Misinformation Grand Rounds: Fluoride Misinformation

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LSUHSC SCHOOL OF PUBLIC HEALTH LSUHSC SCHOOL OF DENTISTRY

PH SGA Fluoride Misinformation Grand Rounds Sign In



What is Misinformation? Disinformation? Malinformation?



is deliberately created to mislead, harm, or manipulate a person, social group, organization, or country.



- Misinformation misleads.
 - ▶ <u>It is false</u>, but not created or shared with the intention of causing harm.
- Disinformation <u>deceives</u>.
 - It is <u>deliberately created</u> to mislead, harm, or manipulate a person, social group, organization, or country.
- Malinformation sabotages.
 - ▶ It is based on fact, but <u>used out of context</u> to mislead, harm, or manipulate.

Misinformation Example: The War of the Worlds

- ▶ October 30, 1938, Orson Welles' radio play *The War of the Worlds* aired as a fictional news broadcast about an alien invasion (adapted from the book).
- Why It Was Misinformation (Not Disinformation)?
 - ▶ The broadcast was <u>meant as entertainment</u>, not a hoax.
 - Some <u>listeners missed the disclaimer</u> that it was a dramatization.
 - ▶ People panicked, thinking it was a real news report.
- ► How Did It Spread?
 - Radio was the main source of news, so realistic reporting styles made it sound credible.
 - ▶ Breaking news format added to the confusion.
- Lesson Learned:
 - Misinformation can spread quickly when people lack context or don't fact-check.
 - Media literacy is crucial—always verify information before believing or sharing.



Hysteria among radio listeners throughout the nation and actual panicky evacuations from sections of New York and New Jersey resulted from a too-realistic radio broadcast last night, describing a fictitious visitation of strange men from Mars.

How Mother Slain

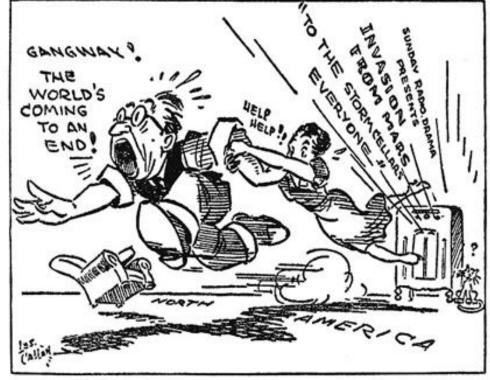
Hundreds of excited Chicagoans

Or Was It Actually <u>Disinformation</u>?

- ▶ In 1938, radio was competing with newspapers as a primary news source.
 - Newspapers saw an opportunity to discredit radio as unreliable and sensationalized the panic.
- How Newspapers Spread Disinformation
 - Exaggerated reports claimed widespread hysteria, even though actual panic was limited.
 - Stories falsely suggested that thousands fled their homes or committed suicide (no evidence supports this).
- Headlines like "Radio Listeners in Panic, Taking War Drama as Fact" reinforced fear and distrust in radio.

FROM MARS!" "HELP! MEN





FROM TIME TO TIME some quirk of fate, some state of mind, or some brilliance of thought makes a broadcast memorable. As such it deserves to be preserved for after it passes

Newspapers Framed It as a Mass Panic



What Was the Motive?

- <u>Financial threat</u>: Radio was cutting into newspaper ad revenue.
- Power struggle: Newspapers wanted to regain control of public trust in news.
 Framing radio as dangerous made people more reliant on print media.



Lesson Learned:

- <u>Disinformation is often driven by self-interest (money, power, influence)</u>.
- Media can manipulate narratives to control public perception.
- <u>- Fact-checking is essential</u>, even for stories from "trusted" sources.

The Tobacco Industry & "Doubt is Our Product"

- Strategy:
 - A 1969 memo from the tobacco industry stated: "Doubt is our product" to confuse the public about smoking risks.
- ▶ Tactics:
 - Funded biased research, hired scientists to challenge health risks, and promoted false controversy.
- ▶ Impact:
 - Delayed regulations, cost millions of lives, and <u>set a precedent for</u> <u>other disinformation campaigns</u> (e.g., climate change denial).
- ▶ Lesson:
 - Manufactured doubt protects industries, not people. Always check who funds research.

