http://www.gaia-health.com/articles251/000293-epa-scientists-oppose-fluoridation.shtml

**EPA Scientists Oppose Fluoridation**

**"I've never seen scientific evidence discounted and refused to be looked at the way they're doing with fluoride." —Jacqueline Warren, National Resources Defense Council**

**by Heidi Stevenson**

5 September 2010



In this age of repression on genuine scientific research, we need to take note that scientists free to do open and honest research, and report on it, have often taken stands that dispute their agencies' officials stances. Nowhere has that been more true than in the Environmental Protection Agency (EPA) on the issue of fluoride. Rank and file EPA scientists have strongly opposed water fluoridation.

EPA scientists protected by the National Treasury Employees Union were approached by an employee in 1985. His concern was that he was:

...being forced to write into the regulation a statement to the effect that EPA thought it was alright for children to have "funky" teeth. It was OK, EPA said, because it considered that condition to be only a cosmetic effect, not an adverse health effect. The reason for this EPA position was that it was under political pressure to set its health-based standard for fluoride at 4 mg/liter. At that level, EPA knew that a significant number of children develop moderate to severe dental fluorosis, but since it had deemed the effect as only cosmetic, EPA didn't have to set its health-based standard at a lower level to prevent it.(1)

A statement issued by EPA scientists stated that they tried to "settle this ethics issue quietly, within the family, but EPA was unable or unwilling to resist external political pressure." Therefore, they went public with it and filed an *amicus curiae* brief supporting a public interest group's suit against the EPA. In their statement, from which the above quote was extracted, the scientists avered that their opposition to fluoridation only grew stronger after that incident.

**Studies Showing Fluoride Lowers Intelligence**

That article goes on to document research by Phyllis Mullenix, PhD, who had established the Department of Toxicology at the Forsyth Dental Research Institute. She was also involved with a research program at Harvard's Department of Neuropathology and Psychiatry. That research documented significant neurotoxic effects of fluoride.

Dr. Mullenix described going to a conference of the National Institute of Dental Research, a division of the National Institutes of Health (NIH), to present her findings and realizing, on walking in, that she was in hostile territory. The entry areas were filled with propaganda declaring "The Miracle of Fluoride". Of her experience at that conference, she stated:

The fluoride pattern of behavioral problems matches up with the same results of administering radiation and chemotherapy [to cancer patients]. All of these really nasty treatments that are used clinically in cancer therapy are well known to cause I.Q. deficits in children. That's one of the best studied effects they know of. The behavioral pattern that results from the use of fluoride matches that produced by cancer treatment that causes a reduction in intelligence.(2)

On meeting with dental industry representatives afterwards, she was asked if she'd been saying that fluoride lowers children's IQ. She says, "And I told them, 'basically, yes.'"(2)

That was the end of her career. She was fired from Forsyth Dental Center and has gotten no related grants since then. Shortly after her firing, Forsyth received a quarter million dollar grant from Colgate, the toothpaste manufacturer. She has since stated:

I got into science because it was fun, and I would like to go back and do further studies, but I no longer have any faith in the integrity of the system. I find research is utterly controlled.

EPA scientists also noted a Chinese study documenting that children between ages 8 and 13 consistently score 5-10 IQ points lower than children subjected to less fluoride.

**Fluoride and Cancer**

Dr. William Marcus, the chief toxicologist of the EPA's Office of Drinking Water, was fired for his refusal to be silent about his work on fluoride.

Dr. Marcus was particularly concerned about several studies showing that fluoride causes osteosarcoma (bone cancer), particularly in young men. A 2-year study was conducted by the National Toxicology Program. It documented bone cancer and cancer in other tissues in rats. This coincided with other studies documenting fluoride's ability to cause cellular mutations, which are associated with cancer, and osteosarcomas in young men in New Jersey.

Dr. Marcus called for an unbiased evaluation of these studies. He was vindicated, though it didn't result in full restitution of his losses, when he won his lawsuit against the EPA, which found that he was clearly dismissed for his anti-fluoride advocacy.

**Brain and Kidney Damaging Effects of Fluoride**

The EPA scientists then noted a study by JA Varner, KF Jensen, W Horvath, and RL Isaacson(3,4) that demonstrated as little as 1 ppm (part per million) of fluoride in water causes damage to the brains and kidneys of rats. The scientists referred to this as:

...especially disturbing because of the low dose level of fluoride that shows the toxic effect in rats - rats are more resistant to fluoride than humans.

