

COMMUNITY WATER FLUORIDATION:

70 YEARS OF SUCCESS: IS IT STILL EFFECTIVE & SAFE?

AUGUST 20, 2015

EUSTIS CITY COMMISSION

COMMUNITY WATER FLUORIDATION WORKSHOP

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Disclosures-no financial interests

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- Speaking as spokesperson of the Fluoridation Action Team of Oral Health Florida
- Speaking as a private practice pediatric dentist
- I do this for the Adults and children that live in pain and suffer every day of their lives because of preventable, contagious, & communicable dental disease
- I don't get paid jack for doing this

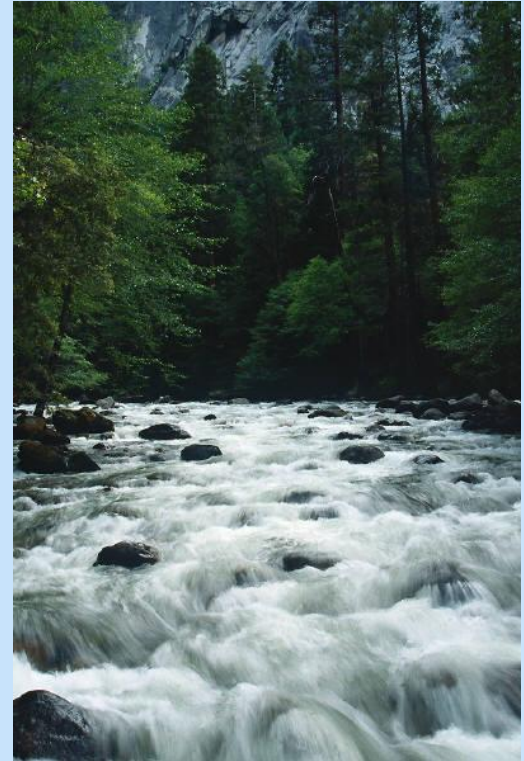
Fluoridation Definition

- ❑ Fluoridation is the precise adjustment of the fluoride in drinking water to a level that is recommended for optimal reduction of tooth decay
- ❑ This adjustment includes adjustment upwards or downwards, depending on the natural level of fluoride in the water.
- ❑ Natural level of Eustis water is 0.2ppm (mg/L)
- ❑ **Updated optimal level for community water fluoridation is a uniform 0.7ppm**



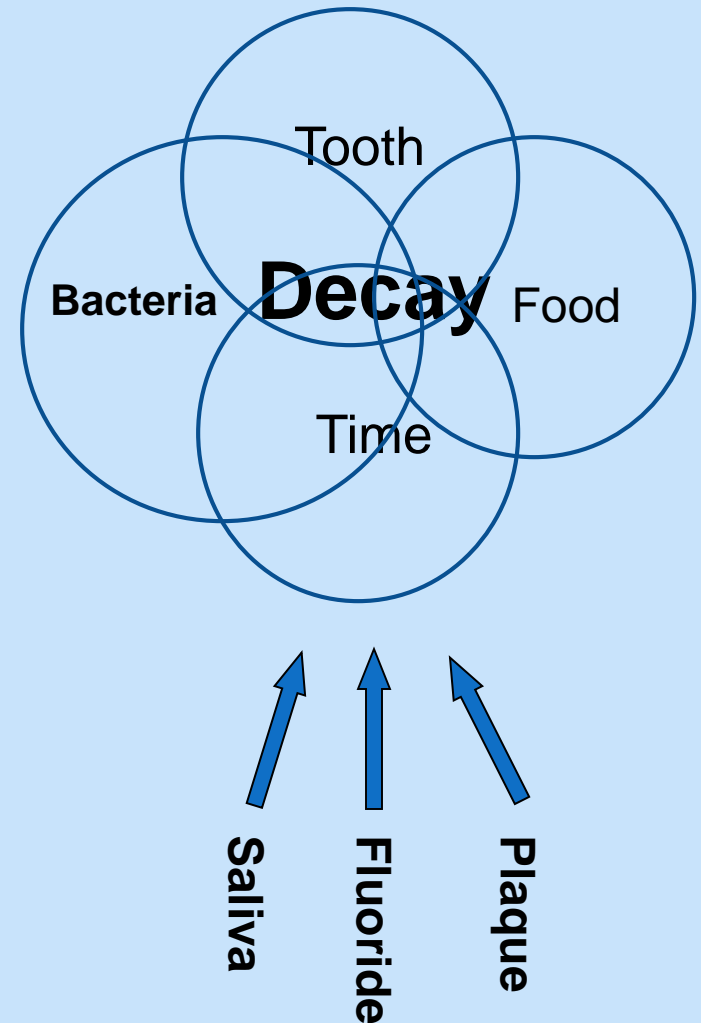
Fluoride is Naturally Occurring

- 13th most abundant mineral in the earth's crust
- Surface water (rivers) -- typically low concentrations, 0.2 mg/L (ppm) or less
- Groundwater (wells) --higher concentrations, 0.1 mg/L to over 5.0 mg/L
- Ocean water is typically 0.8 to 1.4 mg/L