Doubt is our product since it is the best means of competing with the "body of fact" that exists in the mind of the general public. It is also the means of establishing a controversy. Within the business we recognize that a controversy exists. However, with the general public the consensus is that cigarettes are in some way harmful to the health. If we are successful in establishing a controversy at the public level, then there is an opportunity to put across the real facts about smoking and health. Doubt is also the limit of our "product". "Unfortunately, we cannot take a position directly opposing the anti-cigarette forces and say that cigarettes are a contributor to good health. No information

Truth is our message because of its power to withstand a conflict and sustain a controversy. If in our pro-cigarette efforts we stick to well documented fact, we can dominate a controversy and operate with

that we have supports such a claim.

the confidence of justifiable self-interest.

Why Are We Susceptible?

- Cognitive Biases:
 - We accept repeated information as true, even if false.
- Information Overload:
 - ▶ Too much data makes fact-checking hard.
- Emotional Appeals:
 - Fear, anger, or hope can override critical thinking.
- Social Confirmation:
 - ▶ We trust info from friends or our community.
- ► Erosion of Trust:
 - Skepticism toward traditional media pushes people to unreliable sources.
- Plausibility Trap:
 - Some false claims seem real because similar events happened before (e.g., MKUltra, Tuskegee Syphilis Study).

OAnon STATE THE ANTISEMITIC POINT OF NO RETURN Cartaria REALITY DENIAL Greta Thunberg is a time traveller STEVIE WONDER LEAVING REALITY WE LIVE IN A SIMULATION ASSESSING AREA 51 SPECULATION LINE

DETACHED FROM REALITY

1) Perfors, A. P. A. (2024, July 10). Why are we so vulnerable to bad information?. Pursuit by the University of Melbourne. https://pursuit.unimelb.edu.au/articles/why-are-we-so-vulnerable-to-bad-information

2) Larson, S. (2021, November 29). This chart on conspiracy theories has gone viral. A local disinformation researcher breaks down what to know - The Boston Globe.
Boston Globe.com, https://www.bostonglobe.com/2021/11/29/metro/this-chart-conspiracy-theories-has-gone-viral-freebritney-qanon-local-disinformation-researcher-breadown-what-know/

You! Yes, **YOU** are Vulnerable!

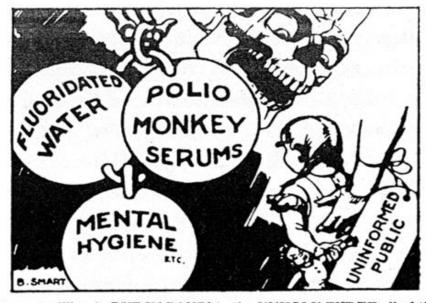
- ▶ In 2003, Jobs was diagnosed with pancreatic neuroendocrine tumor, a rare, but curable cancer with surgery.
 - ► Early intervention could have improved his chances and saved his life, but he delayed surgery and opted for diet changes, alternative medicine, and acupuncture instead.
 - ► He waited 9 months before seeking surgery, allowing the cancer to spread. Surgery was no longer an option.
- ▶ The Result:
 - ▶ Jobs passed away in 2011, and it's believed that his delayed treatment contributed to his early death.
- Regrets:
 - ▶ <u>Jobs later expressed regret</u> for not pursuing medical treatments sooner in his biography
- Lesson:
 - Evidence-based medicine is essential for health decisions misinformation can have deadly consequences



Why This Topic (Fluoride)?

- Recent Headlines: RFK Jr. and Claims of CDC Changes
 - RFK Jr. has falsely suggested the CDC reversed its support for water fluoridation, despite no such change.
- Social Media Trends & Conspiracy Theories
 - Fluoride misinformation spreads rapidly online, recycling old fears of mind control, poisoning, and government conspiracy.
- Misinformation Around Fluoride Isn't New: It's Been Recycled Since the 1950s
 - Since the 1950s, fluoride has been falsely linked to communism (during the red scare), mass poisoning and threats to personal freedom.
- Public Health Implications of Rising Skepticism
 - Growing skepticism of fluoride increases risks of higher rates of preventable dental disease, <u>especially among</u> <u>vulnerable populations</u>.

At the Sign of THE UNHOLY THREE



Are you willing to PUT IN PAWN to the UNHOLY THREE all of the material, mental and spiritual resources of this GREAT REPUBLIC:

FLUORIDATED WATER

1—Water containing Fluorine (rat poison—no antidote) is already the only water in many of our army camps, making it very easy for saboteurs to wipe out an entire camp personel. If this happens, every citizen will be at the mercy of the enemy—already within our gates.