Most significantly, the EPA considers such doses to be benign.

**Pineal Gland and Early Maturation**

The scientists reported on a study documenting that fluoride collects in the pineal gland, resulting in early sexual maturation in children. A comparison of girls in two different towns, one with flouridated water and one without, showed that those drinking the treated water matured an average of six months earlier.

**Bone Pathology Caused by Fluoride**

EPA scientists expressed concerns about crippling skeletal fluorosis. It was ethical deficiencies in the standards-setting process that resulted in them filing the amicus curiae brief discussed above.

Many of the symptoms from dioxin poisoning are indistinguishable from fluoride poisoning, an unsurprising fact, since dioxins usually contain fluoride. It's probaby the primary reason for dioxin's devastating effects. For graphic evidence of what dioxins and fluoride can do, go to the photo gallery [here](http://www.gaia-health.com/articles/000046-photos1.shtml%22%20%5Ct%20%22_blank). ***Warning: These images are quite disturbing***.

**Lack of Efficacy in Preventing Dental Decay**

Finally, the scientists pointed to the lack of double-blind studies in support of prevention of caries. They pointed out that a study done by dentists of the National Institute of Dental Research, involving more than 39,000 children aged 5-17, documented no significant differences in tooth health among fluoridated, partially fluoridated, and nonfluoridated communities. The study considered decayed, missing, and filled teeth.

They also reported a 50-year study comparing two New York communities, Newburgh and Kingston. It documented no benefit from fluoridation, but showed double the amount of fluorosis in the teeth of children drinking fluoridated water, the first sign of fluoride toxicity.

They cited a publication by John Colquhoun, Principal Dental Officer for Auckland, New Zealand, titled "Why I changed My Mind About Water Fluoridation". The article stated that:

Colquhoun provides details on how data were manipulated to support fluoridation in English speaking countries, especially the U.S. and New Zealand. This paper explains why an ethical public health professional was compelled to do a 180 degree turn on fluoridation.

**EPA Scientists' Conclusion**

The EPA scientists' report stated:

For governmental and other organizations to continue to push for more exposure in the face of current levels of over-exposure coupled with an increasing crescendo of adverse toxicity findings is irrational and irresponsible at best.

They used the EPA's own risk control methodology, called the Reference Dose, to determine what an acceptable fluoride dose is. By that method, they determined that the Reference Dose for fluoride is 0.000007 mg/kg of body weight/day.

In Washington DC, they determined that people drinking only one quart from the public water supply each day ingest 0.01 mg/kg a day. *That is more than 1,428 times the safe dose of fluoride!*

The EPA scientists concluded:

The implication for the general public of these calculations is clear. Recent, peer-reviewed toxicity data, when applied to EPA's standard method for controlling risks from toxic chemicals, require an immediate halt to the use of the nation's drinking water reservoirs as disposal sites for the toxic waste of the phosphate fertilizer industry.

**The EPA's Current Policy**

In spite of its own scientists risking their careers to come forward about the dangers inherent in fluoridation, the EPA's official policy is that it has no policy. The EPA states:

EPA neither endorses nor opposes the addition of fluoride to drinking water. The decision to add fluoride is made on a local basis.(5)

They have set a standard of no more than 4.0 mg/liter of water as a maximum allowed. In minor deference to children, who are at far greater risk, they set a secondary standard of 2.0 mg/liter. They don't regulate against it; rather, they merely require that communities with fluoridation at that level must be informed.

This is nothing less than a declaration of war on the people, especially those without the funding to protect themselves by drinking bottled water (which carries its own environmental issues) or purifying tap water. It also means that farm animals are at risk for fluoridation, as documented in this [video](http://www.gaia-health.com/videos/V000029-Fluoride-Horses.shtml%22%20%5Ct%20%22_blank).

The Environmental Protection Agency is charged with protecting the environment and protecting people's health from environmental contamination. Clearly, the EPA doesn't take this seriously. Its own scientists, the ones charged with studying issues of environmental health, are ignored and forced to silence on fluoride, a substance that's been shown to provide none of claimed benefit for teeth and a host of devastating health effects. Children are losing their full potential in intelligence and health.