Required for Decay (Cavities):

- Diet
 - sugars and carbohydrates
 - Frequency of intake
 - Form of substrate-sticky vs non-sticky
- Oral hygiene
- Xerostomia (Dry Mouth)
 - medications
 - salivary flow and composition
- Bacteria Levels
(especially mutans streptococci)
- Tooth Anatomy



Summary of Mechanisms of Action of Fluoride Ion

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For the best prevention of cavities:

Both *Systemic* and *Topical* fluoride exposure are important:

1. Fluoride becomes incorporated into developing permanent teeth of children while still under gums-more resistant to cavities (*systemic effect*)
2. Frequent exposure to low concentrations of fluoride: saliva, release from plaque-reducing acid attack leading to cavities (*topical effect via systemic CWF*)
3. Water fluoridation and dentifrices (toothpaste), fluoride mouthrinses, and professionally applied varnishes (*topical and systemic effects from CWF and fluoride containing products*)

History of Fluoride's Benefits

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Frederick S. McKay

- ➔ **1901** – established practice in Colorado Springs, CO
- Curious mind and good observational skills
- “Colorado Brown Stain”
 - Stain was difficult to polish off – must be caused during the period of enamel formation – environmental agent
 - Only life-long residents (or those who had moved there as infants) had stain
- 1908 – began to investigate extent of condition in surrounding area
- ➔ **Key Observation:** *very few cavities in this population*



Colorado Brown Stain

Other Important Events

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- 1930 - H. V. Churchill used a newly available method of spectrographic analysis that identified high concentrations of fluoride (13.7ppm) in the water of a community in Arkansas with high rates of mottled enamel
- 1931 – McKay contacted Churchill and sent him water samples. Fluoride was discovered in each sample that McKay sent for analysis (2.0ppm to 12.0 ppm)
- It was now known what substance in the water was causing the staining of teeth-natural high levels of fluoride in water**

H. Trendley Dean

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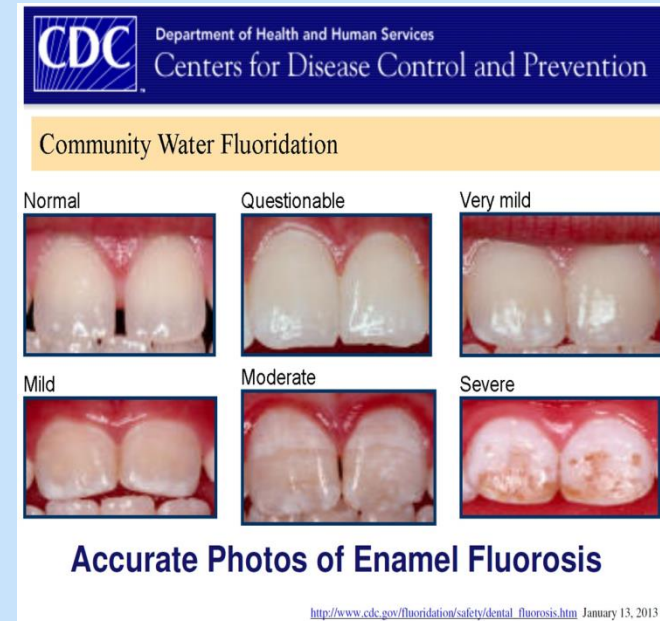
- ✓ **1931 - First dentist appointed to the National Institute of Health**
- ✓ **Primary responsibility** -investigate the association between fluoride and mottled enamel
- ✓ Mid 1930s – Dean began to use the term fluorosis in place of mottled enamel
- ✓ Determined that fluorosis caused by water with 1.0 ppm or less was of “no public health significance”



What is dental fluorosis?

