

Parsons, Susan

From: Teri Barichello [baricht@odscompanies.com]
Sent: Tuesday, September 11, 2012 2:56 PM
To: Adams, Mayor; Leonard, Randy; Commissioner Saltzman; Commissioner Fish; Commissioner Fritz
Cc: Moore-Love, Karla
Subject: pro-fluoride testimony
Attachments: Barichello Fluoride Testimony4.docx

Greetings to all,

I forgot to leave a copy of my testimony with you last week at the fluoridation hearing. I've attached it for your reference.

I want to sincerely thank you all in advance for your consideration of this incredibly important public health measure and urge you each to please vote **yes**.

Kindest regards,
Teri Barichello, DMD

Teri Barichello, DMD
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9/11/2012

Good afternoon, my name is Dr. Teri Barichello and until last year, I practiced general dentistry in Oregon City. Now I am the Vice President and Chief Dental Officer at the ODS Companies.

In my 13 years of private practice, I witnessed more than my share of preschool aged children with bombed out mouths, full of rotted and discolored teeth. So many were in a lot of pain and all were in a situation that no child should have to deal with.

Rarely, I witnessed dental fluorosis, which is not a disease but rather affects the way that teeth look. In the vast majority of cases, enamel fluorosis appears as unnoticeable faint white lines or streaks on tooth enamel and does not affect the function or health of the teeth. In fact, in many cases, the effect is so subtle that, usually only a dental expert would notice it during an exam. Enamel fluorosis occurs only when baby and permanent teeth are forming under the gums. Once teeth break through the gums, they cannot develop fluorosis.

The vast majority of fluorosis can be prevented by stopping children from swallowing highly concentrated topical fluoride products, such as fluoride toothpaste. Parents and caregivers should put only a pea-sized amount of fluoride toothpaste on a child's toothbrush and always provide supervision.

Fluoride works in two very different ways, systemically and topically. Systemically, when fluoride is ingested while teeth are still forming under the gums, it alters the physical structure of enamel, strengthening it, making it inherently resistant to cavities. When fluoride is applied topically after teeth erupt, it helps to remineralize weakened enamel and reverse early signs of tooth decay. Fluoride you take in from drinking fluoridated water continues to provide a topical benefit because it becomes part of your saliva, constantly bathing your teeth and continuing to rebuild weakened enamel.

There is absolutely no way to compare the pain and suffering children with cavities experience, with those that have fluorosis. The first is full blown dental disease, while the other is more often than not a minor esthetic issue, rather than a problem. Children with fluorosis are not experiencing any pain, discomfort or suffering unlike those with cavities and dental disease.

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 backers⁷ 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)

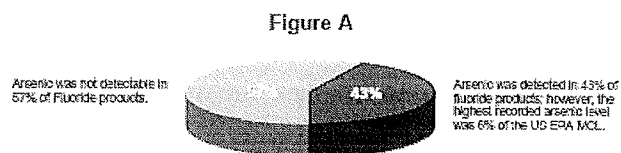
There is no rationale basis for adding an industrial byproduct to Portland drinking water in light of what we know in 2012 about the importance of clean water.

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



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.

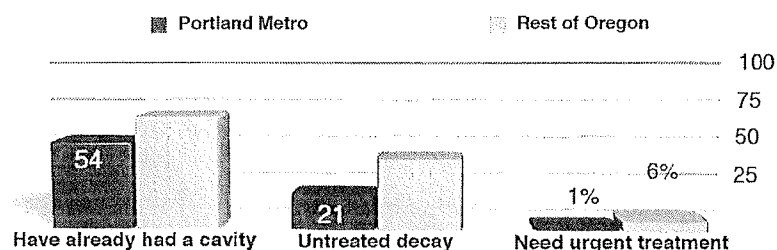
This is supported by data from both the CDC and the 2007 Oregon Smile Survey relied on heavily by fluoridation proponents. This data shows:

- 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 data²⁰, 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 data²¹, 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.cdph.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>

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)

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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 backers⁷ 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 contaminants 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 contaminants.

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 contaminants 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 contaminants that are already in the drinking water but are hardly a reasonable reference point for contaminants 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 promoters¹⁸ 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 contaminants 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 than 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

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
OF THE NATIONAL ACADEMIES

THE NATIONAL ACADEMIES PRESS
Washington, D.C.
www.nap.edu

INTRODUCTION

15

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

Home	About CDC	Press Room	A-Z Index	Contact Us
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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.

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.

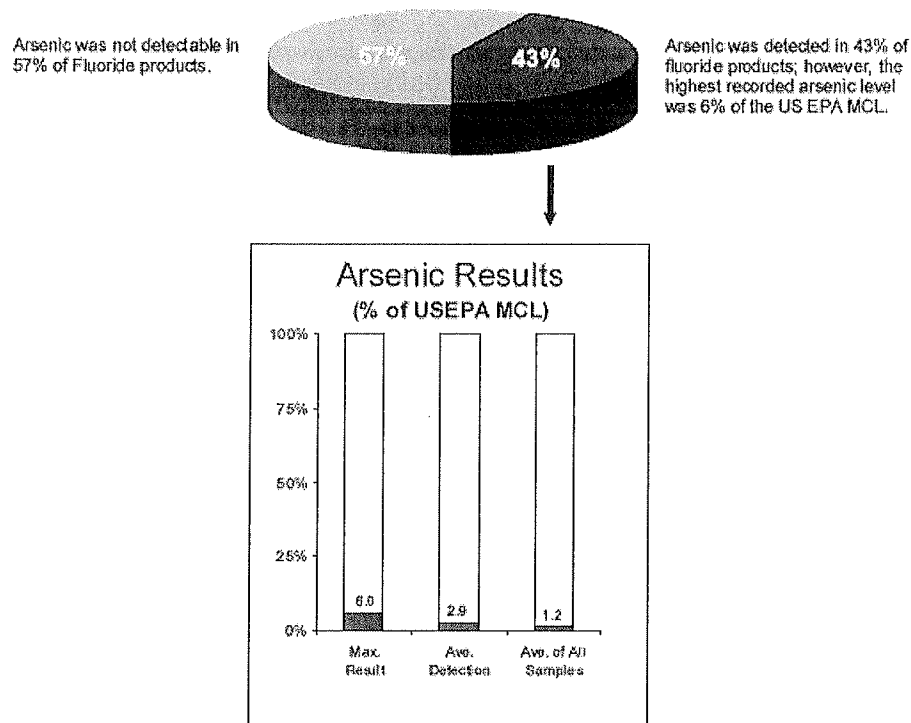
June 2012

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

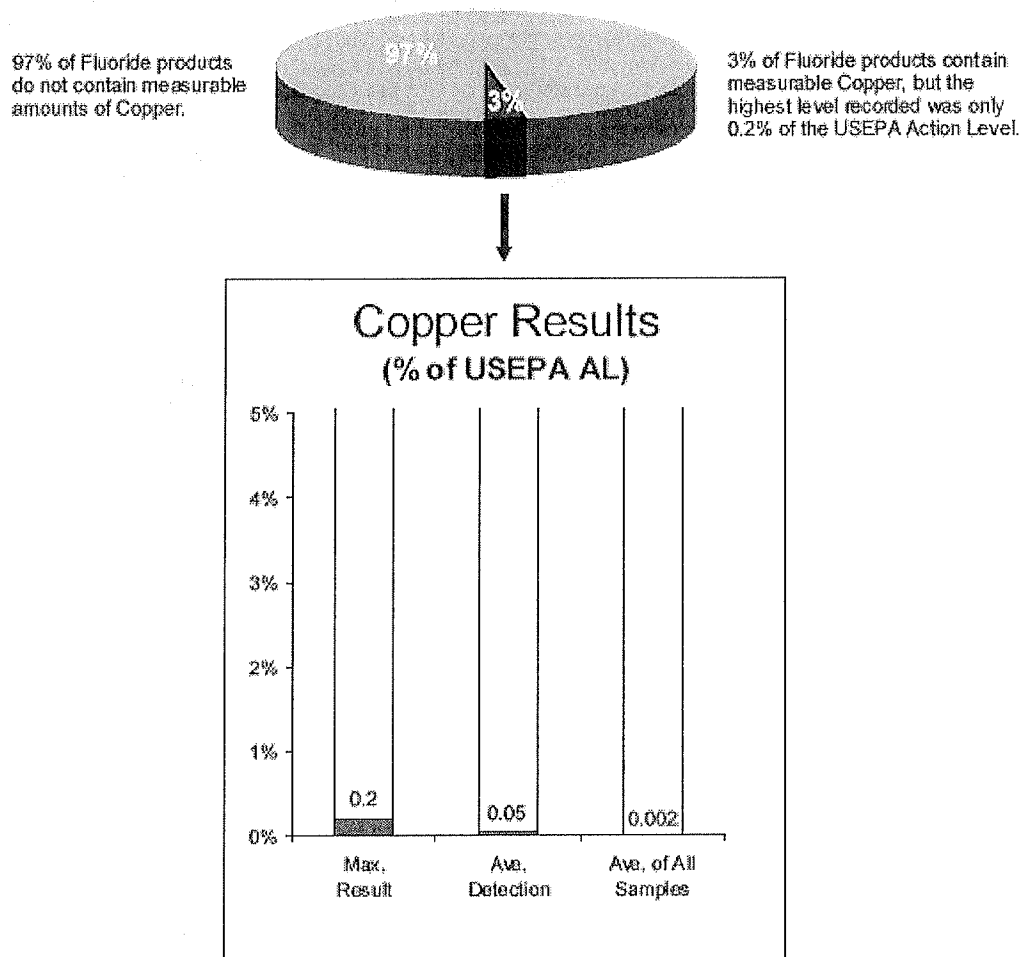


¹ Brown, R., et al., "Trace Contaminants in Water Treatment Chemicals: Sources and Fate." Journal of the American Water Works Association 2004; 96:12:111.

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.

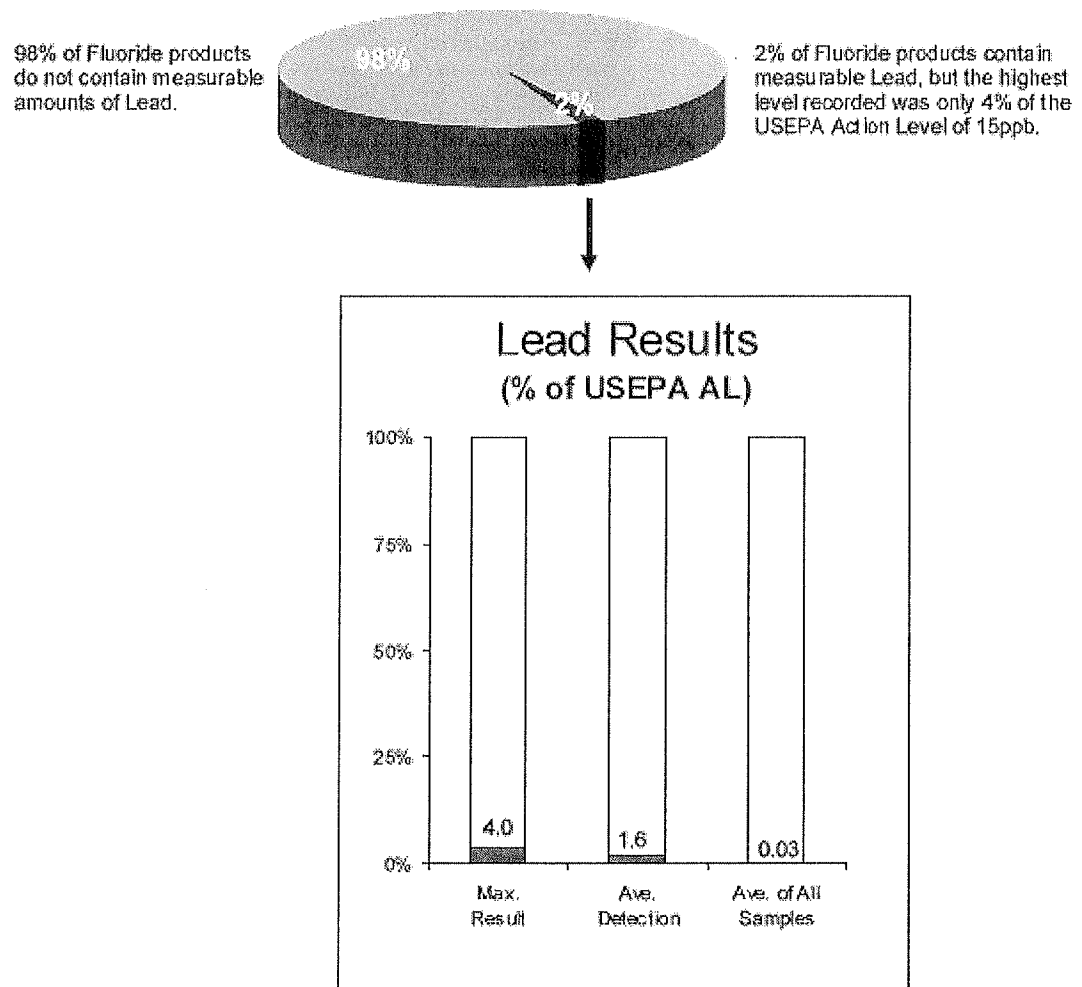
Figure B

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 has been 0.005 ppb with 0.6 ppb being the highest concentration detected. This is well below the 1.0 ppb SPAC requirement of NSF 60.

Figure C



JUNE 2014

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.

REFERNECES

- 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)."

185612

August 28, 2012

Sam Adams, Mayor
Commissioner of Finance and Administration

Amanda Fritz, Commissioner
Commissioner of Public Utilities

Nick Fish, Commissioner
Commissioner of Public Works

Randy Leonard, Commissioner
Commissioner of Public safety

Dan Saltzman, Commissioner
Commissioner of Public Affairs

City of Portland
1221 SW 4th Avenue
Portland, OR 97204



West Slope Water District
3105 SW 89th Avenue
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Office 503 292-2777

Fax 503 297-1179

Dear Mayor Adams and Portland City Council Members,

We, the Board Members of West Slope Water District (WSWD) are writing to you to express our concern with the Portland City Council's aggressive time-line and lack of an adequate public process for considering the proposal to fluoridate Portland's water supply. Because of these concerns we are requesting that you and the Council put into place a process that provides a thorough review of the proposal to fluoridate Portland's water and involves all of those potentially impacted including all of your wholesale partners.

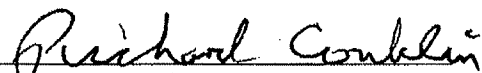
WSWD, with a service population of over 11,000 is located on the Westerly boundary of the City and extends westward to Hwy 217. The District is bounded on the North by Hwy 26 and generally on the South by Beaverton Hillsdale Hwy. Incorporated as a Special District under Oregon Statute in 1922, WSWD has been a customer of Portland's water supply system for 90 years. During this current fiscal year, WSWD will pay approximately \$1.0 million to Portland for water supplies. WSWD has no other water supply option except an emergency connection with Tualatin Valley Water District; therefore, if fluoride is added to Portland's water, it will also be consumed by WSWD customers.

As of this writing, no Board Member nor the management or staff of the WSWD has received any communication from the management or staff of the Water Bureau or member of the City Council with regard to your proposal to fluoridate Portland's water supply. As a customer of Portland of over 90 years, we are appalled that no effort has been taken to consult or advise us in any way on this issue. All of our information about the proposal to fluoridate has been the result of information in the local media. As of this time we do not have a position by the Board regarding the fluoridation of our customer's water, but we are greatly alarmed that you are proceeding without a process including consultation with your

wholesale partners, that provides adequate time for considering an issue that has proven to elicit strong opinions from opponents and supporters alike.

Un-fluoridated water has flowed from the Bull Run to facilitate the needs of this region since 1896. Taking time to consult with and involve both your retail customers and wholesale partners would be time well spent if your intentions are to protect the health and quality of life of the regions citizens. To be hasty in your imposition of fluoride in the region's water supply may well jeopardize your intentions and risk your relationship with others in the region.

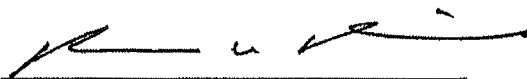
Sincerely,


Richard Conklin, Commissioner


Charles Conrad, Treasurer


Donna Davis, Secretary


Thomas Marineau, Commissioner


Robert Rieck, Chair

cc. LaVonne Griffin-Valade, City Auditor
David Schaff, Water Bureau Administrator
Steve Novick, Commissioner - Elect
Charlie Hales, Mayoral Candidate
Jefferson Smith, Mayoral Candidate
Mary Nolan, Council Candidate

September 6, 2012

Dear City Council,

In communicating with a friend recently she eloquently shared the following words with me. I believe they hold true for many of us.

“Why are we as neighbors, at best, placed in a situation where we are voting on medication for our neighbors? Would we tolerate forcing others to ingest any other drug? For me, it is entirely inappropriate, if a slight bit better. then having it forced on us by our city commissioners and mayor especially when the drug is contaminated with arsenic and lead and lacks FDA approval.”

I have enclosed as documentation of my testimony; a petition with over 400 signatures asking for a public vote on this important issue, a letter forwarded to local health care providers, parents, business owners, and concerned citizens addressing 16 points of concern, along with documented references.

In summary, I do not support water fluoridation, and especially without public vote.

1. It bypasses our right to informed consent.
2. It is not the same as creating legislation for seat belt laws or to wear a helmet, as we, the citizens of Portland, have no ability to opt out.
3. **It is you the City Council Commissioners and Mayor that are ultimately responsible** and liable for those in our community at risk drinking fluoridating water.

Medicating water causes risks to those with chemical sensitivities

Those in our community with multiple chemical sensitivity (MCS) have been recommended by their physicians to avoid fluoride in water, a known incitant. We are aware fluoride can only be filtered with reverse osmosis filtration devices. These devices filter approximately 93% of fluoride and do not work for shower or baths. They are expensive and are likely outside of financial means for the under insured who desire healthy teeth but not systemic fluoride sources that may put them at risk.

The American Academy of Environmental Medicine explains MCS as “a very real chronic medical condition that has been only slowly gaining the public recognition it deserves. Recent estimates suggest that chemical sensitivity, that is, hyper-reactivity to various environmental agents (also known as incitants or triggers), may afflict something like 10-15% of the American population.” Fluoride-containing water is considered an incitant. <http://www.aaemonline.org/chemicalsensitivitypost.html>

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,” and that they support “banning the

addition of fluoride or products containing fluoride to public water supplies.”

<http://www.aamonline.org/images/FluorideResolution.pdf>

4. **EPA's regulatory authority over fluoride is as a contaminant only;** in its own words, EPA has no authority over water additives, including chemicals used for fluoridation. (1,2)

5. **That responding to Congressional inquiry (12/21/2000), FDA has confirmed that, when ingested for prevention/mitigation of tooth decay, fluoride is not just some mineral, but a drug under FDA regulation, one it has never reviewed or approved for that purpose. (3)** In other words, the so called “health benefit” providing the loophole that allows the fertilizer industry to dispose of its toxic waste in drinking water has never been confirmed by the only agency given by Congress the authority to do so—FDA.

6. **That science of the late 1980's and the 1990's disproved the dental community's long-held hypothesis that fluoride's action is systemic. The current consensus, as reported by the CDC in 2001, is that "...fluoride's predominant effect is posteruptive [after teeth have erupted through the gums] and topical."** Many professionals are now questioning the wisdom of swallowing fluoride. (4)

7. (Many professionals question how an "optimal" concentration can deliver an "optimal" dose to each and every individual considering dramatic variances in our exposure to fluoride from other sources and the amount of water we each consume.)