In 2005, 11 EPA employee unions representing more than 700 professional environmental and public health officials, officially called for a moratorium on fluoridation.(6) It was based primarily on "an apparent cover-up of evidence from Harvard School of Dental Medicine linking fluoridation with elevated risk of a fatal bone cancer in young boys" by the EPA.

The EPA still hasn't taken a stand on the dangers of fluoride in the environment or water. They even help in the promulgation of outright lies about its safety. Who does the EPA really represent? It certainly isn't the people.

As Dr. Robert Carton, former President of the EPA Headquarters Union, stated:

This whole thing is politics. You're not talking science at all.

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**WHY EPA HEADQUARTERS UNION OF SCIENTISTS
OPPOSES FLUORIDATION**

"Why EPA Headquarters' Union of Scientists Opposes Fluoridation."
The following documents why our union, formerly National Federation of Federal Employees Local 2050 and since April 1998 Chapter 280 of the National Treasury Employees Union, took the stand it did opposing fluoridation of drinking water supplies. Our union is comprised of and represents the approximately 1500 scientists, lawyers, engineers and other professional employees at EPA Headquarters here in Washington, D.C.

The union first became interested in this issue rather by accident. Like most Americans, including many physicians and dentists, most of our members had thought that fluoride's only effects were beneficial - reductions in tooth decay, etc. We too believed assurances of safety and effectiveness of water fluoridation.

Then, as EPA was engaged in revising its drinking water standard for fluoride in 1985, an employee came to the union with a complaint: he said he was being forced to write into the regulation a statement to the effect that EPA thought it was alright for children to have "funky" teeth. It was OK, EPA said, because it considered that condition to be only a *cosmetic* effect, not an adverse *health* effect. The reason for this EPA position was that it was under political pressure to set its health-based standard for fluoride at 4 mg/liter. At that level, EPA knew that a significant number of children develop moderate to severe dental fluorosis, but since it had deemed the effect as only cosmetic, EPA didn't have to set its health-based standard at a lower level to prevent it.

We tried to settle this ethics issue quietly, within the family, but EPA was unable or unwilling to resist external political pressure, and we took the fight public with a union *amicus curiae* brief in a lawsuit filed against EPA by a public interest group. The union has published on this initial involvement period in detail.\1

Since then our opposition to drinking water fluoridation has grown, based on the scientific literature documenting the increasingly out-of-control exposures to fluoride, the lack of benefit to dental health from ingestion of fluoride and the hazards to human health from such ingestion. These hazards include acute toxic hazard, such as to people with impaired kidney function, as well as chronic toxic hazards of gene mutations, cancer, reproductive effects, neurotoxicity, bone pathology and dental fluorosis. First, a review of recent neurotoxicity research results.

In 1995, Mullenix and co-workers \2 showed that rats given fluoride in drinking water at levels that give rise to plasma fluoride concentrations in the range seen in humans suffer neurotoxic effects that vary according to when the rats were given the fluoride - as adult animals, as young animals, or through the placenta before birth. Those exposed before birth were born hyperactive and remained so throughout their lives. Those exposed as young or adult animals displayed depressed activity. Then in 1998, Guan and co-workers \3 gave doses similar to those used by the Mullenix research group to try to understand the mechanism(s) underlying the effects seen by the Mullenix group. Guan's group found that several key chemicals in the brain - those that form the membrane of brain cells - were substantially depleted in rats given fluoride, as compared to those who did not get fluoride.

Another 1998 publication by Varner, Jensen and others \4 reported on the brain- and kidney damaging effects in rats that were given fluoride in drinking water at the same level deemed "optimal" by pro-fluoridation groups, namely 1 part per million (1 ppm). Even more pronounced damage was seen in animals that got the fluoride in conjunction with aluminum. These results are especially disturbing because of the low dose level of fluoride that shows the toxic effect in rats - rats are more resistant to fluoride than humans. This latter statement is based on Mullenix's finding that it takes substantially more fluoride in the drinking water of rats than of humans to reach the same fluoride level in plasma. It is the level in plasma that determines how much fluoride is "seen" by particular tissues in the body. So when rats get 1 ppm in drinking water, their brains and kidneys are exposed to much less fluoride than humans getting 1 ppm, yet they are experiencing toxic effects. Thus we are compelled to consider the likelihood that humans are experiencing damage to their brains and kidneys at the "optimal" level of 1 ppm.