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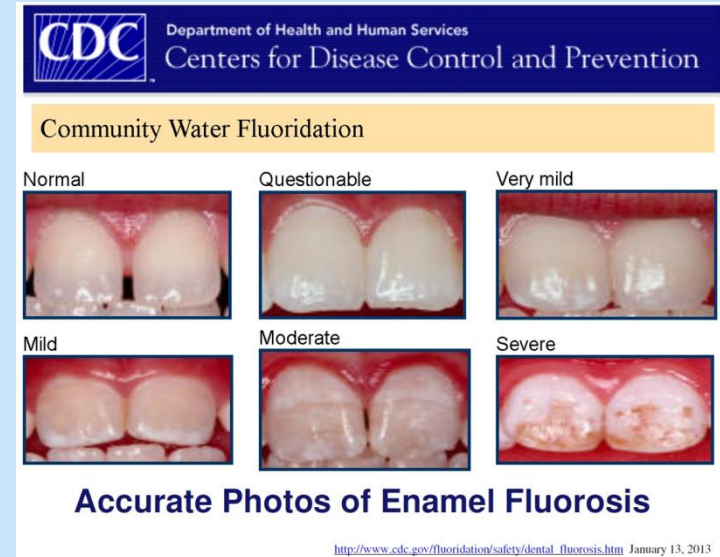
- Dental fluorosis is a change in the appearance of the tooth's enamel
- Very mild and mild forms of dental fluorosis (the most common forms)—teeth have scattered white flecks, occasional white spots, frosty edges, or fine, lacy chalk-like lines. These changes are barely noticeable and difficult to see except by a dental health care professional.
- Moderate and severe forms of dental fluorosis—teeth have larger white spots and, in the rare, severe form, rough, pitted surfaces.
- *Dental fluorosis **only occurs** when younger children consume too much fluoride when teeth are developing under the gums*



Dean's Investigations

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- Developed the Community Fluorosis Index (Dean's Fluorosis Index)
 - Normal
 - Questionable
 - Very Mild
 - Mild
 - Moderate
 - Severe



➡ Led to the landmark study of introduction of fluoridation in 1945

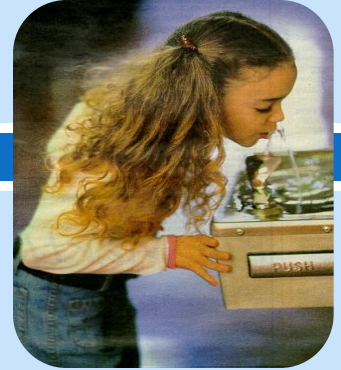
Community Water Fluoridation Begins

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- Grand Rapids, Michigan was the first city to adjust fluoride concentration in public drinking water (1945). Cavity rates dropped dramatically
- **Gainesville 1st city in Florida to fluoridate-Go Gators -1949**
- The rest is History
- 2015 marked the **70th anniversary** of community water fluoridation



An Ounce of Prevention: Community Water Fluoridation



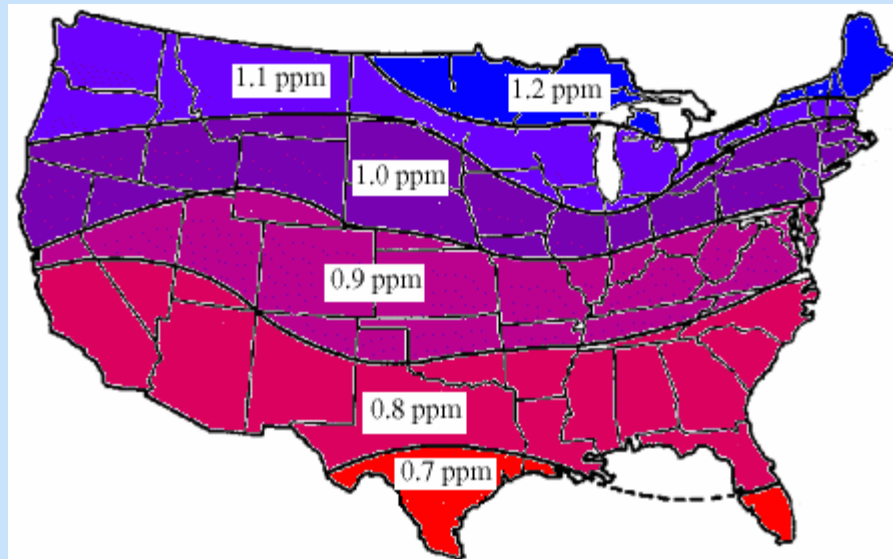
After 70 years of CWF in the United States, the **FACTS**:

1. **Safe**-NO adverse health effects in anyone
2. **Effective**-Adults & Children benefit: 25% reductions in cavities
3. **Cost Savings**-Saves millions of dollars in treatment costs and eliminates pain and suffering
4. **CDC**: One of 10 great Public Health Achievements of the 20th century
5. Helps Americans keep their **teeth longer into adulthood** more than ever before
6. **>210 million** U.S. residents served by it daily (2012)

HHS: Basis for Updated CWF Level

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- Previous levels were a range of fluoride in water from 0.7-1.2ppm (mg/L)
- This range was based on water intakes of residents in the U.S. and was related to temperature gradients



Total Water Intake

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- Since the early 1960's when previous range was set, climate controlled environments have become the norm
- Total Water Intake:
 - Lack of association between daily temperature and children's water intake in the United States — 1999–2004
- Water intake was the same from coast to coast and north to south
- A Federal panel was convened to evaluate this data in 2010
- Decision was reached that for the maximum level of cavity reductions with the minimal level of dental fluorosis, a new single level of fluoride was established for the entire country
- HHS proposed the level to be at the lower level of the range:
 - 0.7ppm