8. **That consumers will ingest fluoridation products entirely at their own risk. NO ONE is responsible/liable for harm.** Manufacturers of these chemicals will not stand behind their products as either safe or effective for the purpose for which they are added when used as directed. Here's the disclaimer that appears on the MDS sheet for one of the largest suppliers in the U.S., Mosiac: The information in this document is believed to be correct as of the date issued. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. This information and product are furnished on the condition that the person receiving them shall make their own determination as to suitability of the product for their particular purpose and on the condition that they assume the risk of their use thereof. The conditions and use of this product are beyond the control of Mosaic, and Mosaic disclaims any liability for loss or damage incurred in connection with the use or misuse of this substance. (5)

9. **That these “products,” namely hydrofluorosilicic acid and its salt forms,**

sodium fluorosilicate and sodium fluoride, are classified as hazardous wastes and cannot legally be disposed of in the air, rivers, lakes, ocean, or on land, but by marketing them as “products” for a “health benefit,” they are being diluted into public water systems (saving industry expensive disposal at a Class 1 hazardous waste facility). (6, 7)

10. That, according to the American Water Works Association, people ingest less than 1 percent of treated water, **meaning most of this toxic waste ends up in the very environment industry is prohibited from polluting directly.**

11. **That responding to Congressional inquiry (7/7/2000), NSF, International,** the private organization involved with fluoridation product certification to “voluntary” standards, (8) **confirmed a host of contaminants in the product (after dilution in water), showing as much as 1.66 parts per billion arsenic.** Product, NSF says, is not tested per batch, but just once per year.

12. The trend in science has been to show that lower and lower levels of a toxin cause harm. Because **current science shows NO amount of lead or arsenic to be safe for long-term ingestion in drinking water, EPA has established public health goals (MCLGs) for these toxins at zero.** It is completely unscientific for promoters to suggest that these “tiny” amounts of toxins in fluoridation products will do no harm.

13. That **no “gold standard” study,** the standard we would expect for a drug administered to whole populations, i.e., **a randomized, controlled trial, has ever been done on fluoride in drinking water.**

14. **That credible, recent, peer-reviewed science raises legitimate questions over adverse health effects, even at the so-called “optimal” level,** with a focus on bone pathology (including osteosarcoma and increased hip fracture in the elderly), kidney, thyroid, and brain damage. **As much as promoters want to dismiss concerns, the science is by no means settled and trends toward more concerns, not fewer.**

15. **That children (all of us, actually) are already receiving significant doses of fluoride from foods and beverages.** Here are a few important examples:

- This dental journal study looked at 43 different fruit juices and found that 42 percent of the samples had more than 1 part per million fluoride (the current, newly revised recommendation for drinking water is less than that—0.7 ppm). Gerber white grape juice tested out highest at 6.80 ppm, or nearly 10 times the current recommended level for water!
- This dental journal study looked at fluoride levels of 332 soft drinks and found they “ranged from 0.02 to 1.28 ppm, with a mean level of 0.72 ppm. Fluoride levels exceeded 0.6 ppm for 71 percent of products.” (9)
- This peer-reviewed study looked at fluoride levels in mechanically deboned

chicken products and found: "A single serving of chicken sticks alone would provide about half of a child's upper limit of safety for fluoride." (10)

16. That fluoride exposure has become so ubiquitous, dental fluorosis (DF) rates are out of control. This permanent damage to teeth, downplayed by dentists as "merely cosmetic," is defined by Taber's Medical Encyclopedia (2001 edition) as "chronic fluorine poisoning, sometimes marked by mottling of tooth enamel." Even proponents admit that in its more severe forms, tooth functionality is compromised. Pitted enamel leaves a tooth vulnerable to decay, and fluorosed teeth are more brittle and prone to fracture. The scientific literature shows that fluorosis causes embarrassment and psychological harm (see studies, <http://www.slweb.org/bibliography.html#DFperceptions>). Based on the CDC study referenced next, we can expect 2-5 percent of Portland's child population to experience the moderate-to-severe form of this damage. (11)

17. We ask that fluoridation proponents use statistics that compare Portland to the rest of Oregon, and Portland to the nation. Comparing Oregon statistics to Washington as a reason to fluoridate Portland's citizen makes no sense. When using the CDC Oral Health webpage data, Portland's children rank as having the 15% lowest rate of cavities experiences in the U.S. When looking at 2007 data from Smile Survey, Portland children have a cavity rate at 54%, compared to 70% of children outside Portland. This is true even though only 8% of the Portland area is fluoridated, where as 33% of Oregon residents outside of Portland metro are fluoridated.

18. We the citizens of Portland ask for healthy teeth for everyone, as well as healthy bodies. Your endorsement affects all of us, and ultimately it is you, City Council Commissioners and Mayor Adams, who are responsible and liable for such a decision.

19. You have the ability and are capable of reviewing the facts, and stepping away from your endorsement with grace. The citizens of Portland would applaud you for acting responsibly on such an important decision that affects each and every one of us, safe drinking water for our health.

Sincerely,


Kellie Barnes MOMT, MPT

REFERENCES:

EPA's National Primary Drinking Water Regulations;
<http://water.epa.gov/drink/contaminants/index.cfm#Inorganic>; Maximum Contaminant Level (MCL) is the enforceable level; the Maximum Contaminant Level Goal (MCLG), which is non-enforceable, is the public health goal, in EPA's words, "The level of a contaminant at which there would be no risk to human health."

EPA letter to House Committee on Science, 6/23/99: "EPA does not regulate drinking water treatment chemicals." http://www.keepers-of-the-well.org/product_pdfs/EPA_response_6.99.pdf; full document: http://www.keepersofthewell.org/gov_resp_pdfs/EPAresponse1.pdf

FDA letter to House Committee on Science, 12/21/2000:
http://www.keepersofthewell.org/product_pdfs/FDA_response_pt.pdf

CDC, MMWR, 8/17/01/Vol.50/No.RR-14, "Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States";
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>

Mosaic MDS for fluoride product (scroll to bottom of document):
http://www.mosaicco.com/images/Hydrofluosilicic_Acid_05_11.pdf; Solvay LLC's disclaimer here: <http://www.scribd.com/doc/39616609/Fluorosilicic-Acid-Hydrofluorosilicic-Acid-HFS>

Phosphorous & Potassium, September/October 1979 No. 103, pp. 33-39, Fluorine recovery in the fertilizer industry - a review by H.F.J. Denzinger, H.J. Konig and G.E.W. Kruger; see especially the first two paragraphs:
<http://www.fluoridealert.org/phosphate/denzinger.htm>

Fluoridation chemicals are classified as hazardous wastes: http://www.keepers-of-the-well.org/product_pdfs/Fluorides_Classified.pdf

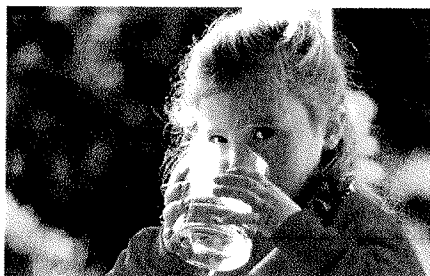
NSF, International letter to House Committee on Science, 7/7/2000 documenting contamination in the fluoridation product, see pg 7.
http://www.keepersofthewell.org/gov_resp_pdfs/NSF_response.pdf

JADA 1999 study: "Assessing fluoride levels of carbonated soft drinks."
<http://www.ncbi.nlm.nih.gov/pubmed/10573939>

Agric Food Chem, 2001: "Fluoride content of foods made with mechanically separated chicken." <http://www.ncbi.nlm.nih.gov/pubmed/11559124>

CDC study, Beltrán-Aguilar et al; Surveillance for Dental Caries, Dental Sealants, Tooth Retention, Edentulism, and Enamel Fluorosis—United States, 1998-1994 and 1992-2002; MMWR, 8/26/05;54(03);1:44. See very end, Table 23.
<http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5403a1.htm>

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?

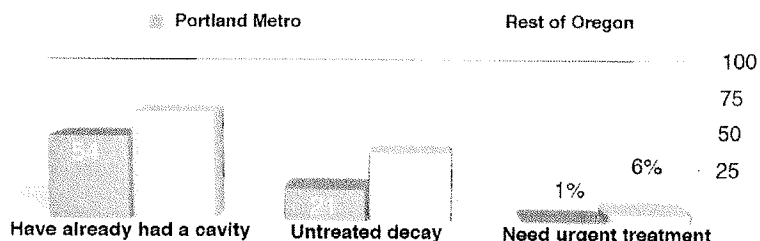
- The percentage of Portland metro children that have had a cavity is 54%, compared to 70% of children outside of Portland. (2007 Smile survey at p. 12) This is true even though only 8% of the Portland area is fluoridated where as 33% of Oregon residents outside Portland metro is fluoridated.¹ Portland 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 data³, 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 data⁴, 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>

INFORMATION TO SHARE:**1. Please get all the facts before rendering a decision.**

We the citizens of Portland are informed and educated around this topic. We have observed a disconnect between promoters' characterization of water fluoridation and what extensive research into the issue—including review of medical/dental journals and various USPHS and other government documents—show. We have voted down fluoridation repeatedly. We expect our legislators and Portland Commissioners to take the time to review the issue, weigh the evidence, and make an informed decision to, at the very least send the issue to voters. We believe there is a need for a less biased, more complete picture of what fluoridating drinking water actually means.

2. Dental Health is important, but systemic fluoridation is not the answer to a topical need.

City Council should know we care about the under insured and their dental health. That we support Portland's desire to assist those in need through outreach programs that include education, nutrition, oral hygiene, and free dental clinics for those most in need. These dental clinics could also provide "topical dose specific" fluoride targeting the community in need, more specifically.

Note the CDC states definitively that "fluoride's predominant effect is posteruptive and topical..." (1) Stated another way, the benefit is not from swallowing the fluoride, but applying it directly to the tooth.

City Council, health care organizations, and our health care providers that endorse fluoridation, can develop outreach programs for communities at risk. The cost to implement such a systemic water fluoridation program could be more cost effective if targeted at populations and communities at risk as well as providing age appropriate and dose appropriate topical care.

Ask yourself does it make sense to have a "one dose fit all" approach, for an entire city population? What about consideration for those at risk due to high exposure of fluoride in bottled beverages and other foods such as those contaminated with fluoride-based pesticides?

3. The source of fluoride is a critical component of the system.

Serving the under insured should not have to occur through systemic water fluoridation programs using hydrofluorosilicic acid also called fluosilic acid.

Many of those in support of water fluoridation are not aware of the source of fluoride used in these programs. Supporters also will characterize those of us concerned about this topic, as environmentalists without awareness of science or as extremist in perspective.

Ask yourself, is it extreme to be concerned with NSF, International, the private organization involved with fluoridation product certification to "voluntary"

standards confirms, through its own testing, co-contamination of lead and arsenic in the product? (See reference below).

4. Not all fluoride is alike

Most typically, promoters describe fluoridation as follows: "Fluoride is a mineral that occurs naturally in water. Water fluoridation is simply the upward adjustment of fluoride to an optimal level for reducing tooth decay. It is both safe and effective."

City Council should be aware:

That although fluoride "occurs naturally" in water as does arsenic, like arsenic, it is toxic and subject to regulation by EPA as a "contaminant." (2) EPA's regulatory authority over fluoride is as a contaminant only; in its own words, EPA has no authority over water additives, including chemicals used for fluoridation. (3)

That promoters' proposed "adjustment" of fluoride to an "optimal" level will be accomplished, not with naturally occurring calcium or magnesium fluoride, but with the considerably more toxic, untreated, fluoride-rich waste products of the phosphate fertilizer industry. (4) (Many professionals question how an "optimal" concentration can deliver an "optimal" dose to each and every individual considering dramatic variances in our exposure to fluoride from other sources and the amount of water we each consume.)

That these "products," namely **hydrofluorosilicic acid and its salt forms, sodium fluorosilicate and sodium fluoride, are classified as hazardous wastes (5) and cannot legally be disposed of in the air, rivers, lakes, ocean, or on land**, but by marketing them as "products" for a "health benefit," they are being diluted into public water systems (saving industry expensive disposal at a Class 1 hazardous waste facility).

That, according to the American Water Works Association, **people ingest less than 1 percent of treated water, meaning most of this toxic waste ends up in the very environment industry is prohibited from polluting directly.**

That hydrofluorosilicic acid is so corrosive, and will so lower the pH of our water, that buffering chemicals will need to be added to water along with the fluoride.

That responding to Congressional inquiry (12/21/2000), FDA has confirmed that, when ingested for prevention/mitigation of tooth decay, fluoride is not just some mineral, but a drug under FDA regulation, one it has never reviewed or approved for that purpose. (6) In other words, the so called "health benefit" providing the **loophole that allows the fertilizer industry to dispose of its toxic waste in drinking water has never been confirmed by the only agency given by Congress the authority to do so—FDA.** (7) confirmed a host of contaminants in the product (after dilution in water), showing as much as 1.66 parts per billion

arsenic. Product, NSF says, is not tested per batch, but just once per year. (8)

5. There is no known safe dosage

We are concerned about the source of fluoridation being proposed for Portland's water fluoridation program. One should recognize the growing body of scientific evidence questioning the practice of adding fluoride in the forms of silicofluoride and fluosilic acid to water programs. Please note that prior recommended dosage from the U.S. EPA ranged from 0.7 to 1.2 parts per million (ppm). This was recently downgraded to a maximum of 0.7 ppm due to growing concerns of risks to communities including the risk of dental fluorosis.

6. The source proposed has never been approved by the FDA for systemic use.

We are aware that hydrofluorosilicic acid is a liquid most likely sourced from Solvay, per David Shaff's office of the Portland Water Bureau. **Solvay is a major agrochemical producer.** The compound is a result of extensive phosphate fertilizer production, and combined with sodium fluorosilicate make up 90% of our nation's systemic water fluoridation programs. Hydrofluorosilicic acid has never been scientifically proven to prevent tooth decay, **nor has it been approved by the FDA for systemic use.**

7. Topical application is not the same as systemic application

Even those that are in support of fluoridation programs are in support of topical application, not systemic. The literature from the American Dental Association's own journals are clear that application is most successful topically and not systemically.

Although no randomized, controlled studies have ever been done on fluoridation (which would help to prove its safe use), the largest ever survey conducted to date, done by the National Institute of Dental Research in 1986-7 (over 39,000 children in 84 geographical areas), found only a tiny difference in tooth decay between the always- and never-fluoridated groups of children (less than one out of approximately 120 tooth surfaces saved), but a significant difference in the incidence of dental fluorosis, permanent damage to teeth from **overexposure to fluoride during tooth development.** Of the "optimally" fluoridated group, 29.9 percent had fluorosis compared to 13.5 percent in the non-fluoridated children. (9)

8. International recommendations are against systemic application

We are aware the **International Academy of Oral Medicine and Toxicology** does not endorse water fluoridation programs due to fluorides ability systemically to inhibit enzymes and interfere with collagen health. (10)

Credible, recent, peer-reviewed science raises legitimate questions over adverse health effects, even at the so-called "optimal" level, with a focus on **bone pathology (including osteosarcoma and increased hip fracture in the elderly), kidney, thyroid, and brain damage.** As much as promoters want to dismiss concerns, the science is by no means settled and trends toward more concerns, not

fewer.

For complete references and more information regarding systemic fluoridation and health risk visit the Fluoride Action Network, www.fluoridealert.gov. (11)

9. Other developed Countries have found better more cost effective solutions.

Other developed countries such as those in Europe, do not have water system fluoridation programs due to growing concern of systemic illness and lack of cost effectiveness. Some provide, for those who desire fluoride in systemic form, **table salt with fluoride additive**, thereby supporting their citizen's right to choice and informed consent while keeping costs at a minimum.

10. New concerns continue to appear.

We are aware that there is a just published, Harvard meta-analysis showing reduced IQ due to systemic water fluoridation programs and total fluoride exposure. (12) Below is a summary of some of the study findings forwarded from a colleague.

“Several of the studies had a "low F" group with around 0.5 mg/L and a "high F" group with 2-3 mg/L. These levels are so close to the F levels in artificial fluoridation, that it is completely wrong for Pew to suggest these studies only dealt with levels of F that are much higher and therefore irrelevant to artificial fluoridation.

Even if the effect is relatively small, and most of the studies had deficiencies, the fact that by 10 to 1 they found that the "high F" group had lower IQ than the "low F" group suggests this is likely to be a real effect. Since the studies were carried out in many different places, using different methods and researchers, it is hard to imagine a systematic bias in all of these studies that would result in all of them producing spurious findings that F lowers IQ. Also, only a single study found that "high F" kids had higher IQ than "low F kids", and that was by a very small amount that was not statistically significant. Such consistency in results amongst 27 studies demands a follow-up with higher quality studies, rather than a dismissal because the studies had various weaknesses.”

11. Medicating water causes risks to those with chemical sensitivities

Those in our community with multiple chemical sensitivity (MCS) have been recommended by their physicians to avoid fluoride in water, a known incitant. We are aware fluoride can only be filtered with reverse osmosis filtration devices. These devices filter approximately 93% of fluoride and do not work for shower or baths. They are expensive and are likely outside of financial means for the under insured who desire healthy teeth but not systemic fluoride sources that may put them at risk.

The American Academy of Environmental Medicine explains MCS as “a very real chronic medical condition that has been only slowly gaining the public

recognition it deserves. Recent estimates suggest that chemical sensitivity, that is, hyper-reactivity to various environmental agents (also known as incitants or triggers), may afflict something like 10-15% of the American population.” Fluoride-containing water is considered an incitant.

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<http://www.aacemonline.org/images/FluorideResolution.pdf>

12. Fluoride application, dosage, and placement in water is complex and not truly controllable.

Dosage is variable and not easily controlled. Some of our citizens will ingest more than others, depending on their water consumption and absorption. Total fluoride exposure is difficult to determine, based on lack of fluoride labeling on foods and beverages.

13. Fluoride added to our water supply is not a nutrient it is a known toxic substance (see MSD sheets) and has never been approved by the FDA for the ingestion purpose of reducing tooth decay.

Consumers will ingest fluoridation products entirely at their own risk. NO ONE is responsible/liable for harm. Manufacturers of these chemicals will not stand behind their products as either safe or effective for the purpose for which they are added when used as directed. Here's the disclaimer that appears on the MSD sheet for one of the largest suppliers in the U.S., Mosiac: The information in this document is believed to be correct as of the date issued. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. This information and product are furnished on the condition that the person receiving them shall make their own determination as to suitability of the product for their particular purpose and on the condition that they assume the risk of their use thereof. The conditions and use of this product are beyond the control of Mosaic, and Mosaic disclaims any liability for loss or damage incurred in connection with the use or misuse of this substance. (13)

14. Systemic dosages are already occurring in hard to control and damaging

amounts. Children (all of us, actually) are already receiving significant doses of fluoride from foods and beverages.

Here are a few important examples:

- This dental journal study looked at 43 different fruit juices and found that 42 percent of the samples had more than 1 part per million fluoride (the current, newly revised recommendation for drinking water is less than that—0.7 ppm). Gerber white grape juice tested out highest at 6.80 ppm, or nearly 10 times the current recommended level for water! (14)
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Fluoride exposure has become so ubiquitous, dental fluorosis (DF) rates are out of control. This permanent damage to teeth, downplayed by dentists as “merely cosmetic,” is defined by Taber's Medical Encyclopedia (2001 edition) as “chronic fluorine poisoning, sometimes marked by mottling of tooth enamel.” Even proponents admit that in **its more severe forms, tooth functionality is compromised.** Pitted enamel leaves a tooth vulnerable to decay, and fluoresced teeth are more brittle and prone to fracture.

The scientific literature shows that fluorosis causes embarrassment and psychological harm (see

<http://www.slweb.org/bibliography.html#DFperceptions>).

Based on the CDC study referenced next, we can expect 2-5 percent of Portland's child population to experience the moderate-to-severe form of this damage.