In support of this concern are results from two epidemiology studies from China\5,\6 that show decreases in I.Q. in children who get more fluoride than the control groups of children in each study. These decreases are about 5 to 10 I.Q. points in children aged 8 to 13 years.

Another troubling brain effect has recently surfaced: fluoride's interference with the function of the brain's pineal gland. The pineal gland produces melatonin which, among other roles, mediates the body's internal clock, doing such things as governing the onset of puberty. Jennifer Luke\7 has shown that fluoride accumulates in the pineal gland and inhibits its production of melatonin. She showed in test animals that this inhibition causes an earlier onset of sexual maturity, an effect reported in humans as well in 1956, as part of the Kingston/Newburgh study, which is discussed below. In fluoridated Newburgh, young girls experienced earlier onset of menstruation (on average, by six months) than girls in non-fluoridated Kingston \8.

From a risk assessment perspective, all these brain effect data are particularly compelling and disturbing because they are convergent.

We looked at the cancer data with alarm as well. There are epidemiology studies that are convergent with whole-animal and single-cell studies (dealing with the cancer hazard), just as the neurotoxicity research just mentioned all points in the same direction. EPA fired the Office of Drinking Water's chief toxicologist, Dr. William Marcus, who also was our local union's treasurer at the time, for refusing to remain silent on the cancer risk issue\9 . The judge who heard the lawsuit he brought against EPA over the firing made that finding - that EPA fired him over his fluoride work and not for the phony reason put forward by EPA management at his dismissal. Dr. Marcus won his lawsuit and is again at work at EPA. Documentation is available on request.

The type of cancer of particular concern with fluoride, although not the only type, is osteosarcoma, especially in males. The National Toxicology Program conducted a two-year study \10 in which rats and mice were given sodium fluoride in drinking water. The positive result of that study (in which malignancies in tissues other than bone were also observed), particularly in male rats, is convergent with a host of data from tests showing fluoride's ability to cause mutations (a principal "trigger" mechanism for inducing a cell to become cancerous) e.g.\11a, b, c, d and data showing increases in osteosarcomas in young men in New Jersey \12 , Washington and Iowa \13 based on their drinking fluoridated water. It was his analysis, repeated statements about all these and other incriminating cancer data, and his requests for an independent, unbiased evaluation of them that got Dr. Marcus fired.

Bone pathology other than cancer is a concern as well. An excellent review of this issue was published by Diesendorf et al. in 1997 \14. Five epidemiology studies have shown a higher rate of hip fractures in fluoridated vs. non-fluoridated communities. \15a, b, c, d, e. Crippling skeletal fluorosis was the endpoint used by EPA to set its primary drinking water standard in 1986, and the ethical deficiencies in that standard setting process prompted our union to join the Natural Resources Defense Council in opposing the standard in court, as mentioned above.

Regarding the effectiveness of fluoride in reducing dental cavities, there has not been any double-blind study of fluoride's effectiveness as a caries preventative. There have been many, many small scale, selective publications on this issue that proponents cite to justify fluoridation, but the largest and most comprehensive study, one done by dentists trained by the National Institute of Dental Research, on over 39,000 school children aged 5-17 years, shows no significant differences (in terms of decayed, missing and filled teeth) among caries incidences in fluoridated, non-fluoridated and partially fluoridated communities.\16. The latest publication \17 on the fifty-year fluoridation experiment in two New York cities, Newburgh and Kingston, shows the same thing. The only significant difference in dental health between the two communities as a whole is that fluoridated Newburgh, N.Y. shows about twice the incidence of dental fluorosis (the first, visible sign of fluoride chronic toxicity) as seen in non-fluoridated Kingston.

John Colquhoun's publication on this point of efficacy is especially important\18. Dr. Colquhoun was Principal Dental Officer for Auckland, the largest city in New Zealand, and a staunch supporter of fluoridation - until he was given the task of looking at the world-wide data on fluoridation's effectiveness in preventing cavities. The paper is titled, "Why I changed My Mind About Water Fluoridation." In it Colquhoun provides details on how data were manipulated to support fluoridation in English speaking countries, especially the U.S. and New Zealand. This paper explains why an ethical public health professional was compelled to do a 180 degree turn on fluoridation.