Long Version of Story

In September 2010, the Department of Health and Human Services convened a panel of scientists from across the U.S. government to review new information related to fluoride intake and to consider a new recommendation for community water fluoridation. The federal panel reviewed the best available information, including changes in the occurrence and severity of tooth decay and of dental fluorosis in U.S. children and adults. The panel also studied the U.S. Environmental Protection Agency's (EPA) scientific assessments of the major sources of fluoride intake and risk of severe dental fluorosis among children. Severe dental fluorosis is rare in the United States. Based on this review, the federal panel proposed changing the recommended level for community water systems to 0.7 milligrams per liter (the low end of the prior recommended range of 0.7 to 1.2 milligrams per liter). The proposed change was published in the Federal Register. Public comment on the proposed new level was sought—and considered carefully by the Panel—before finalizing the new recommendation. In addition, the proposed recommendation was submitted to a Peer Review Process, a step required by the federal government for influential scientific information.

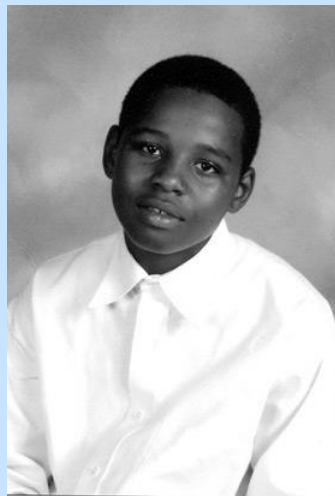
HHS issues final recommendation for community water fluoridation

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- Final Recommendation Release April 27, 2015
- All community water systems that fluoridate their water are recommended to fluoridate at 0.7ppm

Why Do Cavities Matter?

- Infection
- Extreme pain
- Difficulty in chewing
- Poor weight gain
- Difficulty concentrating
- Missed school hours
- Predictor of cavities in later life
- Costly treatment
- **LIFE THREATENING**
- **DEATH**



Deamonte Driver, 12, died February 25, 2007, after an infection from a molar spread to his brain

CAVITIES: Disproportionately Distributed

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- Nearly 80% of cavities occur in 20% of the population
- **The poor** bear a disproportionate burden of cavities

Is Water Fluoridation Still Necessary?

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YES!

Systematic Reviews:

- ✓ Effect of Starting Community Water Fluoridation: 29.1% cavity reduction
- ✓ Effect from Stopping CWF: 17.9% increase in cavities



THE SCIENCE IS CRYSTAL CLEAR

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No Debate!!

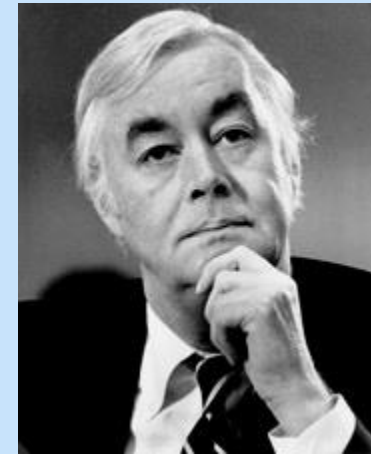
Fluoridation is Safe, Effective, and Provides Huge Cost Savings
& Reduces Human Pain and Suffering



Sen. Daniel Patrick Moynihan

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“Everyone is entitled to his own opinions.....



.....but not his own facts”

DEBATES ON SCIENCE

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Debates on the science of any topic takes place in **expert panels** that have been set up to critically evaluate the literature, ***never in public forums***

1. Community Preventive Services Taskforce: Systematic Reviews

- ❑ Blue Ribbon Panel Established by Congress
- ❑ Purpose is to scientifically evaluate the literature
- ❑ Provide recommendations to communities

2. National Research Council's: Systematic Reviews

“Scientific Review of EPA Standards on Fluoride in Drinking Water, 2006”

- ❑ 3 ½ years of **debate**
- ❑ Recommendations and findings

Community Preventive Services Taskforce

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Recommendations Reaffirmed 2013:

1. Community Water Fluoridation is ***RECOMMENDED*** based on ***STRONG EVIDENCE*** of effectiveness in **reducing cavities across populations.**
2. Evidence shows the **prevalence of cavities is substantially lower** in communities with community water fluoridation (CWF)
3. There is **NO EVIDENCE** that CWF results in **severe fluorosis.**

National Research Council

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

Report issued in March 2006

Focused on naturally occurring high levels of fluoride in drinking water. (~200,000 people, ~\$4 million dollars spent on study)

Reviewed studies:

