this work indicates that studies of childhood osteosarcoma that have not looked at intake related to age of exposure cannot be considered to show "no effect."

Proponents of water fluoridation will use the 2011 study from Harvard and other US medical institutions as proof that water fluoridation is not linked to osteosarcoma.[4] There are 3 major problems with this study. First, the study did not address age of exposure. It measured the level of fluoride in bone, which accumulates over a lifetime. Second, the comparison group was patients with other forms of bone cancer - fluoride may cause other types of bone cancer, so a difference will not be evident. Third, the comparison group was much older and would have higher fluoride levels from life-long accumulation masking a difference.

A Japanese study of US cancer registry data found that cancers of the mouth, colon, liver, kidneys, bladder, and bone were associated with fluoridated drinking water.[5]

US and Indian scientists found a gene mutation common in cancer in samples of bone from osteosarcoma patients and the samples contained very high fluoride levels. They concluded, "...high fluoride bone content might have been one of the major factors causing osteosarcoma."[6]

It is reasonable that fluoride is associated with bone cancer because it accumulates in bone and causes division of immature bone cells increasing the risk that some cells will become malignant.

Genotoxicity – the ability to damage the genetic material of cells
Genotoxicity is considered indicative of potential carcinogenicity. A number of mammalian systems have shown dose-dependent cell transformational effects from fluoride exposure. Several reports suggest an indirect mechanism such as inhibition of DNA synthesis or of repair enzymes, rather than directly causing mutations.[7 8 9].

Increase in the risk of bone fractures and skeletal fluorosis
Chronic exposure to fluoridated water, even as low as 1 part per million, has been shown to increase the risk for bone fractures in the elderly, especially the hips.[10] This correlates with clinical trials of high daily doses of fluoride failing to treat osteoporosis, a condition of brittle bones.[11] Despite increasing bone density, fluoride alters the crystal structure to render bone more susceptible to fracture and causes a condition called skeletal fluorosis.

Chachra reported bone fluoride content for residents of Toronto (fluoridated for 32-36 years at the time of the study) who underwent total hip replacement surgery; most of the individuals had a diagnosis of arthritis.[12] Two of the 53 patients had bone fluoride concentrations in the range of skeletal fluorosis. The study indicates bone fluoride concentrations in citizens of fluoridated North American cities can be in the range reported for skeletal fluorosis.

Bone fluoride concentrations, radiologic changes, and symptoms are not clearly correlated.[13] Most studies address high fluoride exposures over a few years; there has been no investigation of effects of low long-term exposures and no effort to identify skeletal fluorosis in the U.S. Arthritis is the leading cause of disability in the U.S. and currently affects at least 50 million adults in the U.S.[14] The possibility that a significant fraction of U.S. adults with arthritis is attributable to fluoride exposure has not been investigated, and it is plausible, given what is known about fluoride intakes.

Danielson reported an increased risk for hip fracture in a fluoridated area for women and men.[15] These authors reported a difference between women exposed to fluoride prior to menopause and those exposed afterwards. For women exposed prior to menopause, the fracture risk was considerably higher than for those not exposed to fluoride. Many studies of fracture risk have not looked at age-specific exposure, or have involved women exposed only after menopause, when fluoride uptake into bone is probably substantially lower.

Until more studies such as those suggested by the National Research Council in 2006 are performed, we must take a precautionary approach. At this time, I urge the Portland City Council to avoid making the mistake of adding fluoride to our drinking water.