POLIO SERUM

2—Polio Serum, it is reported, has already killed and maimed children; its future effect on minds and bodies cannot be guaged. This vaccine drive is the entering wedge for nation-wide socialized medicine, by the U.S. Public Health Service, (heavily infiltrated by Russian-born doctors, according to Congressman Clare Hoffman.) In enemy hands it can destroy a whole generation.

MENTAL HYGIENE

3—Mental Hygiene is a subtle and diabolical plan of the enemy to transform a free and intelligent people into a cringing horde of zombies.

Rabbi Spitz in the American Hebrew. March 1, 1946: "American Jews must come to grips with our contemporary anti-Semites; we must fill our insane asylums with anti-Semitic lunatics."

FIGHT COMMUNISTIC WORLD GOVERNMENT by destroying THE UNHOLY THREE!!! It is later than you think!

KEEL AMERICA COMMITTEE
Box 3094, Los Angeles 54, Calif. II. W. Courtols, Secy.

May 16, 1953

RFK Jr. and Fluoride Misinformation

- Why Discuss RFK Jr.?
 - Identified as part of the "<u>Disinformation Dozen</u>" by the Center for Countering Digital Hate (CCDH), a group responsible for a significant share of vaccine misinformation online (Source: CCDH Report, 2021).
- His Public Positions and Actions:
 - Founder of Children's Health Defense, an organization that <u>has promoted</u> misinformation about vaccines, fluoride, and public health interventions.
 - His website includes claims linking fluoride to various health risks that are not supported by mainstream scientific consensus (Source: Children's Health Defense).
- Notable Activities:
 - Has filed lawsuits against U.S. government agencies regarding vaccine safety and fluoride use.
 - Publicly <u>opposed</u> CDC, FDA, and HHS positions on vaccine & fluoride safety.
- Current Role:
 - United States Secretary of Health and Human Services (HHS)



Robert F. Kennedy Jr. addressing a crowd in Berlin during an event associated with coronavirus skepticism and conspiracy theories.







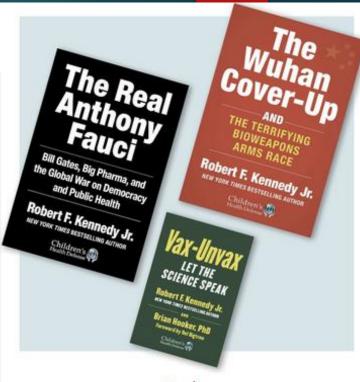
DVDs / FILMS

Will be covered in more detail in the "Vaccine Misinformation Grand Rounds" once a speaker is found!









Books

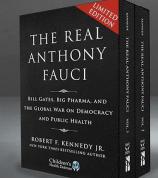
CHD Profiting off Disinformation Exs:

RFK Jr. has stepped away from CHD since 2023 to focus on the presidential race, but merchandise with his name still remains on the website (as of 4/28/2025)



THE REAL
ANTHONY FAUCI





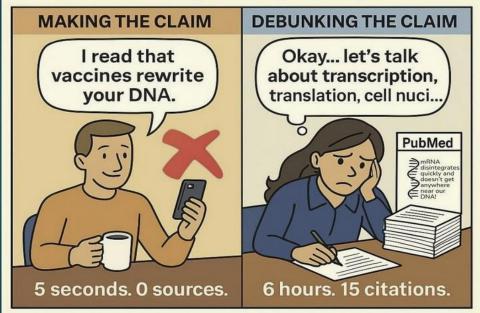


Why This Matters: The Real-World Consequences

"Analysis found that it took the truth approximately <u>six times</u> as long as falsehood to reach 1,500 people." (MIT)

Brandolini's Law

The BS Asymmetry Principle



Debunking takes hours. Misinformation takes seconds.

Think before you share.

UNIBIASED SCIENCE

- Public Health Risks:
 - Misinformation about vaccines, COVID-19, or tobacco leads to preventable deaths.
- Erosion of Trust:
 - ► False narratives weaken faith in science, media, and institutions, making society more vulnerable.
- Political Instability:
 - Disinformation fuels division, violence, and election interference (e.g., January 6th Capitol riot).
- Financial Harm:
 - Scams, stock manipulation, and fraud cost individuals and economies billions.
- Delayed Action on Global Issues:
 - Climate change denial and public health misinformation slow critical policy responses.
- Lesson:
 - Bad information has real consequences
 - Question, verify, and think critically.