That the CDC's most recent research (2005) found 41 percent of 12-15 year-olds in the U.S. affected by dental fluorosis. (17) That fluorosis disproportionately affects some ethnic groups: CDC's study found among (1) White, (2) African American and (3) Mexican Americans, the percent of children with “very mild fluorosis” was 14.09, 21.21 and 15.93 respectively; percentages with “mild fluorosis” were 3.87, 8.24 and 5.05 respectively, and with “moderate/severe fluorosis,” 1.92, 3.43 and 4.82 respectively. (17) This inequity, plus science identifying people with diabetes and kidney disease as “populations unusually susceptible to the toxic effects of fluoride,” (18) has prominent African Americans, including former ambassador Andrew Young and Bernice King (daughter of MLK, Jr) calling for an investigation into and halt of water fluoridation. (19)

15. This is not a racial or underserved issue

those in support of water fluoridation programs are making this an issue of race. City Council members should support all communities in need, and of all race, color, and heritage. Each and everyone of us is dependent on safe drinking water for health. We the citizens of Portland, regardless of race, do not appreciate adding **a known toxin to all water** and we do wish to support those most at risk with cheaper and more topical and choice based options.

16. Systemic fluoridation does not sufficiently provide better dental health

Hawaii, the least fluoridated state in the U.S. at 8.4 percent of the water systems fluoridated (20) has, according to CDC statistics, the lowest rate of edentulism (tooth loss) in the country, at 16 percent. (21) Kentucky, with public water systems fluoridated at 99.8 percent, has the highest rate of tooth loss at 44 percent. This is contrary to what we would expect based on promoters' rhetoric.

sincerely,

Ken Barnes mom.mpt

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<http://water.epa.gov/drink/contaminants/index.cfm#Inorganic>; Maximum Contaminant Level (MCL) is the enforceable level; the Maximum Contaminant Level Goal (MCLG), which is non-enforceable, is the public health goal, in EPA's words, "The level of a contaminant at which there would be no risk to human health."

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Petition for Public Review of Portland Water Supply Fluoridation

by Kellie Barnes, MOMT, MPT, OCSDW volunteer

Sept 5, 2012
Portland, OR

We the undersigned are a coalition of concerned citizens, parents, health care practitioners, organizations, and businesses that believe a systemic water fluoridation program should not be implemented without public consent.

There is a growing body of scientific literature that questions the community benefit versus the community risk from such a systemic implementation of fluoride. We believe the first and ongoing costs of such a fluoridation program would be better used for public outreach and education regarding dental health, including dental hygiene and nutrition.

Topical use of fluoride for dental health is more readily controllable, and could potentially be provided to those without dental health access. We believe that the entire population of Portland should not be exposed to a health related proposal or ordinance without a thorough public review and vetting.

Citizens should have the right to consent, and the right to vote on such an important issue.

For more information or volunteer opportunities contact: **Oregon Citizens for Safe Drinking Water**, Kim Kaminski, Executive Director. Telephone: (503) 675-7451

e-mail: kim@safewateroregon.org.

Name	City	State	Zip Code	Country	Signed On
1 Kellie Barnes, MOMT, MPT, OCSDW volunteer	Portland	Oregon			8/21/2012
2 Joseph Soprani	Portland	Oregon	97209	United States	8/21/2012
3 Michael Deane	portland	Oregon	97212	United States	8/21/2012
4 Alexander Kain	Portland	Oregon	97219	United States	8/21/2012
5 Scott Carpenter	Portland	Oregon	97225	United States	8/21/2012
6 Tammily Carpenter M.D.	Portland	Oregon	97225	United States	8/21/2012
7 Cheryl Dillinger	Portland	Oregon	97211	United States	8/21/2012
8 Tanis Kleckler	Portland	Oregon	97218	United States	8/21/2012
9 Lorell Miller	Portland	Oregon	97211	United States	8/21/2012
10 Destin Ferdun	Portland	Oregon	97212	United States	8/21/2012
11 George Ramsey	Portland	Oregon	97218	United States	8/21/2012
12 Donna Hauser	Portland	Oregon	97218	United States	8/21/2012
13 Kirsten Brady	Portland	Oregon	97239	United States	8/21/2012
14 Patricia Murphy	Portland	Oregon	97215	United States	8/21/2012
15 Robin Miller-Bodhi	Portland	Oregon	97202	United States	8/21/2012
16 Teresa Keane	Portland	Oregon	97219	United States	8/21/2012
17 Joe Miller	Portland	Oregon	97201	United States	8/21/2012
18 Julie Galaski	portland	Oregon	97202	United States	8/21/2012
19 Megan Doty	Portland	Oregon	97225	United States	8/21/2012
20 Patricia conwayPatriciaConway	Portland	Oregon	97218	United States	8/21/2012
21 Michael McCarron	Portland	Oregon	97212	United States	8/21/2012
22 Cathy Cummins	Portland	Oregon	97266	United States	8/22/2012
23 Andy Harris	Portland	Oregon	97201	United States	8/22/2012
24 Dr. Claire Careaga, Ph.D.	Tigard	Oregon	97224	United States	8/22/2012
25 Diane Tierney	Portland	Oregon	97219	United States	8/22/2012
26 Libby Graf	Portland	Oregon	97209	United States	8/22/2012
27 Gloria Nepstead	Portland	Oregon	97229	United States	8/22/2012
28 Marjorie Kircher	Portland	Oregon	97205	United States	8/22/2012
29 Diane Luck	Portland	Oregon	97212	United States	8/22/2012
30 Francesca Lowes	Portland	Oregon	97206	United States	8/22/2012
31 Kimberly Kaminski	Portland	Oregon	97213	United States	8/22/2012
32 Anna Jensen	Portland	Oregon	97215	United States	8/22/2012
33 Lynn Hanrahan	Portland	Oregon	97202	United States	8/22/2012
34 Beverly Madison	Portland	Oregon	97212	United States	8/22/2012
35 Marta Dietiker	Portland,	Oregon	97219	United States	8/22/2012
36 Miguel Rosas-baker	Portland	Oregon	97219	United States	8/22/2012
37 Lloyd Lemmermann	Portland	Oregon	97202	United States	8/22/2012
38 James Brunkow	Portland	Oregon	97218	United States	8/22/2012
39 Angelina McKinney	Portland	Oregon	97212	United States	8/22/2012
40 Nancy Wong	Portland	Oregon	97214	United States	8/22/2012
41 Erin McCown	Portland	Oregon	97215	United States	8/22/2012

42 Nancy Ferber	Portland	Oregon	97206	United States	8/22/2012
43 Gerald Shorey	Portland	Oregon	97205	United States	8/22/2012
44 Tara Blank	La Center	Washington	98629	United States	8/22/2012
45 Mary Kimsey	Portland	Oregon	97206	United States	8/22/2012
46 Rowan Kimsey	Portland	Oregon	97206	United States	8/22/2012
47 Kristina Williams	Portland	Oregon	97206	United States	8/22/2012
48 lois foster	portland	Oregon	97211	United States	8/23/2012
49 Dahra Perkins, MD	Portland	Oregon	97202	United States	8/23/2012
50 Patrick Buono	Portland	Oregon	97239	United States	8/23/2012
51 Lynne Gibbons	Portland	Oregon	97206	United States	8/23/2012
52 Carrie Twigg	Portland	Oregon	97205	United States	8/23/2012
53 Nina Scott	Portland	Oregon	97211	United States	8/23/2012
54 Danielle Cornelius	Portland	Oregon	97206	United States	8/23/2012
55 Darlene Zimbardi	Portland	Oregon	97206	United States	8/23/2012
56 tracy livermore	lake oswego	Oregon	97035	United States	8/23/2012
57 John Feuerborn	Portland	Oregon	97206	United States	8/23/2012
58 Malgosia Cegielski	portland	Oregon	97219	United States	8/23/2012
59 Zale Chadwick	portland	Oregon	97206	United States	8/23/2012
60 Shandra Bauer	Portland	Oregon	97206	United States	8/23/2012
61 mary scott	PDX	Oregon	97215	United States	8/23/2012
62 Colette Gardiner	Portland	Oregon	97202	United States	8/23/2012
63 Christian Giusto	Portland	Oregon	97206	United States	8/23/2012
64 Cynthia Hale	Portland	Oregon	97219	United States	8/23/2012
65 Ute Munger	Portland	Oregon	97206	United States	8/23/2012
66 Nate Young	Portland	Oregon	97217	United States	8/23/2012
67 Anna Crowley	Portland	Oregon	97206	United States	8/23/2012
68 Jerod Tarte	Portland	Oregon	92706	United States	8/23/2012
69 ron albers	Portland	Oregon	97202	United States	8/23/2012
70 Nia Lewis	Portland	Oregon	97213	United States	8/23/2012
71 Charles Hartman	Portland	Oregon	97212	United States	8/23/2012
72 Heather Frazier	Portland	Oregon	97212	United States	8/23/2012
73 Matthew Kimball	Crosby	Texas	77532	United States	8/23/2012
74 Wendy Neal, DO, ND	Portland	Oregon	97223	United States	8/23/2012
75 Glenn Bennett	Portland	Oregon	97212	United States	8/23/2012
76 Marybeth McDonald	Portland	Oregon	97218	United States	8/23/2012
77 Jean Aalseth	Portland	Oregon	97202	United States	8/23/2012
78 Natalie Busch	Portland	Oregon	97217	United States	8/23/2012
79 Gelsey Kurrasch	Portland	Oregon	97206	United States	8/23/2012
80 Kari Sheragy	Portland	Oregon	97214	United States	8/23/2012
81 Lisa Puma	Portland	Oregon	97219	United States	8/23/2012
82 Donna Anessi	Yamhill	Oregon	97148	United States	8/23/2012
83 Sharleen Roberson	Portland	Oregon	97202	United States	8/23/2012

84 Yvonna Daul	Portland	Oregon	97306	United States	8/23/2012
85 Andrew Firpo	Portland	Oregon	97214	United States	8/24/2012
86 Lori Romike	Lake Oswego	Oregon	97035	United States	8/24/2012
87 Naga Nataka	Portland	Oregon	97206	United States	8/24/2012
88 Janine Blanchard, LMT	Portland	Oregon	97210-2280	United States	8/24/2012
89 Bill Osmunson	Beaverton	Oregon	97005	United States	8/24/2012
90 James Black	Portland	Oregon	97236	United States	8/24/2012
91 jaime lefcovich	portland	Oregon	97214	United States	8/24/2012
92 Kristin Allen	Portland	Oregon	97211	United States	8/24/2012
93 Rodney Bender	Portland	Oregon	97213	United States	8/24/2012
94 Grace Marian	Portland	Oregon	97214	United States	8/24/2012
95 Andrew Hosch	Portland	Oregon	97214	United States	8/24/2012
96 Aaron Hopkins	Portland	Oregon	97213	United States	8/24/2012
97 Amanda Schueler	Portland	Oregon	97218	United States	8/24/2012
98 Colleen McCormack	Portland	Oregon	97213	United States	8/24/2012
99 Jan Rizzo	Portland	Oregon	97211	United States	8/24/2012
100 Lynne Campbell	Lake Oswego	Oregon	97035	United States	8/24/2012
101 Christine White	Portland	Oregon	97202	United States	8/24/2012
102 Kimberly Horenstein	Portland	Oregon	97218	United States	8/24/2012
103 Tom Deines	Newberg	Oregon	97132	United States	8/24/2012
104 C. Merwin	Portland	Oregon	97212	United States	8/24/2012
105 elizabeth carlson	Portland	Oregon	97211	United States	8/24/2012
106 Colleen Patterson	Portland	Oregon	97206	United States	8/24/2012
107 Elise Varga	Portland	Oregon	97213	United States	8/24/2012
108 Linda Pooley	Scappoose	Oregon	97056	United States	8/24/2012
109 Courtney Scott	Portland	Oregon	97232	United States	8/24/2012
110 thomas tittle	Portland	Oregon	97217	United States	8/24/2012
111 ninette jones	portland	Oregon	97217	United States	8/24/2012
112 Jim Dancing Trout	Portland	Oregon	97206	United States	8/24/2012
113 Frances Holtman	Rockaway Beach	Oregon	97136	United States	8/24/2012
114 Richard Ness	Portland	Oregon	97229	United States	8/24/2012
115 Kevin Layden	Portland	Oregon	97222	United States	8/24/2012
116 Catherine Teach	Portland	Oregon	97212	United States	8/24/2012
117 Teresa Farrell	Portland	Oregon	97202	United States	8/25/2012
118 Catherine Whelan	Portland	Oregon	97219	United States	8/25/2012
119 Pam Allen	Portland	Oregon	97206	United States	8/25/2012
120 Sara Genta, RN	Portland	Oregon	97202	United States	8/25/2012
121 Spyder Carneol	Portland	Oregon	97215	United States	8/25/2012
122 mike tabor	Portland	Oregon	97220	United States	8/25/2012
123 Alex Shives	Portland	Oregon	97225	United States	8/25/2012
124 Chris Henry	Portland	Oregon	97211	United States	8/25/2012
125 blythe pavlik	Portland	Oregon	97206	United States	8/25/2012

126 James Thompson	Portland	Oregon	97210	United States	8/25/2012
127 Susan Glosser	Portland	Oregon	97202	United States	8/25/2012
128 Alicia Polacok	Portland	Oregon	97232	United States	8/25/2012
129 Kurt Fosso	Portland	Oregon	97213	United States	8/25/2012
130 Peter Gold	Portland	Oregon	97232	United States	8/25/2012
131 Jana Throckmorton	Portland	Oregon	97206	United States	8/25/2012
132 Brian Kinney	Los Angeles	California	90041	United States	8/25/2012
133 Kathleen Bushman	Portland	Oregon	97211	United States	8/26/2012
134 Brian Keith	Portland	Oregon	97203	United States	8/26/2012
135 Julie Ratcliff	Portland	Oregon	97206	United States	8/26/2012
136 Deanna DeLong	Beaverton	Oregon	503-641-1916	United States	8/26/2012
137 Sandra Stirling	Beaverton	Oregon	97006	United States	8/26/2012
138 Leigh Bunkin	Portland	Oregon	97223	United States	8/26/2012
139 Heidi Cluff	Portland	Oregon	97225	United States	8/26/2012
140 Carrie Haas	Portland	Oregon	97220	United States	8/26/2012
141 Lara Triback	Portland	Oregon	97293	United States	8/26/2012
142 Betsy Langton	Portland	Oregon	97219	United States	8/26/2012
143 Kate Markell	Portland	Oregon	97221	United States	8/26/2012
144 Meladee Martin	Portland	Oregon	97221	United States	8/26/2012
145 Shayla Rogers	Portland	Oregon	97218	United States	8/26/2012
146 Tamarah Jane Pringle	Portland	Oregon	97219	United States	8/26/2012
147 Karen Ball	Beaverton	Oregon	97005	United States	8/26/2012
148 Kathleen Kay	Beaverton	Oregon	97006	United States	8/26/2012
149 Beth Schwartz	West Linn	Oregon	97068	United States	8/26/2012
150 Christine Maxwell	Portland	Oregon	97211	United States	8/26/2012
151 Kimberly Kaminski	Portland	Oregon	97213	United States	8/26/2012
152 Bonny Seal	Portland	Oregon	97217	United States	8/26/2012
153 Bill Osmunson DDS MPH	Wilsonville	Oregon	97070	United States	8/26/2012
154 Candida Ferraiolo	Portland	Oregon	97212	United States	8/26/2012
155 Paola Dennis	Portland	Oregon	97219	United States	8/26/2012
156 Gibran Ramos	Portland	Oregon	97202	United States	8/26/2012
157 Winter Harvey	Portland	Oregon	97213	United States	8/26/2012
158 Judith Vandervort	Canby	Oregon	97013	United States	8/26/2012
159 Judith Beck	Portland	Idaho	97205-1166	United States	8/26/2012
160 Starr Thompson BSDH, RDH	Tigard	Oregon	97223	United States	8/26/2012
161 Fatima Zenner	Tigard	Oregon	97224	United States	8/26/2012
162 Laura Fletcher	Portland	Oregon	97225	United States	8/26/2012
163 Judy Morse	Beaverton	Oregon	970097	United States	8/26/2012
164 Joyce Ferrier	Tigard	Oregon	97223	United States	8/26/2012
165 JJanine McFall	Canby, OR	Oregon	97013	United States	8/26/2012
166 Jean Landes	Beaverton	Oregon	97007	United States	8/26/2012
167 Malika Smaini	Tigard	Oregon	97224	United States	8/26/2012

168 Callie Bell	Gresham	Oregon	97030	United States	8/26/2012
169 Carolyn Clark	Lake Oswego	Oregon	97035	United States	8/26/2012
170 Camille Gifford	Lake Oswego	Oregon	97035	United States	8/26/2012
171 Allen Clark	Canby	Oregon	97013	United States	8/26/2012
172 Tana Kuntz	PORTLAND	Oregon	97218	United States	8/26/2012
173 Marion Newey	Warren	Oregon	97053	United States	8/26/2012
174 Louise Tolzmann, ND	Portland	Oregon	97222	United States	8/26/2012
175 Tim O'Neal	Portland	Oregon	97212	United States	8/26/2012
176 Sarah Augustine	Portland	Oregon	97214	United States	8/26/2012
177 Josh Scofield	Portland	Oregon	97206	United States	8/26/2012
178 Lara Haehle	Beaverton	Oregon	97006	United States	8/26/2012
179 Marjorie Marchant	Hillsboro	Oregon	97123	United States	8/26/2012
180 Cathrin Mueller	Portland	Oregon	97239	United States	8/26/2012
181 sabiah sogard	PORTLAND	Oregon	97266	United States	8/26/2012
182 Nancy McAuliffe	Lake Oswego	Oregon	97034	United States	8/26/2012
183 Paula Fisher	Tigard	Oregon	97224	United States	8/26/2012
184 Beth Hahn	Portland	Oregon	97213	United States	8/26/2012
185 Marlene Kelley	Beaverton	Oregon	97006	United States	8/26/2012
186 Cara Orscheln	Portland	Oregon	97202	United States	8/26/2012
187 Kundalini Bennett	Portland	Oregon	97214	United States	8/26/2012
188 stefan senna	portland	Oregon	97212	United States	8/26/2012
189 Erik Overson	portland	Oregon	97212	United States	8/26/2012
190 Sia Haralampus	Portland	Oregon	97225	United States	8/26/2012
191 Debbie Richman	Portland	Oregon	97219	United States	8/26/2012
192 Kenneth Vincig Vincig	Portland	Oregon	97212	United States	8/26/2012
193 Tod Elliott	Portland	Oregon	97202	United States	8/26/2012
194 Bill Novotny	Portland	Oregon	97211	United States	8/27/2012
195 Beth Giansiracusa	portland	Oregon	97232	United States	8/27/2012
196 Andrew Zeutzius	Portland	Oregon	97214	United States	8/27/2012
197 Melissa Herring	Portland	Oregon	97236	United States	8/27/2012
198 marilyn mitchell	portland	Oregon	97233	United States	8/27/2012
199 Sacha Stephens-Avery	Portland	Oregon	97202	United States	8/27/2012
200 Kaya Singer	Portland	Oregon	97211	United States	8/27/2012
201 Mamie Gregory	Lake Oswego	Oregon	97035	United States	8/27/2012
202 Deb Seemann	Corbett	Oregon	97019	United States	8/27/2012
203 Gregory Press	Portland	Oregon	97211	United States	8/27/2012
204 terah varga	Portland	Oregon	97206	United States	8/27/2012
205 Heidi Pannke	Portland	Oregon	97203	United States	8/27/2012
206 Brooke VanBuren	Portland	Oregon	97215	United States	8/27/2012
207 Amy Baker	Portland	Oregon	97215	United States	8/27/2012
208 Erik Geschke	Portland	Oregon	97202	United States	8/27/2012
209 Stacey Philipps	Portland	Oregon	97219	United States	8/27/2012