- Effects of Fluoride on Teeth
- Musculoskeletal Effects-**NO!**
- Reproductive and Developmental Effects-**NO!**
- Neurotoxicity and Neurobehavioral Effects-**NO!**
- Effects on the Endocrine System-**NO!**
- Effects on the Gastrointestinal, Renal, Hepatic, and Immune Systems-**NO!**
- Genotoxicity and Carcinogenicity-**NO!**



States with high levels of fluoride naturally occurring:

- S. Carolina **5.9 mg/L**
- Virginia **6.3 mg/L**
- Texas **8.8 mg/L**
- Colorado **11.2 mg/L**
- Oklahoma **12.0 mg/L**
- New Mexico **13.0 mg/L**
- Idaho **15.9 mg/L**

National Research Council

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

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Report issued in March 2006:

1. No Health Effects from fluoride in water at 2mg/L (2ppm)
2. Severe fluorosis is virtually zero at 2mg/L fluoride in water

IMPORTANT NOTE:

Community water fluoridation = 0.7ppm (mg/L)

- 1/3rd level at which severe fluorosis is virtually zero

1. The Weight of Science



2. No adverse health effects from drinking fluoridated water (CWF)



Department of Health and Human Services
Centers for Disease Control and Prevention

Community Water Fluoridation

Normal



Questionable



Very mild



Mild



Moderate



Severe



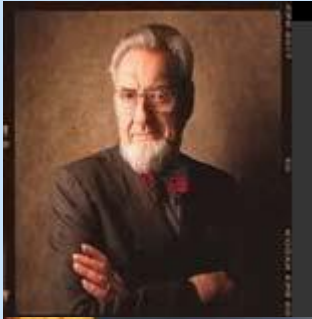
Community Preventive Services Task Force finds **no evidence** of severe fluorosis with CWF

2006 NRC Review finds **no evidence** of severe fluorosis below 2mg/L (ppm) fluoride in water
CWF 1/3rd this level=0.7ppm

Accurate Photos of Enamel Fluorosis

http://www.cdc.gov/fluoridation/safety/dental_fluorosis.htm January 13, 2013

A Public Health Achievement



“Fluoridation is the single most important commitment a community can make to the oral health of its children and to future generations.”

Dr. C. Everett Koop

Surgeon General (1982-1989)



“Fluoridation is the single most effective public health measure to prevent tooth decay and improve oral health over a lifetime, for both children and adults.”

David Satcher, MD, PhD

Surgeon General (1998-2002)



“Community water fluoridation is one of the most practical, cost-effective, equitable, and safe measures communities can take to prevent tooth decay and improve oral health. [E]ach generation born since the implementation of water fluoridation has enjoyed better dental health than the preceding generation.”

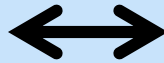
Dr. Vivek H. Murthy, MD, MPH

Surgeon General (2014-current)

WHICH WOULD BE YOUR CHOICE???

Tooth Decay

or Mild Dental Fluorosis



Summary

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Water fluoridation:

- ✓ **No adverse health effects from drinking fluoridated water**
- ✓ Is Safe, Effective, and the most Cost Efficient means to reach everyone with the cavity fighting benefits of CWF
- ✓ benefits all members of the community, regardless of age, race, SES, access to dental care
- ✓ offers a great return on its investment: For every \$1 invested in fluoridation, \$43 in dental treatment costs/person/year are avoided
- ✓ is recommended by the Task Force on Community Preventive Services and all major health organizations; WHO, CDC, AAP, ADA, AMA.....

Claims by Opponents-all false

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- ▣ Not needed, doesn't work, small effect, there are alternatives
- ▣ ADA states don't use in infant formula
- ▣ Lowers IQ in children
- ▣ Communist Plot
- ▣ Hitler used it in Jewish Concentration camps
- ▣ Infringement on personal rights
- ▣ Forced Medication
- ▣ Increases lead uptake
- ▣ Cancer
- ▣ Down Syndrome
- ▣ Allergies, AIDS, Alzheimer's disease
- ▣ Breast milk fluoride level-"Mother Nature knows best"
- ▣ Effects on the renal, gastrointestinal, and immune systems, reproductive problems
- ▣ Fluorosis is sign of toxic effects on body
- ▣ Government Conspiracy-dentists taught to believe it works

If you throw it at a wall often
enough, some of it's going to stick

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RITA

Claim: *Fluoride is an additive, equivalent to forcing people to take medicine*

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FACTS:

- U.S. courts have rejected the idea that fluoride is a medication and should not be allowed in water supply
- **Fluoridation:** the adjustment of *natural* (background) water fluoride levels to bring to optimum. *Most of Florida's groundwater contains about 0.2ppm fluoride.* It needs to be adjusted upwards just a smidge to 0.7 ppm for maximum benefit in reducing cavities.
- **Fortification** is a common practice - Folic acid, Vitamin D, Iodine etc.