Further on the point of the tide turning against drinking water fluoridation, statements are now coming from other dentists in the pro-fluoride camp who are starting to warn that topical fluoride (e.g. fluoride in tooth paste) is the only significantly beneficial way in which that substance affects dental health \19, \20, \21. However, if the concentrations of fluoride in the oral cavity are sufficient to inhibit bacterial enzymes and cause other bacteriostatic effects, then those concentrations are also capable of producing adverse effects in mammalian tissue, which likewise relies on enzyme systems. This statement is based not only on common sense, but also on results of mutation studies which show that fluoride can cause gene mutations in mammalian and lower order tissues at fluoride concentrations estimated to be present in the mouth from fluoridated tooth paste\22. Further, there were tumors of the oral cavity seen in the NTP cancer study mentioned above, further strengthening concern over the toxicity of topically applied fluoride.

In any event, a person can choose whether to use fluoridated tooth paste or not (although finding non-fluoridated kinds is getting harder and harder), but one cannot avoid fluoride when it is put into the public water supplies.

So, in addition to our concern over the toxicity of fluoride, we note the uncontrolled - and apparently uncontrollable - exposures to fluoride that are occurring nationwide via drinking water, processed foods, fluoride pesticide residues and dental care products. A recent report in the lay media\23, that, according to the Centers for Disease Control, at least 22 percent of America's children now have dental fluorosis, is just one indication of this uncontrolled, excess exposure. The finding of nearly 12 percent incidence of dental fluorosis among children in un-fluoridated Kingston New York\17 is another. For governmental and other organizations to continue to push for *more* exposure in the face of current levels of over-exposure coupled with an increasing crescendo of adverse toxicity findings is irrational and irresponsible at best.

Thus, we took the stand that a policy which makes the public water supply a vehicle for disseminating this toxic and prophylactically useless (via ingestion, at any rate) substance is wrong.

We have also taken a direct step to protect the employees we represent from the risks of drinking fluoridated water. We applied EPA's risk control methodology, the Reference Dose, to the recent neurotoxicity data. The Reference Dose is the daily dose, expressed in milligrams of chemical per kilogram of body weight, that a person can receive over the long term with reasonable assurance of safety from adverse effects. Application of this methodology to the Varner et al.\4 data leads to a Reference Dose for fluoride of 0.000007 mg/kg-day. Persons who drink about one quart of fluoridated water from the public drinking water supply of the District of Columbia while at work receive about 0.01mg/kg-day from that source alone. This amount of fluoride is more than 100 times the Reference Dose. On the basis of these results the union filed a grievance, asking that EPA provide un-fluoridated drinking water to its employees.

The implication for the general public of these calculations is clear. Recent, peer-reviewed toxicity data, when applied to EPA's standard method for controlling risks from toxic chemicals, require an immediate halt to the use of the nation's drinking water reservoirs as disposal sites for the toxic waste of the phosphate fertilizer industry\24.

This document was prepared on behalf of the National Treasury Employees Union Chapter 280 by Chapter Senior Vice-President J. William Hirzy, Ph.D. For more information please call Dr. Hirzy at 202-260-4683.

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**DR PHYLLIS MULLENIX**

**January, 1998.**

Phyllis Mullenix, Ph.D., formerly of Harvard University experienced the wrath of the industry when she walked blindly into the fluoride fray as part of her research program with Harvard's Department of Neuropathology and Psychiatry. While holding a dual appointment to Harvard and the Forsyth Dental Research Institute, Dr. Mullenix established the Department of Toxicology at Forsyth for the purpose of investigating the environmental impact of substances that were used in dentistry. During that undertaking she was also directed by the institute's head to investigate fluoride toxicity ......

For her toxicology studies Dr. Mullenix designed a computer pattern recognition system that has been described by other scientists as nothing short of elegant in its ability to study fluoride's effects on the neuromotor functions of rats.

**THE "MIRACLE OF FLUORIDE" -or- A DIRTY INDUSTRY?**

"By about 1990 I had gathered enough data from the test and control animals," Mullenix continues, "to realize that fluoride doesn't look clean." When she reviewed that data she realized that something was seriously affecting her test animals. They had all (except the control group) been administered doses of fluoride sufficient to bring their blood levels up to the same as those that had caused dental fluorosis [a brittleness and staining of the teeth] in thousands of children. Up to this point, Mullenix explained, fluorosis was widely thought to be the only effect of excessive fluoridation.