210 Ansula Press	Portland	Oregon	97211	United States	8/27/2012
211 Leah Yamaguchi	Portland	Oregon	97233	United States	8/27/2012
212 Renee Manly	Portland	Oregon	97266	United States	8/27/2012
213 Bette Steflik	Portland	Oregon	97213	United States	8/27/2012
214 Shannon Bishop	Portland	Oregon	97236	United States	8/27/2012
215 Kathleen Sanchez	Portland	Oregon	97203	United States	8/27/2012
216 Gene Zilberstein	Portland	Oregon	97202	United States	8/27/2012
217 Thomas Seaman	portland	Oregon	97214	United States	8/27/2012
218 Jasmine Albert	portland	Oregon	97223	United States	8/27/2012
219 Emily Sunderman	portland	Oregon	97213	United States	8/27/2012
220 charity Prater	Portland	Oregon	97211	United States	8/27/2012
221 Bryan Dunning	Portland	Oregon	97211	United States	8/27/2012
222 Tammy Frederick	Milwaukie	Oregon	97222	United States	8/27/2012
223 G. Buddy Bercu	Portland	Oregon	97214	United States	8/27/2012
224 Corinne Palmer	Oregon City	Oregon	97045	United States	8/27/2012
225 Julie Waddell	Oregon City	Oregon	97045	United States	8/27/2012
226 Gayle Morris	Beaverton	Oregon	97007	United States	8/27/2012
227 Dana Sturtevant	Portland	Oregon	97227	United States	8/27/2012
228 Kim Anderson	Portland	Oregon	97209	United States	8/27/2012
229 richard barton	portland	Oregon	97210	United States	8/27/2012
230 Dena Ford	Newberg	Oregon	97132	United States	8/27/2012
231 Miriam Eschweiler	Beaverton	Oregon	97008	United States	8/27/2012
232 Alonso Hernandez	San Antonio	Texas	78212	United States	8/27/2012
233 Katrina Smith	San Antonio	Texas	78254	United States	8/27/2012
234 Amy Evans	Portland	Oregon	97212	United States	8/27/2012
235 Albert Kaufman	Portland	Oregon	97212	United States	8/27/2012
236 Jacqueline Rubinstein, GCFP	Portland	Oregon	97206	United States	8/27/2012
237 Kay Floyd	Martinsburg	West Virginia	25404	United States	8/27/2012
238 Lauren Kennedy	Portland	Oregon	97206	United States	8/27/2012
239 Shawna O'Neal	Portland	Oregon	97212	United States	8/27/2012
240 Dorrit Thomsen	Portland	Oregon	97206	United States	8/27/2012
241 Nadi Gruber	Portland	Oregon	97212	United States	8/27/2012
242 Steven King	PORTLAND	Oregon	97201	United States	8/27/2012
243 Angie Bork	Portland	Oregon	97223	United States	8/27/2012
244 Lorraine Marchant	Oregon City	Oregon	97045	United States	8/27/2012
245 Olivia Meiring	Portland	Oregon	97202	United States	8/27/2012
246 Jeff Slater	Tigard	Oregon	9724	United States	8/27/2012
247 Nicole Mo'on	Portland	Oregon	97220	United States	8/27/2012
248 Donna Hauser	Portland	Oregon	97218	United States	8/27/2012
249 Olivia Schmidt	Portland	Oregon	97202	United States	8/27/2012
250 Nancy Parent	Portland	Oregon	97225	United States	8/27/2012
251 Amanda Nelson, NTP	Portland	Oregon	97211	United States	8/27/2012

185612

252 Juana Celia Djelal	State College	Pennsylvania	16803	United States	8/27/2012
253 Travis Turnsen	Portland	Oregon	97211	United States	8/28/2012
254 Cedric Rougier	Portland	Oregon	97209	United States	8/28/2012
255 Brittaney Califf	Portland	Oregon	97220	United States	8/28/2012
256 Kylene Fickenscher	Portland	Oregon	97217	United States	8/28/2012
257 Audrey Metcalfe	Portland	Oregon	97221	United States	8/28/2012
258 Rylee Keys	Portland	Oregon	97210	United States	8/28/2012
259 Davida Gordon	Portland	Oregon	97214	United States	8/28/2012
260 Kate Patterson	Portland	Oregon	97217	United States	8/28/2012
261 Emily Cleek	Portland	Oregon	97211	United States	8/28/2012
262 J Marchant	Oregon City	Oregon	97045	United States	8/28/2012
263 Shelley Siddans	Canby	Oregon	97013	United States	8/28/2012
264 Claire Andrews	Tigard	Oregon	97223	United States	8/28/2012
265 dizz locasto	Portland	Oregon	97223	United States	8/28/2012
266 Myra Himmelfarb	Portland	Oregon	97219	United States	8/28/2012
267 Joanne Skirving	Portland	Oregon	97206	United States	8/28/2012
268 austin foster	Lake Oswego	Oregon	97035	United States	8/28/2012
269 Vanessa Fritz	Portland	Oregon	97214	United States	8/28/2012
270 Kathy Royce	West Linn	Oregon	97068	United States	8/28/2012
271 Melynda Sipp	Portland	Oregon	97206	United States	8/28/2012
272 David Schallberger	Portland	Oregon	97208	United States	8/28/2012
273 Alice Shapiro	Portland	Oregon	97202	United States	8/28/2012
274 Janette Novotny	Portland	Oregon	97211	United States	8/28/2012
275 Susan Mather	Portland	Oregon	97211	United States	8/28/2012
276 Cynthia Christensen	Vancouver	Washington	98662	United States	8/28/2012
277 Howard Shapiro	Portland	Oregon	97202	United States	8/28/2012
278 heather suhrbur	portland	Oregon	97201	United States	8/29/2012
279 Steven L. Oewns	Portland	Oregon	97209	United States	8/29/2012
280 Bob McCulloch	Portland	Oregon	97202	United States	8/29/2012
281 David Nelson	Gresham	Oregon	97030	United States	8/29/2012
282 Mike Brady	Gresham	Oregon	97080	United States	8/29/2012
283 Honorino Lora	Tigard	Oregon	97223	United States	8/29/2012
284 Julie MIKALSON	PORTLAND	Oregon	97220	United States	8/29/2012
285 Bruce Sprando	gresham	Oregon	97030	United States	8/29/2012
286 lauree carlsen	happy valley,	Oregon	97086	United States	8/29/2012
287 Debra Parker	Tigard	Oregon	97223	United States	8/29/2012
288 Amanda Aplet	Kelso	Washington	98626	United States	8/29/2012
289 Kyle McNicholas	Portland	Oregon	97206	United States	8/29/2012
290 Hilary Forrest	Portland	Oregon	97215	United States	8/29/2012
291 Karla Walker	Beaverton	Oregon	97007	United States	8/29/2012
292 Ameyalli Ayala	Portland	Oregon	97233	United States	8/29/2012
293 Noel Goodman	Beaverto	Oregon	97007	United States	8/30/2012

185612

294 elisa nutzmann	Portland	Oregon	97266	United States	8/30/2012
295 Alison Chandler	Portland	Oregon	97266	United States	8/30/2012
296 Dustin Toney	Lake Oswego	Oregon	97035	United States	8/30/2012
297 Satya Ambrose	damascus	Oregon	97089	United States	8/30/2012
298 Paul Prior	Portland	Oregon	97206	United States	8/30/2012
299 John Richard Young	norristown	Pennsylvania	19401-1531	United States	8/30/2012
300 Sabrina Harle	Portland	Oregon	97232	United States	8/30/2012
301 Jeff Seiffert	Milwaukie	Oregon	97222	United States	8/30/2012
302 Janet Christ	Portland	Oregon	97221	United States	8/30/2012
303 Sarah Seiffert	Portland	Oregon	97222	United States	8/30/2012
304 Sarah Brooks	Portland	Oregon	97214	United States	8/30/2012
305 Joe hoffman	Portland	Oregon	97201	United States	8/31/2012
306 Cathy Frost	Portland	Oregon	97219	United States	8/31/2012
307 GREG GIAMETTA	FORT PIERCE	Florida	34982	United States	8/31/2012
308 Gracie Campbell	Portland	Oregon	97206	United States	8/31/2012
309 Cindhi Gleason	portland	Oregon	97217	United States	8/31/2012
310 Alan Haggard	San Diego	California	92105-5104	United States	8/31/2012
311 Shawn Mccloud	Portland	Oregon	97210	United States	8/31/2012
312 Ezra Hunt	portland	Oregon	97225	United States	8/31/2012
313 Raeanne Lewman	Portland	Oregon	97219	United States	8/31/2012
314 Charlie White	Portland	Oregon	97229	United States	8/31/2012
315 Martha Wheeler	Portland	Oregon	97214	United States	8/31/2012
316 Diane Tweten	Portland	Oregon	97213	United States	8/31/2012
317 Sally Frese	Portland	Oregon	97206	United States	8/31/2012
318 Rebecca Groebner	Portland	Oregon	97211	United States	8/31/2012
319 Rick North	Durham	Oregon	97224	United States	8/31/2012
320 Carolyn Alter	Portland	Oregon	97213	United States	9/1/2012
321 Benjamin Wurtsbaugh	Portland	Oregon	97236	United States	9/1/2012
322 Jason Wheeler	Portland	Oregon	97214	United States	9/1/2012
323 Beth Kerschen	Portland	Oregon	97211	United States	9/1/2012
324 Michelle Marcyk	Portland	Oregon	97232	United States	9/1/2012
325 Piera Greathouse-Cox	Portland	Oregon	97211	United States	9/1/2012
326 Susan Miller	Lake Oswego	Oregon	97035	United States	9/1/2012
327 Jacob Stebins	Troutdale	Oregon	97060	United States	9/1/2012
328 Eric Klein	Portland	Oregon	97214	United States	9/1/2012
329 James Tyler	Portland	Oregon	97209	United States	9/1/2012
330 Rob Helms	Portland	Oregon	97218	United States	9/1/2012
331 Adam Wyatt	Portland	Oregon	97206	United States	9/1/2012
332 Todd Bradley	Portland	Oregon	97210	United States	9/1/2012
333 Catherine Agrimson	Portland	Oregon	97203	United States	9/1/2012
334 Cris Maranze	Portland	Oregon	97205	United States	9/1/2012
335 Marian Grebanier	Portland	Oregon	97211	United States	9/1/2012

185612

336 anne Hill	Portland	Oregon	97212	United States	9/1/2012
337 anastasia Poirier	Portland	Oregon	97210	United States	9/1/2012
338 Elizabeth Nyiri	Portland	Oregon	97214	United States	9/1/2012
339 Ruthie Marx	Portland	Oregon	97236	United States	9/1/2012
340 erin middleton	Portland	Oregon	97266	United States	9/1/2012
341 John Hubbard	Portland	Oregon	97209	United States	9/1/2012
342 John Brown	Portland	Oregon	97212	United States	9/2/2012
343 Jerzy Giedwoyn	Portland	Oregon	97215	United States	9/2/2012
344 Laurie Line	Portland	Oregon	97212	United States	9/2/2012
345 Kris Johnston	Scappoose	Oregon	97056	United States	9/2/2012
346 tim elmer	Portland	Oregon	97212	United States	9/2/2012
347 stephana johnson	portland	Oregon	97220	United States	9/3/2012
348 Katherine Anne Stansbury	Portland	Oregon	97219	United States	9/3/2012
349 Kirk Sigurdson	Portland	Oregon	97206	United States	9/3/2012
350 Heather Arnett	Portland	Oregon	97239	United States	9/3/2012
351 Clare Bourquein	Portland	Oregon	97232-1688	United States	9/3/2012
352 Scott Putnam	Portland	Oregon	97239	United States	9/3/2012
353 Heather Stein	Portland1	Oregon	97211	United States	9/3/2012
354 Kathryn Mura	Portland	Oregon	97220	United States	9/3/2012
355 Tracy Bosnian	Portland	Oregon	97214	United States	9/3/2012
356 Pamela Melcher	Portland	Oregon	97236	United States	9/4/2012
357 Maryjo Dickinson	Portland	Oregon	97280	United States	9/4/2012
358 sara foster	Portland	Oregon	97214	United States	9/4/2012
359 Joyce Choe	Ridgefield	Washington	98642	United States	9/4/2012
360 Matthew Collier	Portland	Oregon	97202	United States	9/4/2012
361 Raquel Hugo	Portland	Oregon	97215	United States	9/4/2012
362 Susan Gillespie	Portland	Oregon	97206	United States	9/4/2012
363 Elise Hilde	Portland	Oregon	97206	United States	9/4/2012
364 Cindy Sherman	Portland	Oregon	97219	United States	9/4/2012
365 Mark Cody-Wald	Portland	Oregon	97215	United States	9/4/2012
366 Dr. Jennifer Davies	Lake Oswego	Oregon	97035	United States	9/4/2012
367 Sam McKinney	Portland	Oregon	97212	United States	9/4/2012
368 Tamara Yates	Portland	Oregon	97219	United States	9/4/2012
369 roman Zakhariya	PORTLAND	Oregon	97216	United States	9/4/2012
370 Jennifer Herrick	Portland	Oregon	97203	United States	9/4/2012
371 Sue Linton	Portland	Oregon	97239	United States	9/4/2012
372 Dave Mundell	Portland	Oregon	97211	United States	9/4/2012
373 Melissa Katz-Moye	Portland	Oregon	97202	United States	9/4/2012
374 Aaron Berg	Portland	Oregon	97217	United States	9/4/2012
375 Keith Fritzinger	Portland	Oregon	97217	United States	9/4/2012
376 Jamie Hennessey	Portland	Oregon	97266	United States	9/4/2012
377 Julia Sanasarian	Portland	Oregon	97211	United States	9/4/2012

185612

378 Lacey Holbert	Hillsboro	Oregon	97123	United States	9/4/2012
379 Amy Elvey	Portland	Oregon	97211	United States	9/4/2012
380 Meghan Mowry	Portland	Oregon	97086	United States	9/4/2012
381 daniel lacy	portland	Oregon	97266	United States	9/4/2012
382 Gene Latimer	Portland	Oregon	97214	United States	9/4/2012
383 Brandon Landis	Portland	Oregon	97213	United States	9/4/2012
384 Megan Zimmerman	Portland	Oregon	97214	United States	9/4/2012
385 Bryan Delgadillo	Portland	Oregon	97220	United States	9/4/2012
386 Carrie Albright	Portland	Oregon	97223	United States	9/4/2012
387 Eric Wheeler	Portland	Oregon	97293	United States	9/4/2012
388 Samuel Solano	Gresham	Oregon	97080	United States	9/4/2012
389 Bethany McCraw	Portland	Oregon	97210	United States	9/4/2012
390 Kimberly Siemer	Portland	Oregon	97206	United States	9/4/2012
391 Danielle Deane	Beaverton	Oregon	97007	United States	9/4/2012
392 George Stoddard	Wilsonville	Oregon	97070	United States	9/4/2012
393 Beth Munger	Portland	Oregon	97215	United States	9/4/2012
394 Heather Haindel	Portland	Oregon	97211	United States	9/4/2012
395 Petra Prostrednik	Portland	Oregon	97219	United States	9/4/2012
396 Jesse Holland	Portland	Oregon	97217	United States	9/4/2012
397 Ellen Laing	Portland	Oregon	97217	United States	9/4/2012
398 Sussanna Czeranko	Portland	Oregon	97214	United States	9/4/2012
399 Richard Marshall	Portland	Oregon	97223	United States	9/4/2012
400 Frank Scarfone	Portland	Oregon	97211	United States	9/5/2012
401 Chris Lacy	Portland	Oregon	97206	United States	9/5/2012
402 Jason Anders	Portland	Oregon	97211	United States	9/5/2012
403 Martha Warrington	Beaverton	Oregon	97005	United States	9/5/2012
404 Pamela Clark	Beaverton	Oregon	97006	United States	9/5/2012
405 Lisa Collins	Portland	Oregon	97219	United States	9/5/2012
406 Devin Jordan	Portland	Oregon	97213	United States	9/5/2012
407 Lucielle Brownell	Beaverton	Oregon	97005	United States	9/5/2012
408 Holly Bamber	Portland	Oregon	97202	United States	9/5/2012
409 David Jacob	Portland	Oregon	97206	United States	9/5/2012
410 Heidi Smith	Portland	Oregon	97223	United States	9/5/2012
411 Sandra Juodis	Edina	Minnesota	55439	United States	9/5/2012
412 Scott Phillips	Portland	Oregon	97202	United States	9/5/2012
413 Cory Latimer	Bogota			Colombia	9/5/2012
414 erroyl hawley	Lake Oswego	Oregon	97035	United States	9/5/2012
415 nancy d johnson	portland	Oregon	97229	United States	9/5/2012
416 Julie Glass	Gresham	Oregon	97030	United States	9/5/2012
417 Aki Shimane	Portland	Oregon	97202	United States	9/5/2012
418 Amy Bennett	Portland	Oregon	97211	United States	9/5/2012
419 Lise Thom	Portland	Oregon	97216	United States	9/5/2012

420 Kristal Passy
 421 HEATHER AGOSTA
 422 Carol Dickson
 423 Karen Scott
 424 Terri Levine
 425 Sharon Donegan
 426 Elaine H.
 427 Yanina Morejohn
 428 Kristin Morgan
 429 William Derville
 430 Douglas Bloch
 431 Phineas Warren
 432 Claire Houston
 433 Debora Myers
 434 sally brodigan
 435 Angela Molloy Murphy

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97202 United States 9/5/2012
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 97224 United States 9/5/2012
 97211 United States 9/5/2012
 97239 United States 9/5/2012
 97223 United States 9/5/2012
 97206 United States 9/5/2012
 97219 United States 9/5/2012
 97201 United States 9/5/2012
 97006 United States 9/5/2012
 97211 United States 9/5/2012
 97212 United States 9/5/2012
 97203 United States 9/5/2012
 97219 United States 9/6/2012
 97302 United States 9/6/2012
 97211 United States 9/6/2012

185612

Petition for Public Review of Portland Water Supply Fluoridation

by Kellie Barnes, MOMT, MPT, OCSDW volunteer

Sept 5, 2012
Portland, OR

We the undersigned are a coalition of concerned citizens, parents, health care practitioners, organizations, and businesses that believe a systemic water fluoridation program should not be implemented without public consent.

There is a growing body of scientific literature that questions the community benefit versus the community risk from such a systemic implementation of fluoride. We believe the first and ongoing costs of such a fluoridation program would be better used for public outreach and education regarding dental health, including dental hygiene and nutrition.

Topical use of fluoride for dental health is more readily controllable, and could potentially be provided to those without dental health access. We believe that the entire population of Portland should not be exposed to a health related proposal or ordinance without a thorough public review and vetting.

Citizens should have the right to consent, and the right to vote on such an important issue.

For more information or volunteer opportunities contact: **Oregon Citizens for Safe Drinking Water**, Kim Kaminski, Executive Director. Telephone: (503) 675-7451

e-mail: kim@safewateroregon.org.

Name	City	State	Zip	Country	SignedOn	Comment
Tammy Carpenter	portland	OR	97225	United States	8/21/2012	As a physician and a parent, I am opposed to systemic water fluoridation.
Cheryl Dillinger	Portland	OR	97211	United States	8/21/2012	I just want to have a say on my own drinking water's contents.
George Ramsey	Portland	OR	97218	United States	8/21/2012	Fluoride is poison. WATER IS LIFE!!! Don't mess with MY LIFE!!! □
Donna Hauser	Portland	OR	97218	United States	8/22/2012	I drink from the tap water in Portland because it doesn't have flouride in it. If it ain't broke don't fix it! We love our Portland water!
Kirsten Brady	Portland	OR	97239	United States	8/22/2012	I believe systemic implementation of fluoride is unnecessary and perhaps harmful. With growing debate on the matter we citizens deserve the opportunity to vote on the matter.
Pat Murphy	portland	OR	97215	United States	8/22/2012	The scientific evidence calls for following the precautionary. Most research in the US is blatantly ignoring unintended side effects, which could hurt the very people fluoridation is meaning to help.□ There are alternatives.
Robin Miller-Bodhi	Portland	OR	97202	United States	8/22/2012	There is not enough scientific data to suggest the benefit of fluoridation to public water supply. Robin Bodhi, LMT, BS
Teresa Keane	Portland	OR	97219	United States	8/22/2012	Fluoride is a drug that is not approved by the FDA for use. I don't want an unapproved drug in my water. Educate families to use toothpaste with fluoride and that will solve the problem
Patricia Conway	Portland	OR	97218	United States	8/22/2012	fluoride causes many problems in people's health.more so in kids. Please don't do this.....leave our water alone.
Cathy Cummins	Portland	OR	97266	United States	8/22/2012	health
Andy Harris	Portland	OR	97201	United States	8/22/2012	Because the fluoridation of municipal drinking water comes from industrial waste containing many toxic chemicals.
penni graf	portland	OR	97203	United States	8/22/2012	I dont want my clients or myself exposed to fluoride .
Marjorie Kircher	Portland	OR	97205	United States	8/22/2012	It has come to my attention that scientific research is showing probable neurodevelopmental effects of fluoride to developing brains of children, affecting neurologic function and also endocrine function, affecting more body tissues than teeth. This concerns me. Please reconsider fluoridating Portland's water. We don't usually make decisions in Portland "because everyone else does it." Thanks.
Diane Luck	Portland	OR	97212	United States	8/22/2012	Fluoridation poses a health risk and should not be implemented.
Kimberly Kaminski	Portland	OR	97213	United States	8/22/2012	Water is essential to life.