Claim: *Fluoridation chemicals are different from naturally occurring fluoride*

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CDC:

Fluoride Additives Are Not Different From Natural Fluoride

Some consumers have questioned whether fluoride from natural groundwater sources, such as calcium fluoride, is better than fluorides added "artificially," such as FSA or sodium fluoride. Two recent scientific studies, listed below, demonstrate that [the same fluoride ion is present in naturally occurring fluoride or in fluoride drinking water additives](#) and that no intermediates or other products were observed at pH levels as low as 3.5. In addition, the metabolism of fluoride does not differ depending on the chemical compound used or whether the fluoride is present naturally or added to the water supply.

Finney WF, Wilson E, Callender A, Morris MD, Beck LW. [Re-examination of hexafluorosilicate hydrolysis by fluoride NMR and pH measurement](#). *Environ Sci Technol* 2006; 40:8:2572.

G.M. Whitford, F.C. Sampaio, C.S. Pinto, A.G. Maria, V.E.S. Cardoso, M.A.R. Buzalaf. [Pharmacokinetics of ingested fluoride: Lack of effect of chemical compound](#)., *Archives of Oral Biology*, 53 (2008) 1037–1041.

Approved Water Fluoridation Additives in the US

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The three additives approved for use by the American Water Works Association:

1. **Fluorosilicic acid:** a water-based solution used by most water systems in the United States. Fluorosilicic acid is also referred to as hydrofluorosilicate, FSA, or HFS.
2. **Sodium fluorosilicate:** a dry additive, dissolved into a solution before being added to water.
3. **Sodium fluoride:** a dry additive, typically used in small water systems, dissolved into a solution before being added to water.

Claim: “FSA (hydrofluorosilicic acid) is not acceptable because it adds dangerous impurities like arsenic and lead to water supply.”

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FACT:

1. To ensure the public's safety, all additives used at a water treatment facility must meet *strict quality standards*.
2. American Water Works Association (AWWA) and the NSF/ANSI (National Sanitation Foundation/American National Standards Institute) measure levels of impurities.
3. The average concentration of arsenic and lead from all samples of water fluoridated with FSA, tested by NSF International from 2000 to 2011 was *less than 0.1 ppb* (parts per billion). *EPA allowable is 10.0 ppb*

Claim: *“no double-blind studies ever done”*

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Fact:

- ❑ **Population-based studies** are used routinely to assess observational findings.
- ❑ No Double-blind studies have ever been done on:
 - Tobacco
 - Alcohol
 - STD's
- Population-based studies were used to see their effects on our bodies
- ❑ Population-based studies are used to evaluate fluoride's safety and effectiveness
- ❑ No Double-blind studies needed to be conducted to connect the dots between tobacco and lung disease/cancer, Alcohol and its health effects, or the damages from STD's

Claim: *“The ADA warns parents not to add fluoridated water to infant formula because of its harmful effects”*

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FACT:

This has NEVER been accurate!!!

ADA recommendations:

- ❑ **Continued use** of liquid or powdered concentrate infant formulas reconstituted with optimally fluoridated drinking water while being cognizant of the potential risk for *mild* enamel fluorosis

- ❑ Use ready-to-feed formula or liquid or powdered concentrate formula reconstituted with water that is either fluoride-free or has low concentrations of fluoride when the potential risk for *mild* enamel fluorosis **may be a concern for parents**

Claim: “Just look at Warning Label on back of a tube of toothpaste! Poison!!”

Warnings Keep out of the reach of children under 6 years of age. If more than used for brushing is accidentally swallowed, get medical help or contact a Poison Control Center right away. Ask a dentist before use if you have • bleeding or redness lasting more than 2 weeks • pain, swelling, pus, loose teeth, or more spacing between teeth. These may be signs of periodontitis, a serious form of gum disease.

Directions • Supervise children as necessary until capable of using without supervision. • Adults and children 6 years of age and older: Brush teeth thoroughly, preferably after each meal or at least twice a day, or as directed by a dentist or a physician. • Children under 12 years: Instruct in good brushing and rinsing habits (to minimize swallowing). • Children under 6 years: Do not use unless directed by a dentist or a physician.

*“To this day, according to the American Association of Poison Control Centers, there have not been **any** deaths or serious adverse reactions from ingestion of fluoride toothpastes”*

-Clifford W. Whall, Jr., PhD
Director of Acceptance Program
ADA Council on Scientific Affairs
April 2, 2012, email to Dr. Johnny Johnson

- Responsible Parenting
- Same labeling on vitamins, Tylenol-required by FDA

FACT: No one has ever died

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Responsible
Parenting!!

- It would take a 20kg child (~4 year old) ingesting 2 full tubes of Adult sized toothpaste at one setting to reach a lethal dose of fluoride
- The sudsing agent and abrasive components of toothpaste would cause anyone ingesting excess toothpaste to throw up.