Case Study of Fluoridation Removal in Calgary, Canada

- ▶ In 2011, Calgary, Canada <u>stopped</u> <u>adding fluoride to its drinking water</u>.
- ► A study comparing Calgary (without fluoride) and Edmonton (with fluoride) found about 65% of Calgary children had tooth decay, compared to about 55% in Edmonton.
- A decade later, <u>Calgary voters chose</u> <u>to reinstate fluoridation</u>, although it has not yet been implemented.
- Public health expert Lindsay McLaren Ph.D emphasized that removing fluoride is not a neutral action and needs to be replaced with other oral health strategies, which is something left out when making these decisions. (PBS, April 2025)

Current Events in the US

Utah Becomes First State to Ban Fluoride in Public Water

Medical experts warn the move could have consequences for oral health, especially among children.

Listen to this article · 3:32 min Learn more

Bill banning fluoride in Louisiana's

public water systems clears

Senate committee

WWNO - New Orleans Public Radio | By Drew Hawkins Published April 23, 2025 at 9:12 PM CDT







Our Role as Professionals

- Share science clearly
 - Don't make it complicated—clear, simple language goes a long way.
- Engage with communities
 - Meet folks where they are, not where you wish they were.
- Sounter false claims with empathy
 - When misinformation pops up, call it out gently (with empathy) and back it up with solid sources.
- Promote media literacy
 - Help people learn how to spot bad info.
- ▶ m Advocate for better policies
 - Advocate for policies that hold disinformation campaigns accountable.
- Model ethical communication
 - Show what responsible, ethical communication looks like.
 - People trust actions more than words.

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Who is Dr. Mosca?

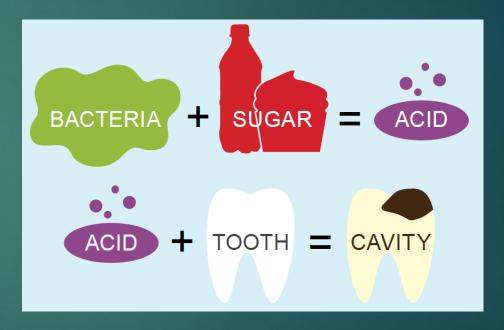
- Dentist (Loyola University) with doctorate in Public Health (UNC)
- Educator at University of Mississippi Medical Center (Hospital Dentistry)
- Dental Director & STD/HIV Director for Mississippi Dept. of Health
- Past President, American
 Association of Public Health
 Dentistry
- Member, The Santa Fe Group
 - https://santafegroup.org/



What is Dental Caries?

- Breakdown of tooth enamel (demineralization & cavitation)
- Caused by bacteria producing acid from sugars
- Worsened by poor oral hygiene, diet, dry mouth, chronic diseases & limited dental care
- By age 8, over half of children have had a cavity

"TOOTH DECAY"



What is Fluoride?

- Naturally found in lakes, rivers and groundwater
- Imparts hardness to tooth enamel (hydroxyfluorapetite) and prevents dental decay
- Fluoridation adjusts the natural fluoride content in water to prevent dental caries
- Fluoridation is one of the "10 Greatest Public Health Achievements of the 20th Century" (CDC)

(Watch <u>here</u>)

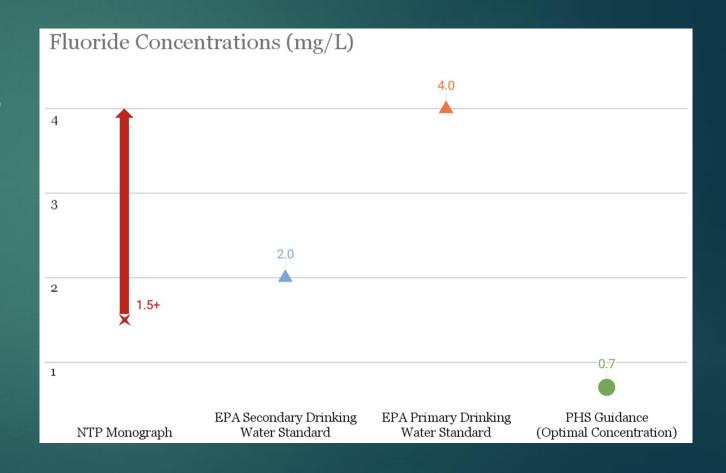
Why This Topic?