Anna Jensen	Portland	OR	97215 United States	8/22/2012	There is no need to put additives into our water system. Fluoride is available in many forms for those who want it.
Lynn Hanrahan	Portland	OR	97202 United States	8/22/2012	It makes no sense to force fluoride on everyone; there are ways to get it to children if needed. It is a costly, unnecessary fix.
Miguel Rosas-baker	Portland	OR	97219 United States	8/22/2012	I don't want flouride in my water!
Angelina McKinney	Portland	OR	97212 United States	8/22/2012	Fluoride was developed during World War I as an additive to mustard gas and was not intended to be consumed by humans. Toothpaste tubes with fluoride have a warning to not swallow on them and if you put this in our water system you making us ingest something that will harm us. In our house we do not use fluoride in our toothpaste and we will not have fluoride applied to our teeth. We have healthy teeth and strong teeth. Please do not add this to our water system.
lois foster	portland	OR	97211 United States	8/23/2012	Any medical or dental treatment imposed by the government is not a good idea. Informed consent or denial of an educated public is what we need on the issue of adding fluoride to our pristine water supply.
Dahra Perkins, MD	Portland	OR	97202 United States	8/23/2012	I do not think we have adequate evidence to show that the benefit outweighs the risk with fluoridation.
Lynne Gibbons	Portland	OR	97206 United States	8/23/2012	Tired of the government telling me what to do
Nina Scott	Portland	OR	97211 United States	8/23/2012	Our water is pure. For those interested in using fluoride topically, it is readily available. I believe the toxic influence of fluoride should be avoided at all costs.
Darlene Zimbardi	Portland	OR	97206 United States	8/23/2012	Flouride is poison. I don't want it in our drinking water
Malgosia Cegielski Ph.D.	Portland	OR	97219 United States	8/23/2012	The people of Portland have said 3 times they don't want it. It's an industry give away, it is extremely toxic to human and animal health and the environment and it makes me regret that I fought for Sam Adams against the recall because I think he has been bought off on this issue. This has nothing to do with the well being of children nor their teeth.
Zale Chadwick	portland	OR	97206 United States	8/23/2012	don't like toxic waste
mary scott	PDX	OR	97215 United States	8/23/2012	Personal Health Choice
Ute Munger	Portland	OR	97206 United States	8/23/2012	no need to be ruled by governmt for some decisions that individuals should be making for themselves
Nate Young	Portland	OR	97217 United States	8/23/2012	I have lived all of my adult life in cities without Fluoride in the water and have survived just fine. It is asinine to consider adding industrial chemicals to what is currently one of the purest municipal drinking water systems in the world!

Anna Crowley	Portland	OR	97206 United States	8/23/2012	Portland has some of the best water ever. I do not want added fluoride in my water. This should not be unilateral decision. The public has the right to be involved.
Natalie Busch	Portland	OR	97217 United States	8/23/2012	I should be able to make own decisions about my body
Gelsey Kurrasch	Portland	OR	97206 United States	8/23/2012	This is an issue that, at the very least, needs to be voted on.
Lisa Puma	Portland	OR	97219 United States	8/23/2012	Fluoridation causes arteriosclerosis. Government wants to impose it's views about the value of chemicals on citizens. if you want fluoride, buy it.
Donna Anessi	Yamhill	OR	97148 United States	8/23/2012	It is about freedom of choice. Sodium Flouride is not a nutrient. Our bodies have not evolved to drink this product. Anyone who wants to ingest flouride can use fluoride toothpaste or rinses or take pills. We should not be forced to drink the stuff.
Sharleen Roberson	Portland	OR	97202 United States	8/23/2012	An issue such as this should not be forced on the public, but a choice.
Andrew Firpo	Portland	OR	97214 United States	8/24/2012	Because I live in Portland and I have a 5 year old son.
Naga Nataka	Portland	OR	97206 United States	8/24/2012	I can't afford the expensive filtration system needed to filter fluoride out of my drinking water, and I don't want to ingest it. I believe people should be allowed to choose for themselves whether or not they use fluoride via the toothpaste they use.
Bill Osmunson	Wilsonville	OR	97070 United States	8/24/2012	Fluoridation is a violation of my informed consent. I do not consent to fluoridation and request Portland ask the FDA CDER for NDA.

James Black	Portland	OR	97236	United States	8/24/2012	Um...this should be a no-brainer. Fluoride is extremely bad for health and wellness, and this is documented fact. ☐ http://ahealthyidea.com/epa-reverses-itself-on-fluoride/☐ "In an amazing announcement that received little media coverage, the EPA has reversed itself on the claimed health benefits of the industrial chemical fluoride. Citing research suggesting fluoride ingestion can cause cancer, hormone disruption and brittle bones.☐ ☐ The report suggested that fluoride was especially bad for developing children and actually caused many dental issues (darkening of teeth, making teeth brittle) rather than being a promoter of dental health as propaganda has claimed for the past 60 years.☐ ☐ Many parents have trusted the government concerning use of fluoride. This underscores the point that parents and individuals should do their own research and seek a natural route when it comes to their health instead of trusting additives that are not found in nature.☐ ☐ A warning label has accompanied fluoride-containing toothpaste for m☐
Rodney Bender	Portland	OR	97213	United States	8/24/2012	We have one of the freshest water supplies in the country. Let's leave it clean and pure!
Grace Marian	Portland	OR	97214	United States	8/24/2012	Maybe we should make dental care more accessible instead of putting more chemicals into the water supply.
Colleen McCormack	Portland	OR	97213	United States	8/24/2012	I believe it's my right to choose whether or not to have the water my family drinks be systemically implemented with fluoride.
Jan Rizzo	Portland	OR	97211	United States	8/24/2012	There is conflicting research about whether adding this to the water supply is healthy and we should have a choice about our water.

Lynne Campbell	Lake Oswego	OR	97035 United States	8/24/2012	Fluoride's primary benefit is topical, not systemic. The chemicals to be added don't occur naturally, but are toxic waste byproducts of industry, contaminated with a host of toxins including arsenic and lead, for which EPA's public health goal (MCLG) is ZERO (i.e., any amount of arsenic added to the water, however tiny, will cause harm). Manufacturers will not stand behind their product as safe and effective when used as directed--in fact, no one assumes liability for harm, including the massive incidence of dental fluorosis (permanent damage to teeth) resulting from overexposure to fluoride. Fluoride is classified by FDA, when ingested for a reduction of tooth decay, as an unapproved drug. Americans are already exposed to significant quantities of fluoride from other sources, including food products processed with fluoridated water and contaminated with fluoride-based pesticide residue, dental products and treatments. Although the U.S. is now 74 percent fluoridated, the whole country is in an "oral health crisis," with the CDC reporting the first significant uptick in dental decay in 40 years. The elephant in the room--CDC says 80% of
Christine White	Portland	OR	97202 United States	8/24/2012	I'm really wondering why a mostly lame-duck city council is trying to ram this through without asking what we think. Fluoride's cheap and easy to buy and we don't need it on our plants in our pets' water and what will it do to the beer industry?
Tom Deines	Newberg	OR	97132 United States	8/24/2012	Thomas Deines
C. Merwin	Portland	OR	97212 United States	8/24/2012	As a citizen, it is so frustrating to me to see government wasting time, energy and resources on non-essential functions while neglecting important things that need those resources. If the citizens have voted against this 3 times then it does not warrant another round. Adding fluoride to drinking water is not the role of government.
elizabeth carlson	Portland	OR	97211 United States	8/24/2012	Daily intake of fluoride would be detrimental to my health. The ongoing studies reveal the risk to people as myself. My doctors concur. Topical application of fluoride can achieve the same results without endangering the health of people like myself. This would avoid risks to people as myself. Those in need can be treated by topical means.to all. putting others at risk. This is a win win solution. We do not have resources to put into into an expensive project which results are uncertain. Put this issue up to a vote so all can be heard.

Colleen Patterson	Portland	OR	97206 United States	8/24/2012	I am a parent who wishes to limit the chemicals my daughter ingests. She uses a flouride toothpaste and takes a flouride supplement, both means of preventing tooth decay which are more easily controlled by me.
Linda Pooley	Scappoose	OR	97056 United States	8/24/2012	It is very important to me that we have clean water. No reason to add fluoride to any water! Is unhealthy in many ways! If someone wants to get fluoride, they can get from dentist or buy it. I am sure many would donate money to a fund to provide to low income to buy it. No way should it be added to our water!!
ninette jones	portland	OR	97217 United States	8/24/2012	topical use of Fluoride is a personal choice. There is not a one size fits all approach to dental care, so systemic use of fluoride in Portland's drinking water is not helpful but an attack on weakened immune systems. My companion animals do not need fluoride in their drinking water nor do the salmon. My garden vegetables do not need fluoride either. No systemic use of fluoride in the people's drinking water.
Frances Holtman	Steilacoom	WA	98388-1 United States	8/24/2012	I do not want flouride in my drinking water. I do not want flouride in my cleaning water. I would not like flouride in the ecosystem either as that is not healthy. Flouride is an attack on weakened immune systems and forcing me and others who do not want flouride in the water supply seems like something a communist would do.
Teresa Farrell	Portland	OR	97202 United States	8/25/2012	I want to choose what I give my child. Since she has a chronic illness we have chosen not to give her fluoride. □ Thank you for your consideration, Teresa Farrell RN
Pam Allen	Portland	OR	97206 United States	8/25/2012	Cost to the city, cost to human health, cost to wildlife
Sara Genta, RN	Portland	OR	97202 United States	8/25/2012	Thyroid health concerns
Spyder Carneol	Portland	OR	97215 United States	8/25/2012	There must be public input on this issue that will effect the entire population of Portland
Chris Henry	West Linn	OR	97068 United States	8/25/2012	I'm puzzled... Are we having an epidemic of cavities and teeth falling out of people's mouths? If people want fluoride in their drinking water, let them drink mouthwash.
james thompson	portland	OR	97210-2 United States	8/25/2012	i grew up with fluoridated water. i ended up with above average number of fillings and stained teeth!
Susan Glosser	Portland	OR	97202 United States	8/25/2012	Potential health and environmental risks of fluoridation are significant and have not been sufficiently addressed.
Kurt Fosso	Portland		97213 United Kingdom	8/25/2012	Health.
Peter Gold	Portland	OR	97232 United States	8/25/2012	It's water!!!!!!!!!!!!!!

Jana Throckmorton	Portland	OR	97206 United States	8/25/2012	I have autoimmune disease. Any fluoride in my system is poison. People already suffering from food or chemical allergies- which is a growing population- will suffer first. Children next. Elderly next and then the rest of the population as soon as they have too much gluten or RBST dairy or GMO's, chemical crop sprays from food. Please, put a stop to this! We need safe water.
Brian Kinney	Los Angeles	CA	90065 United States	8/25/2012	public consent desired
Brian Keith	Portland	OR	97203 United States	8/26/2012	Fluoride causes an "allergic" type of reaction in around 1% of the people who use it. In Portland that would affect at least 5000 residents who would then have to find water from other source or stay sick. We must not put things in the water we share, if there are those who would suffer from it.
Julie Ratcliff	Portland	OR	97206 United States	8/26/2012	We have enough drugs in our water. Show me how we are worse off without fluoride, until then stop messing with the water.
Sandra Stirling	Beaverton	OR	97006 United States	8/26/2012	Fluoride is unsafe to consume internally...just ask the medical profession. Fluoride is in toothpaste and that is all that is needed to reduce and eliminate decay. See what Europe has done decades ago. They use fluoridated toothpaste and do not put fluoride in their water because it is harmful to one's health to swallow it!!!
Carrie Haas	Portland	OR	97220 United States	8/26/2012	hy is this important to you?
Betsy Langton	Portland	OR	97219 United States	8/26/2012	If I want to take fluoride, it is a choice I make. If I want to give it to my children, it is choice I want to make. I believe it is unconstitutional to add a chemical with known health hazards to public water because a board of politicians have decided it is the correct thing to do. It is not government domain to chose what medication I or my children take . I absolutely oppose this measure and will do what I can to see that it DOES NOT come to pass.
kate markell	Portland	OR	97221 United States	8/26/2012	I live here and DO NOT want fluoride in my water. I want to be able to choose when and how I fluoridate my teeth.
Meladee Martin	Portland	OR	97221 United States	8/26/2012	Environmental and health concerns regarding the use of a chemical by product of the fertilizer industry.
Shayla Rogers	Portland	OR	97218 United States	8/26/2012	Ummm. Duh.
Tamarah Jane Pringle	Portland	OR	97219 United States	8/26/2012	Portland's water has been pristine and should not be tampered with. Fluoride is unnecessary and carcinogenic. If people want to supplement, that's their choice.

Karen Ball	Beaverton	OR	97005	United States	8/26/2012	I read constantly on health issues and take every step I can to assure my health since I am uninsured and cannot afford it. I want to keep fluoride out of my food. I buy organic green tea now, after reading all the research showing how much fluoride is in it with the pesticides and fertilizers that are being used on it. To put it in the water as well when I cannot filter my garden water is criminal.
Kathleen Kay	Beaverton	OR	97006	United States	8/26/2012	Fluoride added to our water is not necessary or is it healthy. Start connecting the dots those who have been chosen to run our city council. Your people are talking to you and they are saying "No" to adding a toxin to their drinking water.□ Kathleen Kay
Kimberly Kaminski	Portland	OR	97218	United States	8/26/2012	This issue is important to me because IT'S OUR WATER!
Bill Osmunson DDS MPH	Wilsonville	OR	97070	United States	8/26/2012	Many are ingesting too much fluoride. Without measured evidence of current serum or urine fluoride concentrations, Portland does not know how many are ingesting too much fluoride.
Winter Harvey	Portland	OR	97213	United States	8/26/2012	We all have a choice about what foods we put into our bodies, but we only have one water source. We should not be forced to consume fluoride.
Judith Beck	Portland	OR	97209	United States	8/26/2012	It is totally UNDEMOCRATIC to force people to drink drugs in their water without their fully informed consent!
Laura Fletcher	Portland	OR	97225	United States	8/26/2012	I believe that we should be able to vote on such a major change to our water. I also believe that drinking water should not be used to deliver medical or dental chemicals to the public when alternatives are available.
Judy Morse	Beaverton	OR	970097	United States	8/26/2012	Medication should not EVER be put in everyone's drinking water especially when the medication easily accesible to anyone who wants it.
Joyce Ferrier	Tigard	OR	97223	United States	8/26/2012	I am concerned about the side effects of consuming flouride for my daughter and everyone else that is chemical sensitive and even for those who aren't chemical sensitive.
Janine McFall	Canby	OR	97013	United States	8/26/2012	I have friends and family that live in Portland who would be adversely effected by the addition of fluoride to the drinking water.
Jean Landes	Braverton	OR	97007	United States	8/26/2012	children's health & wellbeing, right to know, right to choose
Carolyn Clark	Lake Oswego	OR	97035	United States	8/26/2012	After studying fluoride for 47 years I am anxious to be free to choose. There are alternatives i.e. taking fluoride in tablet form for those so inclined. Thank you.
Camille Gifford	Lake Oswego	OR	97035	United States	8/26/2012	Why take away our right to choose whether we want chemicals in our water or not?

Allen Clark	Canby	OR	97013 United States	8/26/2012	Even if someone agrees with fluoridation, doing it in this way is uncontrolled. Some people don't drink enough water, while others drink much more than average. And you don't know how much they are getting if they brush 0-3+ times/day... If you want to give people who can't afford fluoride, give vouchers so they can get how much they need and not force it on the many who already get enough, or too much.
Marion Newey	Warren	OR	97053 United States	8/26/2012	The cost outweighs the benefits which in this case is involuntary exposure to a poison. If this campaign for opposition to fluoride in Portland, perhaps we may get it removed from this area.
Louise Tolzmann	Portland	OR	97222 United States	8/26/2012	As a physician, I am very concerned about fluoride entering the body orally and the possible health consequences from it.
sabiah sogard	PORTLAND	OR	97206 United States	8/26/2012	Flouride calcifies the pineal gland. I would like to retain a healthy pineal gland.
Beth Hahn	Portland	OR	97213 United States	8/26/2012	I have chemical sensitivity and cannot tolerate fluoride. My doctor has told me to avoid it. No water filter will remove it. Only reverse osmosis will remove it, and RO is expensive, cumbersome, difficult to maintain, and wastes water. The city is opening themselves to liability by forcing this on people who cannot tolerate it and have been told by their doctors to avoid it. Reverse osmosis will take care of drinking water, but it remains in water we use to bathe in. We absorb a certain amount through our skin. There is currently no technology that will remove it from water used to bathe, water our gardens, etc. All this leads to accumulation of fluoride in the body.
stefan senna	portland	OR	97212 United States	8/26/2012	My health. Fluoride is toxic and we as individuals must have the right to determine what is in our drinking, showering, cooking, etc.. water.
Kenneth Vincig Vincig	Portland	OR	97212 United States	8/26/2012	Health and safety
Tod Elliott	Portland	OR	97219 United States	8/26/2012	I don't want to be poisoned through the water supply. It is just another way to destroy our health.
Bill Novotny	Portland	OR	97211 United States	8/27/2012	First, the sneaky way they are going about this. □ Who is sponsoring these 'concerned citizens for fluoride' and who paid for the commercials. □ Most of the research they are quoting from is a decade old, and who paid for that 'research'. □ Fluoride is a poison and everything accumulates over time in your body.