Claim: *Fluoridation causes a decrease in IQ*

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FACT: Low quality studies of IQ effect from high fluoride communities in China

“In our appraisals we found that the study design and methods used by many of the researchers had serious limitations. The lack of a thorough consideration of confounding as a source of bias means that, from these studies alone, it is uncertain how far fluoride is responsible for any impairment in intellectual development seen.”

Bazian. “Independent critical appraisal of selected studies reporting an association between fluoride in drinking water and IQ. A report for South Central Strategic Health Authority. February 2009.”

In other words, **NO IQ changes** have been shown to be attributable to naturally occurring fluoride levels in water based on their review and reviews of other credible scientific organizations internationally. These claims are made based on the Harvard Meta-analysis by Choi & Grandjean

Claim: Harvard “Study” proves IQ damage

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Harvard’s researchers conducted Meta-analysis of Chinese studies:

Researchers distanced themselves from anti-fluoridationists who were using their analysis to draw their own statements of harm from CWF

“Harvard University scientists say that Wichita voters shouldn’t depend on a research study they compiled to decide whether to put fluoride in the city’s drinking water to fight tooth decay.

While the studies the Harvard team reviewed did indicate that very high levels of fluoride could be linked to lower IQs among schoolchildren, the data is not particularly applicable here because it came from foreign sources where fluoride levels are multiple times higher than they are in American tap water.”

Wichita Eagle: Anna Choi and Philippe Grandjean in email to Wichita Eagle

Claim: *"Fluoridated water contains 250 x more fluoride than mother's milk."*

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FACTS:

- *There are no known adverse health effects for infants.* Milder form of dental fluorosis is the only risk.
- *Vitamin D* is added to milk because mother's milk *lacks* sufficient amounts. The National Academy of Sciences and the American Academy of Pediatrics recommends vitamin D per day beginning during the first 2 months of life.

Appetitive-based learning in rats: Lack of effect of chronic exposure to fluoride

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ABSTRACT

Background: Chronic ingestion of optimally fluoridated water (ca. 1.0 mg/L) has not been associated with any adverse health effects. Possible effects on the nervous system, however, have received little attention. One study with rats given high doses of fluoride reported subtle behavioral changes. The authors suggested that the ability of humans to learn might be reduced and recommended further study with humans and rats. The present study was done to provide data with which to assess this suggestion.

Methods: Weanling, female rats ($n = 32$) were provided with water containing graded doses of fluoride (0, 2.9, 5.7, 11.5 mg/kg body weight/day) for eight months. While under restricted food access they were tested for their ability to learn an operant response for food and to adjust their responding under schedules of reinforcement requiring high rates of responding (5 days) and then low rates of responding (10 days). Bone, plasma and seven regions of brain were analyzed for fluoride.

Results: There were no significant differences among the groups in learning or performance of the operant tasks. Tissue fluoride concentrations were directly related to the levels of exposure. In the 11.5 mg/kg/day group the bone, plasma and brain concentrations were 99, 305 and 221 times higher, respectively, than those in the control group. The average brain-to-plasma fluoride concentration ratios in each of the seven brain sections fell within a narrow range and did not exceed 0.40. There was no consistent evidence for the preferential uptake of fluoride by any given brain section.

Conclusion: Chronic ingestion of fluoride at levels up to 230 times more than that experienced by humans whose main source of fluoride is fluoridated water had no significant effect on appetitive-based learning.

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J. Neurotoxicology and Teratology. 2009.

Conclusion: Chronic ingestion of fluoride at levels up to 230 times more than that experienced by humans whose main source of fluoride is fluoridated water **had no significant effect** on appetitive-based learning.

Claim: “We should discontinue fluoridation because 41% of children in the US have dental fluorosis.”

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FACTS:

97% of adolescents ages 12-15 have fluorosis of the *very mild to mild types*.
A study by Lido and Kumar suggested that molars with fluorosis were more resistant to cavities than those without fluorosis



← This
or
This? →



**The association between enamel fluorosis
and dental caries in U.S. schoolchildren**

Hiroko Iida, DDS, MPH; Jayanth V. Kumar, DDS, MPH

Claim: *Most countries in Western Europe don't fluoridate, so why do we?*

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- The U.K., Spain, and Ireland have fluoridated water
- In some parts of western Europe, large number of water systems make community water fluoridation (CWF) logistically challenging, so they practice *salt or milk fluoridation* instead
- Nearly the same number of people are using salt and milk fluoridation as CWF
- 405 million people in 60 countries drink fluoridated water

Claim: *“The National Kidney Foundation withdrew its support of water fluoridation”*

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FACT: *"The NKF has **no position** on fluoridation of water. "*

- Dietary advice for patients with CKD should primarily focus on established recommendations for sodium, potassium, calcium, phosphorus, energy/calorie, protein, fat, and carbohydrate intake. Fluoride intake is a secondary concern.
- There is no consistent evidence that the retention of fluoride in people with these stages of CKD (stages 4 & 5) who consume **optimally** fluoridated drinking water results in any negative health consequences.