- Utah banned fluoridation, effective May 7, 2025
- Other states are working to ban it:
 - ► Louisiana (SB 2)
 - Arkansas
 - ▶ Texas
 - Kentucky
 - Georgia
 - ▶ New Hampshire
 - Massachusetts

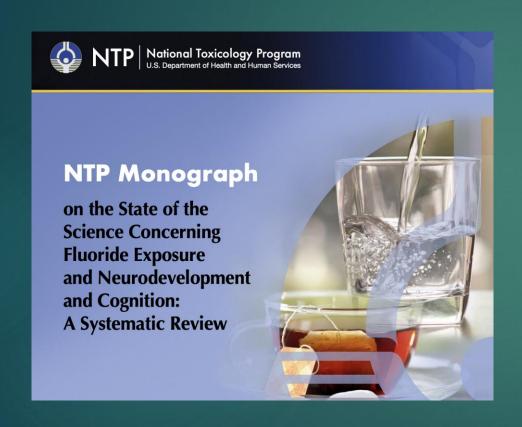
- Lack of awareness of dental caries prevalence = Low issue salience
- Public skepticism about safety and benefits
- Personal choice vs the public good (My Body, My Choice)
- RFK Jr. (Secretary of Health) threatens action to ban fluoridation
- Dissemination of misconceptions & conspiracy theories thru social media

Is Fluoridation Safe?

- Safe Drinking Water Act (EPA)
- Optimal F level = 0.7 mg/L
 - ▶ 3 drops in a 55-gallon barrel
- Secondary level = 2.0 mg/L
 - public notice when exceeded
- Maximal F level = 4.0 mg/L (enforceable)
- Zero enforcement actions for fluoride level violations
- Tolerable Upper <u>Intake Limit</u> is 10 mg daily for people age 9+



Is Fluoridation Safe?



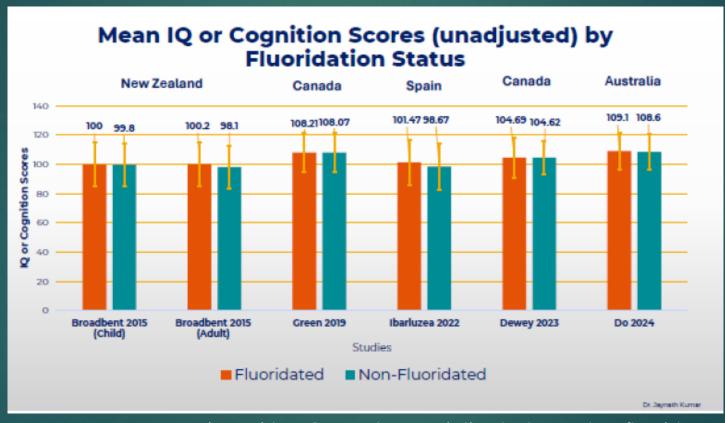
- The NTP review was designed to evaluate total fluoride exposure from all sources and was <u>not</u> designed to evaluate the health effects of fluoridated water.
- ► NTP report states in BOLD:

 "It is important to note that there were insufficient data to determine if the low fluoride level of 0.7 mg/L currently recommended for U.S. community water supplies has a negative effect on children's IQ."

What Science Did NTP Use?

- ▶ **None** of the studies reviewed the health effects of water fluoridation at 0.7 mg/L as practiced in US and Canada
- None of the studies used were from the US. NTP used studies from China, India, Iran and Pakistan, all with natural high levels of Fluoride
- ▶ 53/72 studies used were of low quality & high risk of publication bias
- NTP submitted monograph to <u>NASEM</u> twice for review. NASEM highly criticized & NTP then submitted to their own peer-reviewers.
- Concludes "with a <u>moderate</u> degree of confidence" that higher exposure (>1.5 mg/L) to fluoride is <u>associated</u> with lower IQ in children

Studies At Water Fluoridation Levels

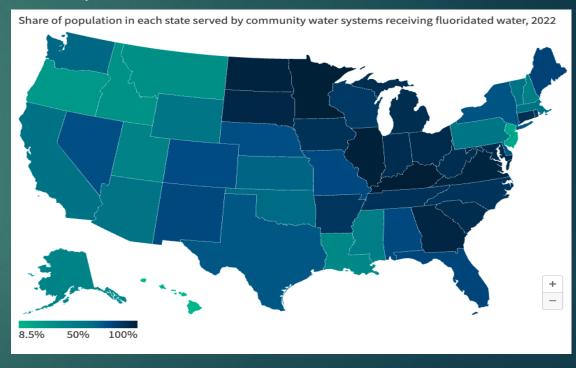


Kumar JV, Moss ME, Liu H, Fisher-Owens S. Association between low fluoride exposure and children's intelligence: a meta-analysis relevant to community water fluoridation. Public Health. 2023 Jun;219:73-84.