Beth Giansiracusa	portland	OR	97232 United States	8/27/2012	here is no need to fluoridate the water... just because billy jumps from the bridge does not me you have to. And most dentist do not approve of fluoride in the water... cause it is a poison
Rantu Press	Portland	OR	97211 United States	8/27/2012	I don't want fluoride in Portland's pristine water.
Heidi Pannke	Portland	OR	97203 United States	8/27/2012	Flouride is a poisonous neurotoxin that is a hazardous by product of the fertilizer industry and has NO place in our pristine water supply. If people feel they need to have flouride in their diet, let them take tablets or swallow their flouride toothpaste. I do NOT want to be forced to consume flouride needlessly. Thank you
Amy-liana Baker	Portland	OR	97215 United States	8/27/2012	Fluoride should be a choice, not forced on anyone. There is evidence that it is not good for us if ingested- used on the teeth is much better, and even then I want a choice.
Ansula Press	Portland	OR	97211 United States	8/27/2012	I do not want to be medicated without my consent.
Leah Yamaguchi	Portland	OR	97233 United States	8/27/2012	I am a health care provider and have young children. I care about our health and am firmly against systemic fluoridation.
Renee Manly	Austin	TX	78749 United States	8/27/2012	Mandatory medication of the entire city of Portland and surrounding cities absolutely MUST be with the consent of the people. The money being spent on this project could easily be used instead on projects targeting individuals that actually need fluoride treatment, with their consent, and in dosages that are safe and tailored to them.
Shannon Bishop	Portland	OR	97236 United States	8/27/2012	Costs of implementation could be better used for public outreach and empowerment.
Gene Zilberstein	Portland	OR	97202 United States	8/27/2012	Portlanders have some of the best water in the nation. Don't poison us!
tom seaman	moscow	ID	83843 United States	8/27/2012	Sodium Flouride is toxic, please do not put it in the water!
Jasmine Albert	Portland	OR	97223 United States	8/27/2012	I need healthy water
Tammy Frederick	Milwaukie	OR	97222 United States	8/27/2012	I care about the quality of life
G. Buddy Bercu	Portland	OR	97214 United States	8/27/2012	There is enough flouride in toothpaste if you choose to incorporate it into your daily regiment. It can cause cancer and other reproductive maladies...We don't need it in our pristine Bull Run water supply. Thanks
Corinne Palmer	Oregon City	OR	97045 United States	8/27/2012	I am a concerned citizen. I work in Portland and do not want the drinking water to be fluoridated.
Julie Waddell	Oregon City	OR	97045 United States	8/27/2012	This or any law like it takes away my right to choose, and that is why it is of grave importance to me. This is mass medication of the public without regard for individuals personal needs and it crosses the bounds of our republic.

Kimberly Anderson	Portland	OR	97214 United States	8/27/2012	I choose not to use fluoride toothpaste because of the potential health risks. I don't think our city's drinking and bathing and washing water should be pumped full of a chemical with dubious health and safety value.
dena Ford	Newberg	OR	97132 United States	8/27/2012	Fluoride is not safe!!
Albert Kaufman	Portland	OR	97212 United States	8/27/2012	I'd like to see more discussion on this issue, and I trust Kellie Barnes.
Kay Floyd	Martinsburg WV		25404 United States	8/27/2012	Citizens should have the right to make decisions concerning their own health. I grew up without fluoride in the water and didn't have a cavity until I was 19. My daughter didn't have one until she was 29.
Shawna ONeal	Portland	OR	97212 United States	8/27/2012	I do not feel ingesting fluoride is safe for our health.
Nadi Gruber	Portland	OR	97212 United States	8/27/2012	Really? It's our water and flouridation is awful.
Steven King	PORTLANE	OR	97201 United States	8/27/2012	This issue at LEAST needs to come before a vote of the people.
Lorraine Marchant	Oregon City	OR	97045 United States	8/27/2012	I want the right to choose what I put into my body.
Jeff Slater	Tigard	OR	97224 United States	8/27/2012	Fluoride can have harmful effects on our health.
Donna Hauser	Portland	OR	97218 United States	8/27/2012	Love the water as it is. Don't force us to buy water to avoid drinking fluoride. Don't be controlled by those that want our most precious resource.
Nancy Parent	Portland	OR	97225 United States	8/27/2012	We all know the health and enviromental risks of fluoridating our water and so do they. Why are they not allowing us to vote on it? because they know we would shoot it down. They know how smart we are.
Amanda Nelson, NTP	Portland	OR	97211 United States	8/28/2012	Fluoride is a medicine and people should be given the choice as to wether they want to ingest it. Do not medicate the water supply!
Juana Celia Djelal	State Colleç	PA	16803 United States	8/28/2012	http://www.fluoridealert.org/top-10-reasons-against-fluoride.aspx
Cedric Rougier	Portland	OR	97209 United States	8/28/2012	Because I do not wish to have fluoride in my water. There is already enough in the environment and more recent studies shows it is health debilitating.
Brittaney Califf	Portland	OR	97220 United States	8/28/2012	I don't want to ingest fluoride.
Kylene Fickenscher	Portland	OR	97217 United States	8/28/2012	I think it's important for the public to make a decision on this issue.
James Metcalfe	Portland	OR	97221 United States	8/28/2012	We should be developing options that allow people the freedom to choose. This is a one- size-fits-all program and is inappropriate for a government to implement such a program. Also, it is not a public interest org. that initiated this "discussion" but rather a for profit org. No flouride in our water supply please. Audrey

Davida Gordon	Portland	OR	97214 United States	8/28/2012	Flouride is poisonoius. why would I want to ingest it daily? Portlanders love their Bull run untouched, naturally filtered water. It has worked for over 100 years.
Emily Cleek	Portland	OR	97211 United States	8/28/2012	I recognize the intended health benefits of fluoride, but these can all be gained by purchasing inexpensive fluoride rinses that one does not have to ingest. I am concerned about not having a say in what is added to the water we drink, nor do I believe that the regulation of fluoridation programs nationwide has been held to a high standard of quality.
Claire Andrews	Tigard	OR	97223 United States	8/28/2012	To protect individual private rights, medical differences, aquatic life, poor children from unnecessary chemical burdens.
Myra Himmelfarb	Portland	OR	97219 United States	8/28/2012	More research is needed in the use of flouride obtained not naturally but from toxic wastes, and I think any flouride is best applied topically and not internally, to anyone.
J S	Portland	OR	0 United States	8/28/2012	Fluoride is toxic for some people and potentially dangerous for everyone. Topical applications give the benefit with much less risk. People need the full scientific evidence and should be able to vote on such an important issue.
Alice Shapiro	Portland	OR	97202 United States	8/28/2012	I agree that the public has a right to know what is in their food and/or water supply.
heather suhrbur	portland	OR	97201 United States	8/29/2012	flouride is a dangerous pharmaceutical and it is not necessary to put in the water you get more than you need from a pea sized amount of toothpaste. Even toothpaste has a warning sign on it that if you swallow it to call poison control. Additionally, it does not prevent cavities instead it has been shown to cause flourosis in most 14 year old that were included in a study that shows that too much flouride causes flourosis of teeth and bones. In case you dont know what that means you should look it up. These children will have more brittle teeth and bones. That is not constitutional nor is it moral to force this upon the population who must use the water to cook, bathe and drink. Even if you have limits on how much ends up in a glass of water there are no studies to show what the limit is for breathing in when taking a hot shower or in how much builds up if you drink 8 plus glasses of water or more daily. There is no real science to support putting it in the water. Japanese Scientist found that flouridated water lowers the IQ by 14 points. No wonder the US students perform the way they do!!
Steven L. Oewns	Portland	OR	97209 United States	8/29/2012	IF I AM GONNA GET SLOW-KILLED I WOULD VERY MUCH ENJOY HAVING SOME SAY IN THE MATTER.

2012_09_05 Petition Comments.xls

David Nelson	Gresham	OR	97030 United States	8/29/2012	We don't need to add more chemicals to our water supply. Dental problems are now verified to be directly related to American's no longer eating healthy saturated fats in their diet. NAZI Germany added fluoride to their water supply and it had nothing to do with people's teeth.
Mike Brady	Gresham	OR	97080 United States	8/29/2012	I don't think it's rite for our government to make such a decision like this without the approval of the voters.
Bruce Sprando	gresham	OR	97030 United States	8/29/2012	I think the general public gets lied to and deceived too often, and I think Kellie Barnes is on to something here. The water supply for the city you live in IS A BIG DEAL!
Debra Parker	Tigard	OR	97223 United States	8/29/2012	This is a personal health decision that I don't want anyone else making for me and my family.
Kyle McNicholas	Portland	OR	97206 United States	8/29/2012	I don't want to poison my family, friends, or anyone for the matter
Ameyalli Ayala	Portland	OR	97206 United States	8/29/2012	Because I drink tap water.

Noel Goodman	Beaverto	OR	97007	United States	8/30/2012	Fluoride May Be Neurotoxic in Kids ☐ Megan Brooks ☐ Authors and Disclosures ☐ Print This ☐ Share ☐ ☐ ☐ Exclusive Report: Medscape surveyed over 21,000 physicians about their EHRs. See which one ranked the best. ☐ ☐ View Report > ☐ August 23, 2012 â€” Exposure to high levels of fluoride in drinking water may harm children's neurodevelopment, according to a systematic review and metaanalysis of published studies. ☐ ☐ Philippe Grandjean, MD, PhD, of the Department of Environmental Health, Harvard School of Public Health, Boston, Massachusetts, and colleagues found that children living in highly fluoridated areas had significantly lower IQ scores than their peers living in areas of low fluoridation. ☐ ☐ "The results suggest that fluoride may be a developmental neurotoxicant that affects brain development at exposures much below those that can cause toxicity in adults," they write. ☐ ☐ The study was published online July 20 in Environmental Health Perspectives. ☐ ☐ Lower IQ ☐ ☐ A 2006 report from the US National Research Council (NRC) concluded that harmful effects of high fluoride concentrations in drinkin
elisa nutzmann	portland	OR	97266	United States	8/30/2012	Not having fluoride in our water is one of the main reasons I love living here, I DO NOT WANT this POISON in my water!
Alison Chandler	Portland	OR	97266	United States	8/30/2012	I don't want to be forced to ingest something that I do NOT need. I take care of my teeth just fine.
Satya Ambrose	damascus	OR	97089	United States	8/30/2012	It's inappropriate to give everyone a substance that has potential harm .
Paul Prior	Portland	OR	97206	United States	8/30/2012	Personal Freedom to not have medication forced on anyone
Sabrina Harle	Portland	OR	97232	United States	8/30/2012	Because fluoride belong ON our teeth, not IN our bodies. And I also oppose MASS mandated government medicating through our water supply.

Charlie White	Portland	OR	97229 United States	8/31/2012	My good health is dependent on minimizing my bodily intake of chemicals. Fluoride is a waste by-product of the phosphate fertilizer industry which will add other pollutants such as lead and arsenic. Fluoride is a Biocide!
Diane Tweten	Portland	OR	97213 United States	8/31/2012	Being healthy is important-if this was ever a good idea, the knowledge says that it isn't!!!
Sally Frese	Portland	OR	97206 United States	8/31/2012	Its my decision if I want to take it. It shouldn't be forced on me.
Rick North	Durham	OR	97224 United States	8/31/2012	City Council members have all received my personal letter.
Carolyn Alter	Portland	OR	97213 United States	9/1/2012	I don't believe in drinking fertilizer byproducts which include toxic metals. Keep our water pure.
Benjamin Wurtsbaugh	Portland	OR	97236 United States	9/1/2012	Floride NOT being in the water was one of the reasons I moved to this town.
Michelle Marcyk	Portland	OR	97232 United States	9/1/2012	Putting fluoride in the drinking water could make the city responsible for damaging the health of citizens who have specific medical conditions. Why is it that fluoridation is nixed in (almost?) all European countries? What factors play into their decisions which are not being seriously considered in the USA?
Susan Miller	Lake Oswego	OR	97035 United States	9/1/2012	Every person in the Portland metropolitan area will be drinking this water since Portland is the hub of all the area's activities. We don't want to be forced to ingest this neurotoxin.
Jacob Stebins	Troutdale	OR	97060 United States	9/1/2012	Because fluoride is a poison promoted by the federal government to lower the IQ of the citizenry.
rob Helms	Portland	OR	97215-2 United States	9/1/2012	Everyone needs to know about what's going on...
Catherine Agrimson	Portland	OR	97203 United States	9/1/2012	Because fluoride should be an individual choice , not one that is imposed.
Cris Maranze	Portland	OR	97205 United States	9/1/2012	Fluoridation of water is dangerous to humans, fish and the environment. We should use the money to develop programs for healthy children's teeth that do not risk the children's neurological and bone health and potentially destroy salmon.
anastasia poirier	Portland	OR	97210 United States	9/1/2012	No toxic waste in our water!
Elizabeth Nyiri	Portland	OR	97214 United States	9/1/2012	I feel the risks outweigh the benefits and the voters should have the opportunity to choose.
John Hubbard	Portland	OR	97209 United States	9/1/2012	Some cities are now beginning to move AWAY from fluoridation due to scientific findings of the health risks. Portland has been wise on this issue from day one, let's not screw it up now at this late date, while other cities stop fluoridation. If I want fluoride, I can get it in my toothpaste , so I don't have to ingest it. Thank you very much. ~John

John D Brown	Portland	OR	97212 United States	9/2/2012	I drink a lot of water, bath in city water, eat much of my vegetables watered by city water and have exposure to city water in many other ways. I do not want to be exposed to this toxin involuntarily. Nor do I wish to publicly subsidize the disposal of an industrial toxic waste product like fluoride.
Jerzy Giedwoyn	Portland	OR	97215 United States	9/2/2012	I oppose forced "medication" for an entire population. Furthermore, fluoride was NEVER approved for ingestion and the scientific literature shows that it may be unsafe for ingestion, particularly for society's most vulnerable: children and the elderly.
Kris Johnston stephana johnson	scappose	OR	97056 United States	9/2/2012	I am in Portland frequently shopping and eating out.
	portland	OR	97220 United States	9/3/2012	we should have a right to choose - to put it in our water supply makes no sense whatsoever. If the "powers that be" really believe fluoride to be the answer to poor dental health then topical use is controllable and people can still have their power to choose.
Kirk S.	Portland	OR	United States	9/3/2012	There are very good reasons why most of Europe does not fluoridate and of those countries that do not, the vast majority has opted to STOP fluoridation. The medical industry and dental industry in America is driven by profit incentives and dubious motives when it comes to fluoridation, NOT the the public good, or keeping children's teeth healthy. IF THERE IS NOT A PUBLIC VOTE, THEN IT WILL BE APPARENT THAT PORTLAND'S CITY GOVERNMENT NEEDS A MAJOR OVERHAUL AND REEVALUATION ON A WHOLE HOST OF ISSUES, NOT MERELY FLUORIDE. Ramming fluoridation down the public's throat in Portland is an indicator that Portland's government has become corrupt to the point of needing to be re-designed from the ground up. If fluoridation is passed without voter consent, then I will personally back a restructuring of Portland's City Council, requiring new members to be state residents for at least TEN YEARS prior to running for City Council, and also to take the mayor off the city council permanently, in addition to other safeguards that will guarantee City Council does not fall into the hands of people like Nick Fish, who waltz
Heather Arnett	Portland	OR	97239 United States	9/3/2012	I don't want others choosing to put chemicals in my body. I drink water to drink water, not chemicals.
Clare Bourquein	Portland	OR	97232-11 United States	9/3/2012	People should have a choice as to what chemicals are placed in drinking water.
Scott Putnam	Portland	OR	97239 United States	9/3/2012	I am against forced medication!

Kate Mura	Portland	OR	97220 United States	9/3/2012	There are people, like myself, who are allergic to fluoride and do not want it in my water. I support drinking tap water and would not be able to without researching filtration. Which I do not want to do when the water right now is fine.
Matthew Collier	Portland	OR	97202 United States	9/4/2012	I believe that forced medication via the water supply is wrong and that the public should be allowed to voice their opinion through a public vote.
Raquek Hugo	Portland	OR	97215 United States	9/4/2012	I chose a chemical free option in my food and water.
Elise Hilde	Portland	OR	97206 United States	9/4/2012	Water is the key to our survival as a human population. Everyone should have access to free, clean drinking water! To add chemicals to our water without our consent is wrong. Give the people of Portland a say in their future health!
Jennifer Davies	Lake Oswego	OR	97035 United States	9/4/2012	I hold an MD and MPH and am a mom of 3. The adverse health effects of Fluoride far outweigh the benefits.
Sam McKinney	Portland	OR	97212 United States	9/4/2012	There is way to much fluoride being pushed on every one commercially with no details of the ill effects of this WW2 poison gas ingredient and most time almost being forced on us by the dental organization. They really need to be reeducated. I feel the city is just after more ways of obtaining funding at the cost of us all.
Sue Linton	Portland	OR	97239 United States	9/4/2012	I don't want medication in my drinking water.
Aaron Berg	Portland	OR	97217 United States	9/4/2012	because i don't like govt telling me what i have to ingest.
Lacey Holbert	Hillsboro	OR	97123 United States	9/4/2012	I don't want fluoride-rich waste products from the phosphate fertilizer industry in my water. If I feel I need it for my health, I'll have it applied topically at the dentist. It has never been proven or documented that systemic use of fluoride has benefited anyone.
Amy Elvey	Portland	OR	97211 United States	9/4/2012	I want to keep my body healthy!
Daniel Lacy	portland	OR	97266 United States	9/4/2012	Freedom of choice is a fundamental right of human beings.
Gene Latimer	Portland	OR	97214 United States	9/4/2012	This is so utterly preposterous: putting known poison into public drinking water! Who's making money off of this? Why are We the People being purposefully overridden. May every person on the city council who supports this never be re-elected!
Megan Zimmerman	Portland	OR	97214 United States	9/4/2012	Fluoride is a toxin.
Eric Wheeler	Portland	OR	97293 United States	9/4/2012	The research is clear: fluoride is toxic. I don't want *any* amount in my water. ☐ ☐ My water stays clear!
Kimberly Siemer	Portland	OR	97206 United States	9/4/2012	Concern over my family's health, particularly my children's
George Stoddard	Wilsonville	OR	97070 United States	9/4/2012	No one should be forced to be "medicated"!

Beth Munger	Portland	OR	97215 United States	9/4/2012	It's crazy to have a public water supply that is not safe for everyone to drink. Infants, pregnant women, and the elderly are encouraged to drink only non fluoridated bottled water in cities that fluoridate. Plus, dentists have been telling us for years that fluoride only helps when a person is still a child and that this is one reason why adults don't even receive topical treatments. Every news article that I have read mentions that there is no data showing that people in Portland have worse dental health than people any where else in the country. Seems like the fertilizer by product lobbyists will get their way.
Petra Prostrednik	Portland	OR	97219 United States	9/4/2012	For the healthy and safety of my family!
Sussanna Czeranko	Portland	OR	97214 United States	9/4/2012	Fluoridation is not healthy for me or any of my family members.
Richard Marshall	Portland	OR	97223 United States	9/4/2012	Because deep down this will not promote my health or the health of my friends -- rather it will be detrimental to our health. ☐ This needs a vote of all concerned citizens
Jason Anders	Portland	OR	97211 United States	9/5/2012	Fluoride not in our drinking water, please. not ever. This is not a public service and does not serve the public health on a large scale. Nope.
Devin Jordan	Portland	OR	97213 United States	9/5/2012	I drink water.
Lucielle Brownell	Beaverton	OR	97005 United States	9/5/2012	I do not want my water contaminated. If I want fluoride, I will provide it for myself.
Cory Latimer	Bogota	Colombia		9/5/2012	I am from Portland.
erroyl hawley	Lake Oswego	OR	97035 United States	9/5/2012	Water treatment should be limited to removing harmful elements.
nancy d johnson	portland	OR	97229 United States	9/5/2012	There is no proof that fluoridation has positive results of any kind, and I so want to keep Portland's water supply pure.
Amy Bennett	Portland	OR	97211 United States	9/5/2012	I am signing this petition today in hopes that before adding fluoride to our water system, a vote is put to the public. It is my opinion that targeting those in need of fluoride treatment would be better served by direct applications. Perhaps free dental clinics in low income elementary schools? I believe that we have a right to vote on this subject. Thank you. ☐ ☐ Amy Bennett
Lise Thom	Portland	OR	97216 United States	9/5/2012	Adding fluoride to the water would not be of benefit to everyone. Have a school program for topical application of fluoride or subsidize sealants for at risk children is better for targeting dental health.