[1] National Research Council. Fluoride in Drinking Water: A Scientific Review of EPA's Standards. 2006;336 [Available: http://www.nap.edu/catalog/11571.html]
[2] Cohn PD. A brief report on the association of drinking water fluoridation and the incidence of osteosarcoma among young males. New Jersey Dept. of Health, Nov. 8, 1992.
[3] Bassin EB, Wypij D, Davis RB, Mittleman MA. Age-specific fluoride exposure in drinking water and osteosarcoma. Cancer Cause Control 2006;17:421-428.
[4] Kim FM, et al. An Assessment of bone fluoride and osteosarcoma. J Dent Res. 2011 Oct;90(10):1171-6.
[5] Takahashi K, Akiniwa K, Narita K. Regression analysis of cancer incidence rates and water fluoride in the USA based on IACR/IACR (WHO) data (1978-1992). J Epidemiol 2001;11:170-9.
[6] Ramesh N, et al. Low levels of p53 mutations in Indian patients with osteosarcoma and the correlation with fluoride levels in bone. J Eviron Pathol Toxicol Oncol. 2001;20:237-43.
[7] Lasne C, Lu YP, Chouroulinkov I. Transforming activities of sodium fluoride in cultured Syrian hamster embryo and BALB/3T3 cells. Cell Biology and Toxicology 1988;4(3):311-324.
[8] Aardema MJ, Tsutsui T. Sodium fluoride-induced chromosome aberrations in different cell cycle stages. Mutation Research 1995;331:171-172.
[9] Meng Z, Zhang B. Chromosomal aberrations and micronuclei in lymphocytes of workers at a phosphate fertilizer factory. Mutation Research 1997;393:283-288.
[10] Danielson C, Lyon JL, Egger M, Goodenough GK. Hip fractures and fluoridation in Utah's elderly population. JAMA 1992;268:746-748.
[11] Eastell R, Riggs BL. New approaches to the treatment of osteoporosis. Clin Obstet Gynecol. 1987;30(4):860-70.
[12] Chachra D, Limeback H, Willitt TL, Grynpas MD. The long-term effects of water fluoridation on the human skeleton. J Dent Res. 2010;89(11):1219-1223.
[13] Franke J, Rath F, Runge H, Fengler F, Auermann E, Lenart GL. Industrial fluorosis. Fluoride 1975;8:61-85.
[14] http://www.cdc.gov/arthritis/data_statistics.htm
[15] Danielson C, Lyon JL, Egger M, Goodenough GK. Hip fractures and fluoridation in Utah's elderly population. JAMA 1992;268:746-748.

185612

September 6, 2012

AUDITOR 09/06/12 PM 4:19

LOCAL 49
SEIU
Stronger Together

SERVICE EMPLOYEES
INTERNATIONAL UNION

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SEIU 49 & 503 Support Healthy Teeth and Fluoridating Portland's Water Supply

Mayor Adams Members of the Council

I am Felisa Hagins, Political Director at the Service Employees International Union (SEIU) 49 and I am here today on behalf of both SEIU 49 & SEIU 503 in support of fluoridating the water supply.

SEIU is the largest union nationally and in Oregon with over 62,000 members. SEIU represents janitors, security officers, hospital and clinic workers, public workers, nursing home workers, child care and home care workers. We are the largest health care union in the state of Oregon. Members in our union represent the spectrum of health care coverage, from fully paid family health plans that include dental care, to no health care at all for themselves or their children. They are also the direct care providers in nursing homes, hospitals and clinics and see the effects of the health care crisis that our nation faces daily at the bedsides and in, in home care settings.

We are here in support of fluoride today because our union believes strongly that healthy teeth, equate to a healthy body, and unhealthy teeth can be a barrier to economic stability as well as a danger to a person's overall health. A rotten set of teeth is an enormous obstacle to securing a good job. We all know the importance of a good education and the ability to communicate in the world of employment but we also know the difference an attractive smile makes versus the negative effect of a smile from someone who has a mouth filled with decaying teeth. There is a reason that parents who can afford it spend what it takes to keep their children's teeth healthy and that they will spend $5,000-$10,000 per child for orthodontics to straighten crooked teeth. Healthy teeth matter.

The fluoridation of drinking water to prevent dental caries is one of the 10 great public health achievements of the 20th century. Our nation's understanding of community water fluoridation is based on more than 60 years of research, which indicates that water fluoridation is a safe and cost effective approach to prevent tooth decay. For every $1 invested in fluoridation, we save $38 in dental care. Every U.S. Public Health Service Surgeon General in over half a century has committed his or her support for community water fluoridation. The CDC's website for fact sheets on water fluoridation can be accessed at *http://www.cdc.gov/fluoridation/*

Our failure to join the rest of the country on this issue is irresponsible and contrary to our reputation as progressive leaders. Water fluoridation is safe and effective in preventing dental decay and the associated costs of dental care. Our lack of fluoridation negatively impacts the lives of thousands of Portland residents every year and has a disproportionate impact on the working poor and families without dental care. Water fluoridation is not only a public health issue, but an issue of equity.

The cost of fluoride pills can be up to $30 per month, or 3 hours of work on a minimum wage salary, and that's for one child. Many parents cannot afford this expense, and particularly if they have more than one child.

We know that prevention is critical in reducing healthcare costs, and as health care costs continue to eat up larger and larger portions of public budgets, it's an imperative that we all do our part. Fluoride will reduce healthcare costs. Fluoridation of our water supply will give all children an enhanced opportunity to grow up with a healthy smile and a healthy prospect of getting a good job as an adult.

We urge the council to take health equity, and public health to reflect our values as a city and fluoridate Portland's water system.