Should We End Water Fluoridation?

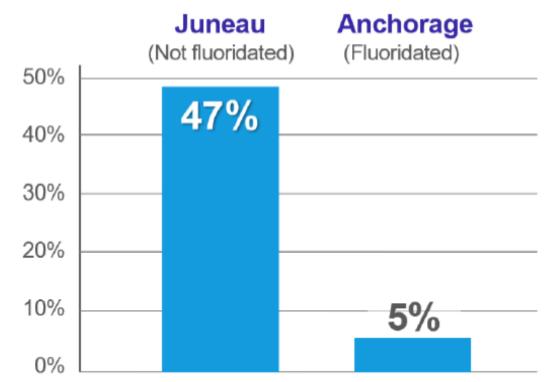
- ► In 2020, 72.7% of U.S. population received fluoridated water
- ▶ Drinking water accounts for 40 to 70% of total fluoride intake in children and 60% of total fluoride intake in adults
- States that rely on fluoride sources other than water have higher rates of dental caries
- Critics say "wide-availability" of fluoride-containing products (toothpaste) preclude the need

Share of population in each state served by community water systems receiving fluoridated water, 2022



<u>Source</u>: Water Fluoridation in the U.S.: The Federal Role in Policy and Practice, Kaiser Family Foundation (2024)

If Fluoride Stops – Decay & Costs Go Up!



(Source: J. Meyer et al., "The Impact of Water Fluoridation on Medicaid-Eligible Children and Adolescents in Alaska," Journal of Primary Prevention, 2022)

- In 2007, the city of Juneau decided to stop fluoridating, but Anchorage continued.
- Prior to stopping, the cities had comparable costs for treating decay.
- Nine years later, a study looked at increases in the avg per child cost to treat dental decay.

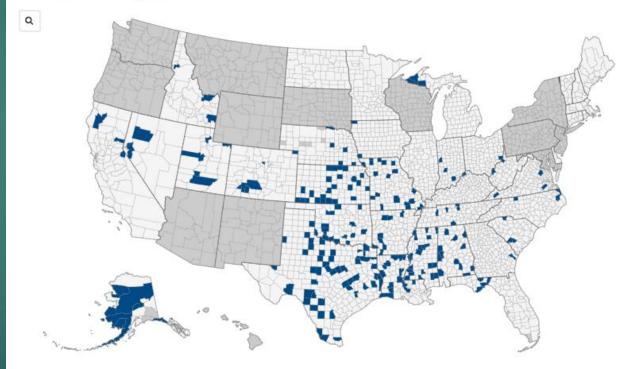
Public Health Consequences of Fluoridation bans

- Increase in unfluoridated communities
- Higher rates of dental caries in children and vulnerable populations
- Cost burden on healthcare systems
- Erosion of trust in public health institutions

Who Will Suffer?

- Children from low-income households are twice as likely to have cavities as children from higher-income households
- Only one third of U.S. dentists treat patients on Medicaid
- On average, 34 million school hours are lost each year due to emergency dental care
- Over \$45 billion in US productivity is lost each year due to untreated dental disease

At least 230 U.S. counties, highlighted in dark blue, have both a dire shortage of dentists and largely unfluoridated drinking water.



Note: Thirteen states and the counties in gray don't report data on fluoride and drinking water to the U.S. Centers for Disease Control and Prevention.