Claim: “*Fluoride works primarily topically, not systemically*”

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FACT: Studies show **fluoride works via both topical and systemic effects**. There is a pre-eruptive cavity preventive effect and continuous exposure to small amounts of fluoride is the best for remineralization of tooth enamel (benefits both adults and children).

*“The findings indicated that **pre-eruption** exposure was required for a caries-preventive effect and that **exposure after eruption alone** did not lower caries levels significantly. However, the maximum caries-preventive effects of fluoridated water were achieved by high pre- and posteruption exposure.”*

Singh KA, Spencer AJ, Armfield JM. Relative Effects of Pre- and Posteruption Water Fluoride on Caries Experience of Permanent First Molars. J Public Health Dent. 2003;63(1):11 – 19.

Claim: *Fluoride is an additive, equivalent to forcing people to take medicine*

50

FACTS:

- U.S. courts have rejected the idea that fluoride is a medication and should not be allowed in water supply
- **Fluoridation:** the adjustment of *natural* (background) water fluoride levels to bring to optimum. Most water in Florida contains approximately 0.2ppm fluoride. It needs to be adjusted upwards just a smidge to 0.7 ppm for maximum benefit in reducing cavities.
- **Fortification** is a common practice - Folic acid, Vitamin D, Iodine etc.

Claim: *Cannot manage fluoride intake*

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- There is no need to control water intake. Fluoride from *dental products, primarily swallowed toothpaste by young children*, needs to be used appropriately as they are a *major contributor* to fluorosis, even in areas *without* fluoridation.
- There is a history of over 70 years of safety record of fluoridation in the United States.
- **NRC Report** showed that severe fluorosis *near zero* below 2mg/L (2ppm)
- **EPA's analysis** provides that the proposed recommendation of 0.7 mg/L of F⁻ *will* protect against *any* potential adverse health effects.

Claim: *There are better ways to deliver fluoride*

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FACT: There are no better, more effective means to deliver fluoride to a population than CWF. It is considered the “**Gold Standard**” of fluoride delivery

1. CWF *benefits all*, **regardless** of age SES, race, education, dental insurance coverage and access to dental care
2. Even with fluoridated toothpaste, areas with CWF show lower rates of tooth decay of **25% or more**
3. The *National Preventive Dentistry Demonstration Program* found community water fluoridation (CWF) to be the most effective in terms of cost and outcomes
4. **Strong** support from economic analysis

Alternatives have Limitations: Impact of a Magic Pill

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Issues	Factors	Estimate (%)	Impact (%)
Efficacy	Pill reduces cavities in permanent dentition by 50%	50	50
Adoption	90% of clinics and physicians write prescriptions	90	45
Reach	90% of parents buy prescriptions	90	41
Implementation	90% of children take the pill every day	90	36
Maintenance	80% of children engage in this behavior on a long term basis	80	29

Source: Adapted from Lawrence Green, CDC Workshop, October 2007.

Claim: “Communities are putting an end to fluoridation..”

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FACTS:

- The percent of the U.S. population on community water systems *increased* from 69.2% in 2006 to 74.6% in 2012 (5.4%)
- In 2012, **210.7 million people** in the U.S. population on community water systems had access to fluoridated water.
- In Florida, over 13.3 million (~77%) people receive optimally fluoridated water.

Summary

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Water fluoridation:

- Is Safe, Effective, and the most Cost Saving means to reach everyone with the cavity fighting benefits of CWF
- benefits all members of the community, regardless of age, race, SES, access to dental care
- offers a great return on its investment: For every \$1 invested in fluoridation, \$43 in dental treatment costs/person/year are avoided
- is recommended by the Task Force on Community Preventive Services and all major health organizations; CDC, AAP, ADA, AMA.....
- “Fluoridation is the single most important commitment a community can make to the oral health of its children and to future generations.”

Surgeon General C. Everett Koop

The Weight of Science



WHICH WOULD BE YOUR CHOICE???

Tooth Decay

or Mild Dental Fluorosis





Department of Health and Human Services
Centers for Disease Control and Prevention

Community Water Fluoridation

Normal



Questionable



Very mild



Mild



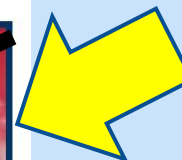
Moderate



Severe



Doesn't Occur



Accurate Photos of Enamel Fluorosis

http://www.cdc.gov/fluoridation/safety/dental_fluorosis.htm January 13, 2013

Community Water Fluoridation

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QUESTIONS?



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