The scientist's first hint that she may not be navigating friendly waters came when she was ordered to present her findings to the National Institute of Dental Research (NIDR) [a division of NIH, the National Institute of Health]. "That's when the 'fun' started," she said, "I had no idea what I was getting into. I walked into the main corridors there and all over the walls was 'The Miracle of Fluoride'. That was my first real kick-in-the-pants as to what was actually going on." The NIH display, she said, actually made fun of and ridiculed those that were against fluoridation. "I thought, 'Oh great!' Here's the main NIH hospital talking about the 'Miracle of Fluoride' and I'm giving a seminar to the NIDR telling them that fluoride is neurotoxic!"

What Dr. Mullenix presented at the seminar that, in reality, sounded the death knell of her career was that:

"The fluoride pattern of behavioral problems matches up with the same results of administering radiation and chemotherapy [to cancer patients]. All of these really nasty treatments that are used clinically in cancer therapy are well known to cause I.Q. deficits in children. That's one of the best studied effects they know of. The behavioral pattern that results from the use of fluoride matches that produced by cancer treatment that causes a reduction in intelligence."

At a meeting with dental industry representatives immediately following her presentation, Mullenix was bluntly asked if she was saying that their company's products were lowering the I.Q. of children? "And I told them, 'basically, yes.'"

The documents obtained by authors Griffiths and Bryson seem to add yet another voice of corroboration to the reduced intelligence effects of fluoride. "New epidemiological evidence from China adds support," the writers claim, "showing a correlation between low dose fluoride exposure and diminished I.Q. in children."

Then in 1994, after refining her research and findings, Dr. Mullenix presented her results to the Journal of Neurotoxicology and Teratology, considered probably the world's most respected publication in that field. Three days after she joyfully announced to the Forsyth Institute that she had been accepted for publication by the journal, she was dismissed from her position. What followed was a complete evaporation of all grants and funding for any of Mullenix's research. What that means in the left-brain world of scientific research, which is fueled by grants of government and corporate capital, is the equivalent to an academic burial. Her letter of dismissal from the Forsyth Institute stated as their reason for that action that her work was not "dentally related." [Fluoride research--not dentally related?] The institute's director stated, according to Mullenix, "they didn't consider the safety or the toxicity of fluoride as being their kind of science." Of course, a logical question begs itself at this last statement: why was Dr. Mullenix assigned the study of fluoride toxicity in the first place if it was not "their kind of science"?

Subsequently, she was continually hounded by both Forsyth and the NIH as to the identity of the journal in which her research was to be published. She told The WINDS that she refused to disclose that information because she knew the purpose of this continual interrogation was so that they could attempt to quash its publication.

Almost immediately following her dismissal, Dr. Mullenix said, the Forsyth Institute received a quarter-million dollar grant from the Colgate company. Coincidence or reward?

Her findings clearly detailed the developmental effects of fluoride, pre- and postnatal. Doses administered before birth produced marked hyperactivity in offspring. Postnatal administration caused the infant rats to exhibit what Dr. Mullenix calls the "couch potato syndrome"--a malaise or absence of initiative and activity. One need only observe the numerous children being dosed with Ritalin as treatment for their hyperactivity to draw logical correlations.

Following her dismissal, the scientist's equipment and computers, designed specifically for the studies, were mysteriously damaged and destroyed by water leakage before she could remove them from Forsyth. Coincidence?

Dr. Mullenix was then given an unfunded research position at Children's Hospital in Boston, but with no equipment and no money--what for? "The people at Children's Hospital, for heaven's sake, came right out and said they were scared because they knew how important the fluoride issue was," Mullenix said. "Even at Forsyth they told me I was endangering funds for the institution if I published that information." It has become clear to such as Dr. Mullenix et al, that money, not truth, drives science--even at the expense of the health and lives of the nation's citizens.