Sources: <u>Harvard University dental shortage study</u>, <u>U.S. Census Bureau 2023 population estimates</u>, <u>CDC water fluoridation data</u> Credit: Brett Kelman/KFF Health News

Common Misinformation Claims

Claims	Facts
Fluoride is a toxin	Dose matters. It's safe in regulated levels.
Causes lower IQ in children	Based on flawed or biased studies in communities with <u>high F levels</u>
Linked to cancer or infertility	No credible evidence supports this
It's forced medication	It's a public health intervention, like iodized salt or vitamin D in milk or niacin in bread

How to Communicate the Facts

- Use plain language (at 6th grade reading level)
- Acknowledge people's concerns without judgment & use relatable messaging with our audience
- Emphasize consensus among experts
- Don't just "debunk"—rebuild trust

- Use issue framing to show public what is at stake
 - Highlight positive outcomes from fluoridation
- Make our data more powerful, clearer, and more relevant
- Take proactive steps to educate our partners and allies

Brace for the Headwinds

- ▶ RFK Jr. and anti-fluoride rhetoric
- Lawsuits and petitions targeting EPA & CDC
- Response from the scientific and public health community
- Ongoing global surveillance on fluoride's safety

Takeaways

- At 0.7 mg/L, fluoride in drinking water is safe, effective, equitable, and backed by decades of research
- No evidence that water fluoridation is injurious to the public's health
- ► It costs pennies on the dollar; for every \$1 spent there are \$7-42 savings in treatment costs
- Misinformation threatens community health
- We must proactively address misinformation with empathy, facts, and transparency

Informative Websites

- ▶ American Academy of Pediatrics <u>www.ilikemyteeth.org</u>
- American Fluoridation Society <u>www.americanfluoridationsociety.org</u>
- American Dental Association <u>www.ada.org/fluoride</u>
- Carequest Institute for Oral Health https://www.carequest.org/
- Kaiser Family Foundation Health News https://kffhealthnews.org/
- The Journalist's Resource (Harvard Kennedy School of Journalism) https://journalistsresource.org/home/fluoride-research-roundup/
- ► Louisiana Well-Ahead https://wellaheadla.com/prevention/oral-health/community-water-fluoridation/
- My Water's Fluoride https://nccd.cdc.gov/doh_mwf/default/SearchByWaterSystem.aspx

Addressing Misinformation Resources

- Webinar (Recordings):
 - Navigating Public Health and Democracy After the Election By Darlene Huang Briggs, JD MPH
 - ▶ The Network for Public Health Law (New!):"<u>Public Health Under the New Administration: Examining State</u> and Local Authority to Regulate Raw Milk, Water Fluoridation, and School-Entry Vaccines".

Websites:

- "Practical playbook for addressing health misinformation" by Johns Hopkins Center for Health Security
- ▶ How to answer tough public health questions by the Public Health Communications Collaborative
- ► <u>The Public Health Communicators Guide to Misinformation</u> by the Public Health Communications Collaborative
- <u>Infodemiology</u> is a website that studies the spread of information with the goal of improving health. It has live <u>dashboards</u> (on a regional and local level) that track trending online health conversations, practical trainings that will help integrate infodemiology into your daily routine, the latest resources from across the field, and more.
- ▶ The Debunking Handbook 2020 by the Center for Climate Change Communication
- The US Surgeon General's Advisory on Building a Healthy Information Environment and Confronting Health Misinformation by the US Department of Health and Human Services

Books:

- ▶ The Deadly Rise of Anti-science: A Scientist's Warning by Peter J. Hotez
- The Fluoride Wars: How a Modest Public Health Measure Became America's Longest-Running Political Melodrama by R. Allan Freeze & Jay H. Lehr (More historical take)

Q/A and Discussions

- SoPH SGA Email:
- Phsga@lsuhsc.edu
- Dr. Mosca's Email:
- ► Nmosca@lsuhsc.edu
- Thank you for your attention!

AWWA Policy Statement on Fluoridation of Public Water Supplies

The American Water Works Association (AWWA) supports the recommendations of the World Health Organization (WHO), American Medical Association (AMA), Canadian Medical Association (CMA), Centers for Disease Control (CDC), American Dental Association (ADA), and Canadian Dental Association (CDA), for the fluoridation of public water supplies as a public health benefit. AWWA supports the application of fluoride in a responsible, effective, and reliable manner that includes monitoring and control of fluoride levels mandated by provincial, state, and/or federal laws and which is subject to community acceptance through applicable local decision making processes. AWWA supports regular reviews of the most current research on fluoride and the positions of the medical and dental communities.

Practices specified in this policy statement are consistent with all other pertinent AWWA policy statements.

Adopted by the Board of Directors Jan. 25, 1976, and reaffirmed Jan. 31,1982, and revised Jan. 20, 2002, and Jan. 21, 2007, and Jan. 22, 2012, and Jan. 16, 2016, Oct. 24, 2018, and April 5, 2022.

https://www.awwa.org/policy-statement/fluoridation-of-public-water-supplies/