HEATHER AGOSTA	Portland	OR	97217 United States	9/5/2012	Fluorinating water does fix a legitimate public health concern. If we are concerned about the dental health of our children, we should consider their diet and teaching them proper dental health care. Preventing serious illness, like ecoli and giardia by adding chlorine is different matter than adding fluoride to prevent tooth decay, and our city commissioners shouldn't insult our intelligence by implying that theses are similar arguments.
Carol Dickson	Tigard	OR	97224 United States	9/5/2012	It doesn't make sense to force mass medication on everyone to benefit a few who could get the same medication by ingesting it individually. Make fluoride available to all who want it at a centrally located site -- free - it would be less costly than the \$5 million initial installation for fluoride and the half-million per year maintenance costs of fluoridation. Many people are allergic to fluoride, or otherwise cannot tolerate it or should not ingest it (I have osteoporosis and have been told to avoid fluoride). I drink a lot of water, as I do not drink sodas or juices, so how would one gauge the amount of fluoride each individual ingests? And what of the effects on the environment of fluoride pouring into the streams and ground water? So much would be "wasted" - laundry, toilets, lawn watering, etc. Let those who want fluoride take it -- so simple. What's next? Vaccines in our water? Vitamins and minerals? Hormones? Let's keep our pure water pure. Please!!!
Terri Levine	Portland	OR	97239 United States	9/5/2012	Supplementation of questionable medical benefit should be a personal choice.
Elaine H.	Portland	OR	97206 United States	9/5/2012	My husband grew up with fluoride in his drinking water and has a mouthful of cavities to show for it. Our kids (in high school & middle school) have ever taken the fluoride pills or drops and have had only one cavity. The difference - nutrition and proper hygiene. We don't "blast" our water supply with medication during cold or flu season. Why for this?☐
Kristin Morgan	Portland	OR	97201 United States	9/5/2012	I have an eighth month old baby and I have read recently that systemic fluoride use can affect cognitive development as well as be the cause of various diseases. I have also read that giving topical fluoride is enough in order to fight cavities. It also, of course, concerns me when run off water that has fluoride in it gets into our water tables which affects our whole ecosystem.

Phineas Warren	Portland	OR	97212 United States	9/5/2012 Something that may cause harm shouldn't be mandatory.
Claire Houston	Portland	OR	97203 United States	9/5/2012 We have the best drinking water in the world! Let's keep it that way.

Testimony to Portland City Council in Support of Fluoridated Drinking Water
Teri Mills, RN, MS, CNE
September 6, 2012

Mayor Adams and Commissioners:

My name is Teri Mills, I am a registered nurse, and a member of the Oregon Nurses Association, the largest nursing union and nursing professional association in the state representing over 12,000 Oregon Nurses. I am also a member of ONA's Cabinet on Health Policy.

Let me begin by thanking you for allowing me to testify today in support of fluoridating Portland's water supply.

While you and your staff have been keeping a tally of the viewpoints of your constituents, Oregon nurses and other health care workers have been on the frontlines, treating patients who are experiencing Oregon's Dental Health Crisis firsthand. We see children suffering from dental caries-cavities that could be prevented with fluoride. Tooth decay hurts, and when kids hurt, they are unable to focus and fall behind in the classroom. Poor dental health leads to poor overall health, and without fluoridating our water we're putting kids at an unfair disadvantage.

I want to emphasize today that nurses believe very strongly in the need to promote access, quality, and cost effective health services. Fluoridating our drinking water addresses these goals. This measure assures that all children have equal access to this preventive measure. Fluoridating the water will reach everyone who drinks water from the City, regardless of their socioeconomic background. As you've heard today, adding fluoride to our drinking water is also cost effective. The American Dental Association notes that for every dollar spent on fluoridation, there is a direct cost savings of \$38 on dental treatment.

Health promotion and disease prevention are at the cornerstone of every nurse's practice. Across different practice settings, nurses work with patients to encourage wellness and give patients the tools they need to prevent disease. Fluoridating our drinking water supply is a common sense measure that will prevent so much unnecessary pain and suffering. Nurses understand how critically important healthy teeth are for children—decaying teeth interfere with the position of permanent teeth, and may even lead to abscess and infection/sepsis that can cause death.

As a nurse, I have always been proud to live in Oregon because we have been leaders in health care, first with the Oregon Health Plan and more recently with Health Systems Transformation. But when it comes to this issue, Oregon is known as the "Go To Place for Tooth Decay". The CDC calls the steep reduction in dental cavities due to adding fluoride to public water supplies one of the top 10 public health achievements of the 20th Century. It's time for Portland to take this step to improve public health, and protect our children.

I urge each of you to support the addition of fluoride to our water, so we can assure that the children who live in our own community have the best dental health possible.

Comments to the city council of Portland, Sept 6, 2012

Mayor Adams and Commissioners,

Thank you for the opportunity to speak with you today.

The city's teachers are back in the classroom this week, and as a result, they cannot be here. But I just retired at the end of the last school year, so I can contribute, I hope, to the well-being of all those people involved in the educational process.

Teachers love their students, take great joy in their every progress and hurt when those kids hurt. That is why I am here today.

I taught in a fantastic high school in Beaverton for eleven years and I would like to tell you what I saw AFTER Beaverton fluoridated its water supply, in the spring of 2004.

Within a year of that addition, I was certain that I saw decreasing memory among my students in such mental functions as remembering vocabulary, grammar and facts, integrating ideas and seeing connections. Learning any foreign language uses many more mental functions than just learning in our native language, so it is not surprising that some of the first signs of impairment showed up among foreign language students.

With each passing year, the memory loss seemed more pronounced and I heard many students express their own frustration at themselves for all they couldn't remember any more.

For the past two school years it was clear that I was not the only teacher seeing this loss of memory, though other teachers did not know what might be a cause. The long-term experienced teachers especially commented nearly every day in the teacher's lounge about their frustration with the students' poorer memories. We all agreed that today's students were not as strong as those of 5 years or so ago. And our principal agreed that there seemed to be some academic difficulty, more notably among the boys. Science teachers commented that students couldn't remember facts they had seemingly learned really well three months earlier.

Because a foreign language class requires back and forth conversation, class became more frustrating for all, since many students were disinclined to speak, period! Many just looked blank and said they had nothing to say, even when we had visitors from abroad visiting our class. Their curiosity had diminished also.

I was concerned about what appeared to be decreased language capacity as well as memory. But as grades dropped, the anxiety about grades and getting into college skyrocketed. That created plenty of tension and unhappiness. Even my best and brightest students were commenting about their lack of memory, and their stress level was rising because of that.

But there were also indisputable visual signals that something had changed. There was an unprecedented spike in the number of students with fractured and broken bones and sports injuries. The halls were constantly full of new kids with splints, casts and on crutches. I had never seen anything like that epidemic of injured bones in my career. There were also many visits to orthodontists for teeth work. Last year, I had about 5 girls with eating disorders, something that I had never witnessed before. Additionally, many students seemed depressed, and quite a few students had parents undergoing divorces. Some unseen factor was eating away at the quality of life for so many of our students.

But the most serious change, that I will never forget as long as I live, was something that shocked our school to the core. One of our male students came down with osteosarcoma, a bone cancer that is considered to be a rare consequence of fluoridation. This sweet young man died, after three miserable years fighting it, with the love and support of his heart-sick but brave family, and sustained by so many people from our school who rose to the occasion to help them. But he died, a miserable death after a noble fight. It was sad beyond all measure to see this young man at the pinnacle of his life deteriorate so dramatically, and it leaves me with this request.

Sometimes, it is difficult to “prove” things, but *if there is the slightest chance that such a death could be prevented, by leaving fluoride out of the water supply, it is unconscionable to put it in!* No one should ever have to go through what that young man had to go through --- NO ONE! And to willingly accept that risk is criminal, in my opinion. But you need to know that fluoride is associated with that cancer, even though it is rare, You and your very own families will now be exposed to the wide ranging effects of fluoride. This is a chance we don’t want to take. So my request is this: despite all the hoopla in favor of this addition of a byproduct of industrial waste, please consider the case of this boy who died needlessly from a horrible cancer. Err on the side of caution, not euphoria about the benefits of something small compared to the larger issues. We trust you and have confided into your hands the governance of our city, for the greater good of all. The greater good, means the whole body and mind, not just the teeth. The children of Portland need your help, for their whole being, not just for their teeth.

To conclude, I want to thank you for your gigantic effort to provide a region wide reliable source of water for everyone, even in time of emergencies. I know this is a huge responsibility. But please let your sense of compassion over-ride your pocketbook concerns. Together, we can figure out the finances, but we will never understand how anyone could possibly allow such harm to come to even one of our innocent children. We are all responsible for them. You are responsible for them. And we appreciate your willingness not to rush this issue, but to get all the facts and to use caution above all else. Thank you.

Susan Miller, former teacher in the city of Beaverton

For City Clerk
185612
Karla Moore-Lowe

If you vote to fluoridate our water, you have the ethical and moral obligation to understand fully how fluoride affects human physiology. I submit that you do not.

- Water fluoridation would put some groups of people at risk. Such as those with:
 - allergy/sensitivity to fluoride
 - chemical sensitivity
 - kidney disease
 - high water intake
 - diabetes insipidus
 - infants who drink formula reconstituted with tap water
 - I have submitted a document from CDC that states that infants should not drink only fluoridated water.^{1a}
 - It is unlikely that low income parents can afford bottled unfluoridated water.
- Fluoride cannot be removed with common carbon filters. It requires reverse osmosis filtration which is expensive and wastes water
- The amount of fluoride that an individual gets cannot be controlled when water is fluoridated and there are many sources of fluoride, which there are.
 - We do not know what the plasma level of fluoride is in the target population (Portland). Drinking fluoridated water on top of other exposures could cause levels to be higher than is said to be safe.
- "Saliva is a major carrier of topical fluoride. 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."⁸
 - I ask: why do something that even the CDC says is not effective?
- It is important for you to seriously consider the potential unintended side effects that have been largely ignored in this country. When you are considering adding a chemical to drinking water, you must look at the potential effect on the whole body. Fluoride affects more than teeth.
- In 2006 The National Research Council's (NRC) published *Fluoride in Drinking Water: A Scientific Review of EPA's Standards*¹, an evaluation of current research on fluoride and it raised many serious concerns about fluoridation safety. I have submitted a highlighted document about this prepared for the EPA by one of the NRC's authors.⁴ Mayor Adams, in your recent online letter you stated that the NRC concluded "that there were no negative health effects." This is factually wrong. They cite many health concerns.
 - I will highlight just a few NRC's conclusions and recommendations:

Neurological effects:

- "On the basis of information largely derived from histological, chemical, and molecular studies, it is apparent that fluorides have the ability to interfere with the functions of the brain and the body by direct and indirect means. To determine the possible adverse effects of fluoride, additional data from both the experimental and the clinical sciences are needed." (p.222)

- “Studies of populations exposed to different concentrations of fluoride should be undertaken to *evaluate neurochemical changes that may be associated with dementia.*” (p.223)

185612

- “*Fluorides also inhibit the activity of cholinesterases, including acetylcholinesterase.* Recently, the number of receptors for acetylcholine has been found to be reduced in regions of the brain thought to be most important for mental stability and for adequate retrieval of memories.” (p.221-222, animals)

My note: Acetylcholine is a major human and animal neurotransmitter and it is important to have it functioning properly.

- “Additional studies of the relationship of the changes in the brain as they affect the hormonal and neuropeptide status of the body are needed.” (p.223)
- “The possibility has been raised by the studies conducted in China that fluoride can lower intellectual abilities.” (p.223) “While the studies lacked sufficient detail for the committee to fully assess their quality and their relevance to U.S. populations, the *consistency of the collective results warrant additional research on the effects of fluoride on intelligence.*” (p.221)
 - In July 2012 Harvard University published a meta analysis of nearly 30 fluoride-IQ studies².
The authors state:
“In conclusion, *our results support the possibility of adverse effects of fluoride exposures on children’s neurodevelopment. Future research should formally evaluate dose-response relations based on individual-level measures of exposure over time, including more precise prenatal exposure assessment and more extensive standardized measures of neurobehavioral performance, in addition to improving assessment and control of potential confounders.*”
 - Ding’s study in , 2011⁷ concluded:
 - “Overall, our study suggested that low levels of fluoride exposure in drinking water had negative effects on children’s intelligence and dental health. The results also confirmed the dose–response relationships between urine fluoride concentrations and IQ scores as well as dental fluorosis condition.”

My comments:

- *It took decades of intensely investigating for us to accept that lead lowers IQ.*
 - *The indicators are such that fluoride is going down the same path.*
- While a difference of a few lower points on an IQ score may not have much consequence for an individual, it would have a tremendous effect on a society: the mean IQ is lowered, the number of those with lower IQ is increased, and the number of those with high IQ is lowered. In my opinion, this is a possibility and is very serious.
- “Regarding the IQ studies: The IQ studies have been criticized and dismissed. One real reason for criticism of scientific studies is to help create better future studies. These need to be done. Where is the funding for scientists in the U.S. follow up this crucial topic?

Endocrine effects

- “In summary, evidence of several types indicates that fluoride affects normal endocrine function or response; the effects of the fluoride-induced changes vary in degree and kind in different individuals. Fluoride is therefore an endocrine disruptor in the broad sense of altering normal endocrine function or response,...”p.266
 - They call particular attention to fluoride’s effects on the *thyroid, blood sugar regulation and diabetes*

My comment: An important issue about effects on the endocrine system is that very little hormone is needed to create a huge effect in the body. It follows that if a substance interferes with the endocrine system, not much may be needed to cause a significant adverse effect.

185612

- *Fluoride collects in the aged pineal gland in humans.* It is unknown if or how much it collects in the pineal gland of the young.³
“Recent information on the role of the pineal organ in humans suggests that any agent that affects pineal function could affect human health in a variety of ways.” p.264

Immune system

- There is documentation in the National Research Council Review about potential adverse health effects on other systems, including the immune system, which is of concern since fluoride collects in the bones. That is important to be aware of because “The bone marrow is where immune cells develop and that could affect humoral immunity and the production of antibodies to foreign chemicals.” (p.294)
- “More research is needed on the immunotoxic effects of fluoride in animals and humans to determine if fluoride accumulation can influence immune function.”(p.303)
- Animal studies: a few examples:
 - We know that *fluoride crosses the blood brain barrier, accumulates in the brain and causes behavioral changes.*^{3a}
 - We know that *fluoride causes oxidative stress.* Some antioxidants have been tested and show that the antioxidants reduce oxidative stress caused by fluoride.^{3b, 3c}
 - We need to investigate these issues in humans.
- Safety database on fluoride is not complete!
“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?”⁴
- Silicofluorides
“...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?”⁴
- There are many other issues about fluoride that deserve close scrutiny: for example, the role of diet and sugar in caries; dental hygiene and dental care. Fluoridation is not a substitute for these. We need to face societal issues of education and availability of dental care, for starters.
- Scientific methods have advanced dramatically in the last 40 years, so gaining knowledge about effects of substances is much more possible now than it was then. Plus, we know that many chronic, neurological and endocrine health problems are increasing.
- Most of the current research I have found coming from the USA is related to dental fluorosis. I have also found some related to osteoporosis, fractures, but studies looking at potential neurotoxic, immune or

endocrine effects of fluoride are blatantly absent. *Why is this research not being funded and being done in the US? This is a question that needs to be asked at every level and answered fully.* 185612

- *We need unbiased, honest, state of the art answers to questions about fluoride's safety. It is not enough to say that we have been fluoridating water for 40+ years, so it is safe. Absence of data does not mean there is nor harmful effect. Assuming safety with current red flags is irresponsible.*
- Your vote for water fluoridation is a vote to medicate me against my will.
 - As a physician, I find that reprehensible
- Why would you even consider putting a substance in our water when the scientific research shows the possibility of so many serious unintended side effects? Portland and Multnomah County have adopted the Precautionary Principle. This is the time to invoke in the case of water fluoridation.

References

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http://www.cdc.gov/fluoridation/safety/infant_formula.htm (accessed 8/12)

1. *Fluoride in Drinking Water: A Scientific Review of EPA's Standards*, National Research Council 2006, National Academy of Science

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2. *Developmental Fluoride Neurotoxicity: A Systematic Review and Meta-Analysis*, Anna L. Choi, et al, Environmental Health Perspectives, Online 20 July 2012.

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3b. Basha, PM, et al. *Evaluation of Fluoride-Induced Oxidative Stress in Rat Brain: A Multigeneration Study*. Biol Trace Elem Res (2011) 142:623–637. DOI 10.1007/s12011-010-8780-4

3c. Nabavi SF, et al. *Mitigating role of quercetin against sodium fluoride-induced oxidative stress in the rat brain*. Pharm Biol. 2012 Aug 8

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

Kathleen M. Thiessen, Ph.D.

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); 8297 Champions Gate Blvd., #193, Champions Gate, FL 33896

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

6. *Prevalence and Severity of Dental Fluorosis in the United States, 1999–2004*
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7. Ding, Yunpeng et al. *The relationships between low levels of urine fluoride on children's intelligence, dental fluorosis in endemic fluorosis areas in Hulunbuir, Inner Mongolia, China*. Journal of Hazardous Materials 186 (2011) 1942–1946

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For Council Clerk Kaila Moore-Love
Submitted by Peter Murphy, ND

185612

**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 mg/L	Children with no caries %	Mean DMFS score ^b	Children with fluorosis ^c %	Mean severity of fluorosis ^d
< 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.

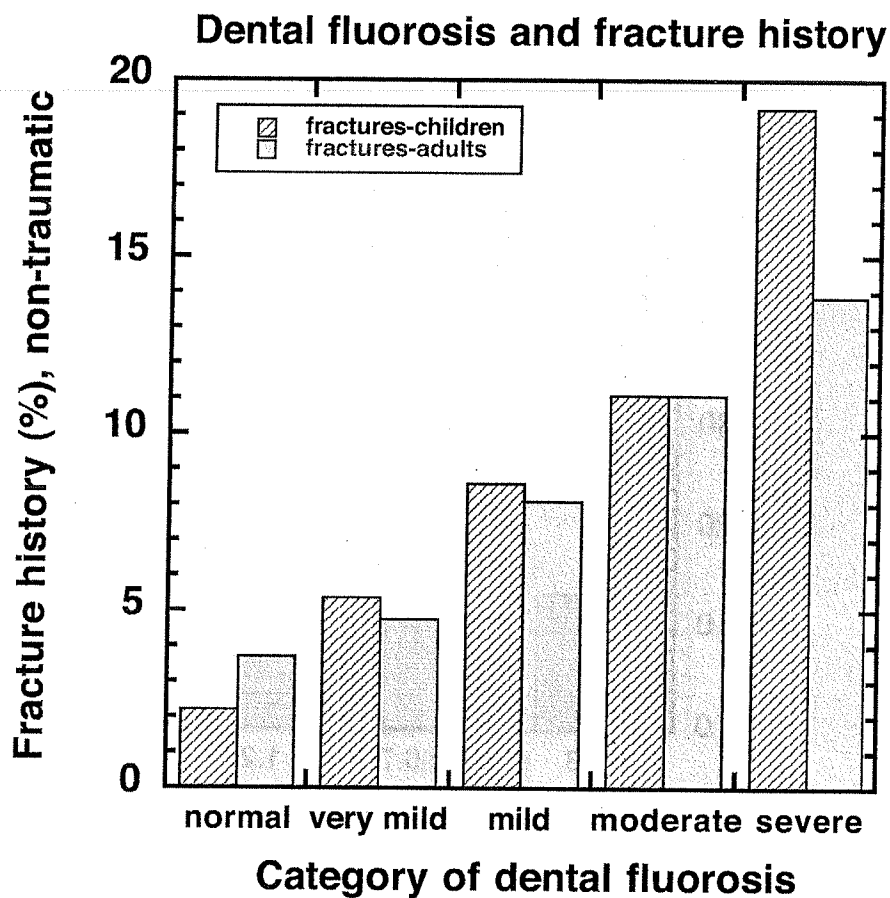


Fig. 1. Fracture history with category of dental fluorosis for children (ages 6-12) and adults (ages 13-60). Numerical values were obtained from information in Tables 5 and 6 of Alarcón-Herrera et al. (2001).

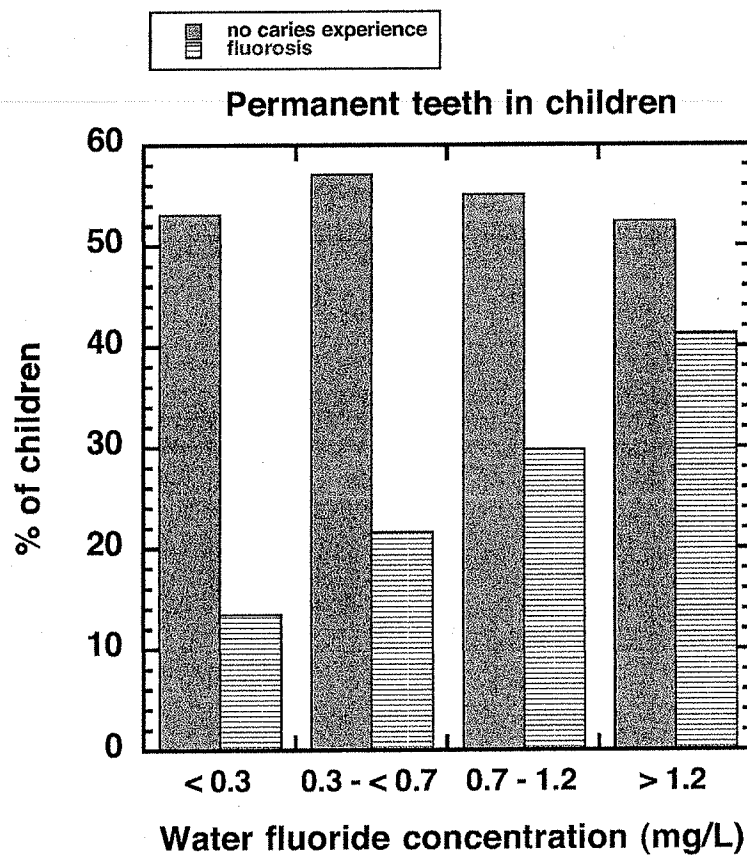


Fig. 2. Percent of children with no caries experience in the permanent teeth (DMFS = 0) and with fluorosis, with respect to water fluoride concentration. Data are shown as % of total children having no caries experience or having fluorosis (very mild, mild, moderate, or severe, but not questionable).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

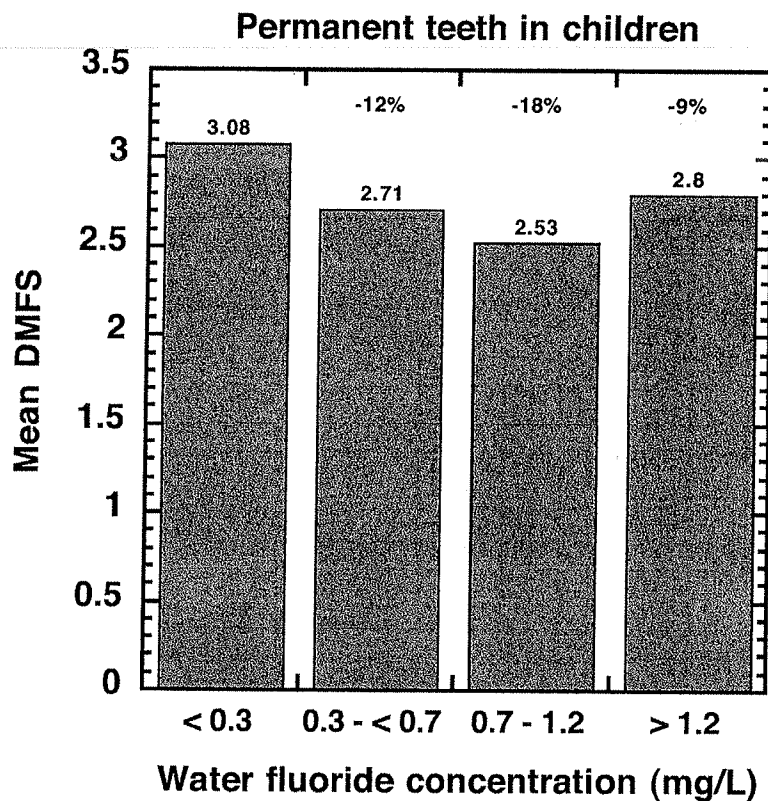


Fig. 3. Mean DMFS score (decayed, missing, or filled tooth surfaces in permanent teeth), with respect to water fluoride concentration. Numerical values are provided in Table 1 of these comments and were obtained from Table 2 of Heller et al. (1997). The percent difference with respect to the lowest fluoride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

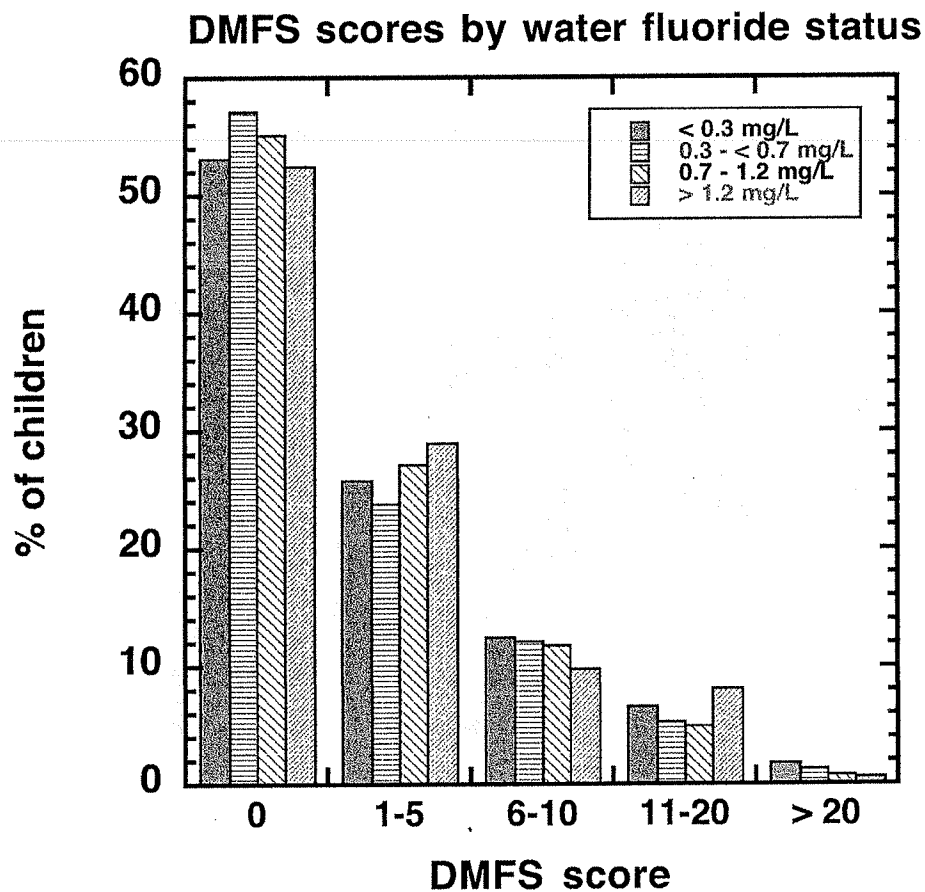


Fig. 4. Percent of children by DMFS score, with respect to water fluoride concentration. Data are shown as % of total children in a given group according to the number of decayed, missing, or filled tooth surfaces in the permanent teeth (DMFS). Data were obtained from Table 2 of Heller et al. (1997).

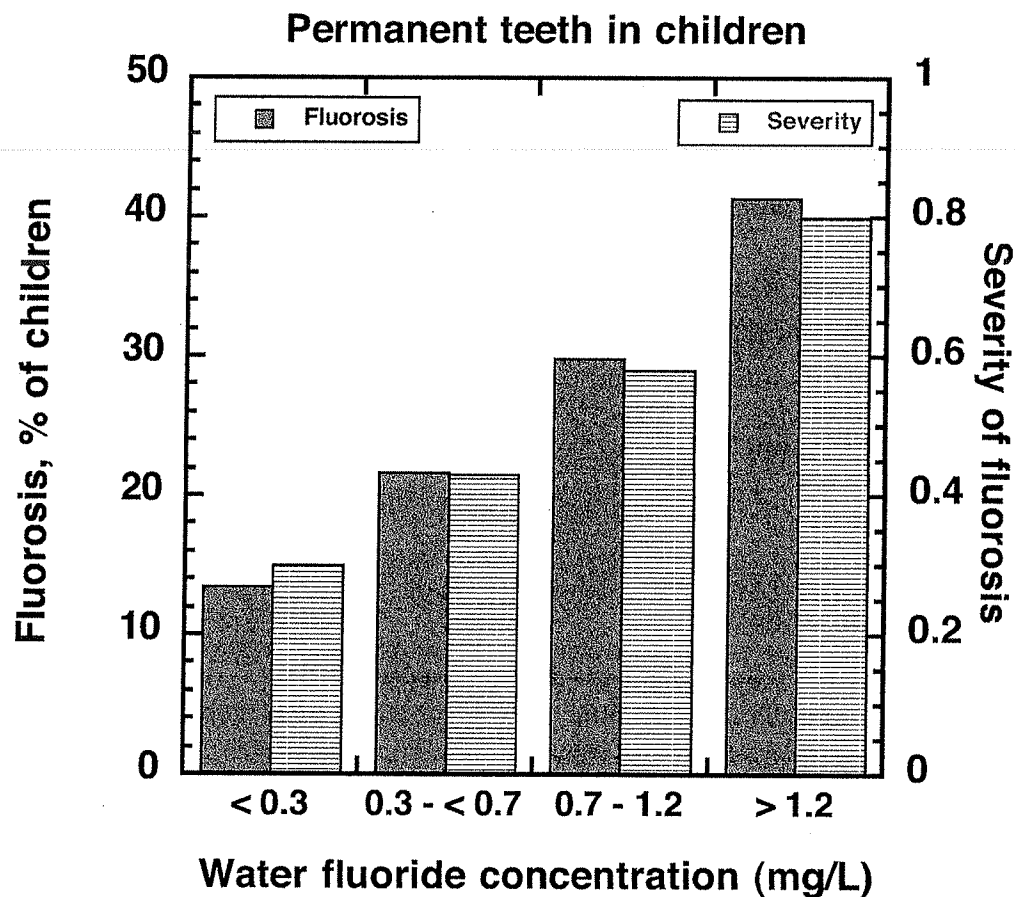


Fig. 5. Fluorosis prevalence and severity with water fluoride concentration for children ages 7-17 with a history of a single continuous residence. Data are shown as (left) % of total children having fluorosis (very mild, mild, moderate, or severe, but not questionable) or (right) severity of fluorosis 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).

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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?

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?

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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 children whose swallowing reflex is not fully developed.

http://www.cdc.gov/fluoridation/safety/infant_formula.htm

accessed 8/2012

Building a Database of Developmental Neurotoxicants: Evidence from Human and Animal Studies

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Introduction

EPA's program for the screening and prioritization of chemicals for developmental neurotoxicity makes it essential to assemble a list of chemicals that are toxic to the developing mammalian nervous system. Listed chemicals will be used to evaluate the sensitivity, reliability, and predictive power of alternative developmental neurotoxicity assays. To establish this list, a literature review was conducted for over 400 compounds that have been suggested to be developmental neurotoxicants, neurotoxicants, or developmental toxicants. Compounds were assigned one of three groups based on the strength of the evidence for developmental neurotoxicity:

- (1) **no evidence:** either there were no reports that met our criteria for evidence, or there were reports which showed no developmental neurotoxicity;
 - (2) **minimal evidence:** one report only or multiple reports from only one laboratory; or
 - (3) **substantial evidence:** reports from more than one laboratory.
- The chemicals in the latter group will be especially useful for vetting protocols that have been proposed as screens for developmental neurotoxicity.

This presentation has been reviewed by the National Health and Environmental Effects Research Laboratory and approved. Approval does not signify that the contents reflect the views of the Agency.

Approach

Collect lists of putative DNT chemicals (n≈400)

- Consult EPA RED* documents
- Consult Literature

- Assess Documentation
- Discuss Level of DNT Evidence
- Prepare Manuscript

Each chemical was assigned to one of three categories:

1. No available evidence existed: exclude from manuscript.
2. Minimal evidence existed: put in table in manuscript.
3. Substantial evidence existed: write a descriptive paragraph for manuscript.

*Registration Eligibility Decision Documents (available online or via Freedom of Information Act)

Evidence: Criteria for Assessment and Endpoints

- a) We included only mammalian studies.
-no *in vitro* studies were included.
- b) We included only studies with the pure chemical (or reasonably so).
-no mixture studies were included.
-no human studies were included wherein there was exposure to more than one compound.
-no formulations were included.
- c) We included only studies where the exposure took place during pregnancy or during the period before weaning.
- d) We included only studies in which the administered dose was below 5 grams/kg.
- e) Where knowledge was available, we considered only studies where the administered dose would not be lethal to the offspring.
- f) We did not include any case reports.
- g) In studies where the chemical was administered during gestation, to the extent possible, we looked for a litter-based statistical design.
- h) If only acute pharmacological effects were reported (either during dosing or shortly thereafter), we did not include that study.

Endpoints assessed included, but were not limited to:

- | | |
|--|---|
| ☐ Head Circumference | ☐ Grip Strength |
| ☐ Brain Weight | ☐ Negative Geotaxis |
| ☐ Exencephaly | ☐ Startle Response |
| ☐ Brain Morphology | ☐ Righting Reflex |
| ☐ Motor Activity | ☐ Neurochemical Levels |
| ☐ Learning and Memory | ☐ Receptor Affinity/Number |

Chemicals with Minimal Evidence of Developmental Neurotoxicity (n≈100)

1,1,1-Trichloroethane	Diaminotoluene (2,5-)	Lidocaine
Abamectin	Dichloromethane (methylene chloride)	Malathion
Acetate	Dichlorvos (DDVP)	Mancozeb
Acetaminophen	Dicofol	Maytansine
Actinomycin D	Difluoromethylornithine	Methamidophos
Amicarbazone (MKH 3586)	Dimethoate	Methyl Ethyl Ketone
Asterizole	Dinoseb	MINDA
Atorvastatin	Diphenhydramine	Molinate
Atrazine	Disulfoton	Naled
Azinphos methyl	Endosulfan	n-Hexane
BAS 510 (Boscalid)	Endrin	Nickel carbonyl
BAS 670H	EPTC (S-Ethyl dipropylthiocarbamate)	Perchlorate
Bifenthrin	Ergotamine	Phorate (BAS 225 I)
Bismuth Ribomorphenate	Ethoxyethanol (2-)	Picrotoxin
Brominated veg oil	Ethylene dibromide	Primidone
Busulfan	Ethylene oxide	Profenofos
Carbofuran	Etofenprox	Prothioconazole
Carbon disulfide	Fenamiphos	Selenium compounds
Chlordane	Fenitrothion	Simvastatin
Chloridometh	Fenvalerate	Spirodiclofen
Chlorfenvap	FK 33-824 (Synthetic enkephalin)	Succinyl
Chlorite, sodium	Flufenacet (thiafluamide)	Terbucif
CI-943 (Antipsychotic)	Formaldehyde	tert-Butylhydroquinone, 2-
Clofibrate-propargyl	Glufosinate ammonium	Tetrachloroethylene
Clothianidin	Glyphosate trimesium	Tetracycline
Coumaphos	Hexachloroplatinate (Na)	Thiamethoxam
Cyfluthrin	Imidacloprid	Tribufos (DEF)
Cyhalothrin	Ivermectin	Triethylene glycol dimethyl ether
Cymoxanil	Levo-alpha-acetylmetadol	Trimethadone
Danazol		Triphenyl phosphite
DDT		VM-26 (Teniposide)
Dextrometoramide		VP-16-213 (Etoposide)

Chemicals with Substantial Evidence of Developmental Neurotoxicity (n≈100)

2-Ethoxyethyl Acetate	Diazepam	Naltrexone
Acibenzolar-S-methyl	Cytosine Arabinoside	Nicotine
Acrylamide	DEET	Methoxyethanol, 2-
Aldicarb	Deltamethrin	Methylazoxymethanol
Allethrin	Diazinon	Methylmercury
Aluminum (cl or lactate)	Dieldrin	Ozone
Amino-nicotinamide(6-)	Diethylstilbestrol	Paraquat
Aminopterin	Diphenylhydantoin	Parathion (ethyl)
Amphetamine(d-)	Epidermal Growth Factor	PBDES
Arsenic	Ethanol	PCBs (generic)
Aspartame	Ethylene thiourea	Penicillamine
Azacytidine(5-)	Fluorouracil(5-)	Permethrin
Benomyl	Fluazinam	Phenylacetate
Benzone	Fluoride	Phenylalanine (d,l)
Bioallethrin	Fluorethrin	Phthalate, di-(2-ethylhexyl)
Bis(tri-n-butyltin)oxide	Haloperidol	Propylthiouracil
Bisphenol A	Hexachlor	Salicylate
Bromodioxynil(5-)	Hexachlorobenzene	Retinoids/vitamin A/sotretinoin
Butylated Hydroxy Anisol	Hexachlorocyclopentadiene	Tebuconazole
Butylated hydroxytoluene	Hexachlorocyclopentadiene	Tellurium (salts)
Cadmium	Hydroxyurea	Terbutaline
Caffeine	Imidodipropionitrile (IDPN)	Thalidomide
Carbamazepine	Ketamine	THC
Carbaryl	Lindane	Toluene
Carbon monoxide	LSD	Triamcinolone
Chlordane	Mab	Tributyltin chloride
Chloridazepoxide	Medroxyprogesterone	Trichlorfon
Chlorine dioxide	Methadone	Trichloroethylene
Chlorpromazine	Methanol	Triethyllead
Chlorpyrifos	Methimazole	Triethyltin
Cocaine	Methylparathion	Trypan blue
Colcemid	Monosodium Glutamate	Urethane
Colchicine	MTPP	Valproate
Cypermethrin	Naloxone	Vincristine
Dexamethasone		
Diamorphine hydrochloride		

Sample Paragraph

DEXAMETHASONE
CAS Number: 50-02-2

Formula:



Dexamethasone is synthetic member of the glucocorticoid class of steroid hormones. It is used to treat inflammation and autoimmune conditions (e.g., rheumatoid arthritis), and to counteract side-effects of chemotherapy in cancer patients. Synthetic glucocorticoids, including dexamethasone, are also administered to women at risk for preterm labor to advance fetal maturation and reduce neonatal morbidity and mortality.

Numerous studies in animals have shown neurodevelopmental effects of perinatal dexamethasone treatment in rodents. Doses of 0.2 – 3 mg/kg (which encompasses the therapeutic range in humans) given to the pregnant dam during gestation or to the offspring postnatally alter neurogenesis and differentiation (Bohn, 1984; Carlos et al., 1992), decrease brain size and brain weight (DeKosky et al., 1982; Carlos et al., 1992; Ferguson and Holson, 1999), and alter locomotor activity and learning and memory behavior (DeKosky et al., 1982; Vicedomini et al., 1986; Ferguson et al., 2001; Kreider et al., 2005a). Relatively low doses (0.05 – 0.2 mg/kg) have also been shown to result in long-lasting changes in neurotransmitter systems and intracellular signaling (Kreider et al., 2005b; Kreider et al., 2006; Slotkin et al., 2006). Effects of dexamethasone, including decreased brain weight and hippocampal damage, have also been observed in nonhuman primates (reviewed in Coe and Lubach, 2005).

Human developmental neurotoxicity is associated with perinatal exposure to dexamethasone. Prenatal dexamethasone is routinely administered to mothers at risk for preterm delivery to reduce mortality and the incidence of respiratory distress syndrome and intraventricular hemorrhage in premature infants. Postnatal dexamethasone treatment in preterm infants is also used to reduce the risk and severity of chronic lung disease. A preponderance of epidemiologic and clinical evidence, however, indicates that both pre- and post-natal exposure to dexamethasone can result in an increased risk for cerebral palsy, decreased brain size, and long-term effects on cognition and behavior (reviewed in Baud, 2004; Purdy, 2004; Purdy and Wiley, 2004; Sloboda et al., 2005).