"I got into science because it was fun," she said, "and I would like to go back and do further studies, but I no longer have any faith in the integrity of the system. I find research is utterly controlled." If one harbors any doubt that large sums of corporate money and political clout can really provide sufficient influence to induce scientists and respected physicians to endorse potentially harmful treatment for their patients, consider the results published in a January 8th article of the New England Journal of Medicine (NEJM). The Journal revealed their survey of doctors in favor of, and against, a particular drug that has been proven harmful (in this case calcium blockers shown to significantly increase the risk of breast cancer in older women). "Our results," the Journal said, "demonstrate a strong association between authors' published positions on the safety of calcium-channel antagonists and their financial relationships with pharmaceutical manufacturers."

When The WINDS asked Dr. Mullenix where she planned to take her research, she said that she is not hopeful that any place exists that isn't "afraid of fluoride or printing the truth."

The end result of the dark odyssey of Phyllis Mullenix, Ph.D., and her journey through the nightmare of the fluoride industry is, essentially, a ruined career of a brilliant scientist because hers was not "their kind of science".

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[Brain Res.](http://www.ncbi.nlm.nih.gov/pubmed/9518651) 1998 Feb 16;784(1-2):284-98.

# Chronic administration of aluminum-fluoride or sodium-fluoride to rats in drinking water: alterations in neuronal and cerebrovascular integrity.

[Varner JA](http://www.ncbi.nlm.nih.gov/pubmed?term=Varner%20JA%5BAuthor%5D&cauthor=true&cauthor_uid=9518651), [Jensen KF](http://www.ncbi.nlm.nih.gov/pubmed?term=Jensen%20KF%5BAuthor%5D&cauthor=true&cauthor_uid=9518651), [Horvath W](http://www.ncbi.nlm.nih.gov/pubmed?term=Horvath%20W%5BAuthor%5D&cauthor=true&cauthor_uid=9518651), [Isaacson RL](http://www.ncbi.nlm.nih.gov/pubmed?term=Isaacson%20RL%5BAuthor%5D&cauthor=true&cauthor_uid=9518651).

### Source

Psychology Department, Binghamton University, Binghamton, NY, USA.

### Abstract

This study describes alterations in the nervous system resulting from chronic administration of the fluoroaluminum complex (AlF3) or equivalent levels of fluoride (F) in the form of sodium-fluoride (NaF). Twenty seven adult male Long-Evans rats were administered one of three treatments for 52 weeks: the control group was administered double distilled deionized drinking water (ddw). The aluminum-treated group received ddw with 0.5 ppm AlF3 and the NaF group received ddw with 2.1 ppm NaF containing the equivalent amount of F as in the AlF3 ddw. Tissue aluminum (Al) levels of brain, liver and kidney were assessed with the Direct Current Plasma (DCP) technique and its distribution assessed with Morin histochemistry. Histological sections of brain were stained with hematoxylin & eosin (H&E), Cresyl violet, Bielschowsky silver stain, or immunohistochemically for beta-amyloid, amyloid A, and IgM. No differences were found between the body weights of rats in the different treatment groups although more rats died in the AlF3 group than in the control group. The Al levels in samples of brain and kidney were higher in both the AlF3 and NaF groups relative to controls. The effects of the two treatments on cerebrovascular and neuronal integrity were qualitatively and quantitatively different. These alterations were greater in animals in the AlF3 group than in the NaF group and greater in the NaF group than in controls.

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**PRESS RELEASE FOR AUGUST 19, 2005**

**EPA Unions Call for Nationwide Moratorium on Fluoridation,**

**Congressional Hearing on Adverse Effects, Youth Cancer Cover Up**

Eleven EPA employee unions representing over 7000 environmental and public health professionals of the Civil Service have called for a moratorium on drinking water fluoridation programs across the country, and have asked EPA management to recognize fluoride as posing a serious risk of causing cancer in people. The unions acted following revelations of an apparent cover-up of evidence from Harvard School of Dental Medicine linking fluoridation with elevated risk of a fatal bone cancer in young boys.

The unions sent [letters to key Congressional committees](http://www.nteu280.org/Issues/Fluoride/fluroride%20.unions.congress.htm) asking Congress to legislate a moratorium pending a review of all the science on the risks and benefits of fluoridation. The letters cited the weight of evidence supporting a classification of fluoride as a likely human carcinogen, which includes other epidemiology results similar to those in the Harvard study, animal studies, and biological reasons why fluoride can reasonably be expected to cause the bone cancer – osteosarcoma – seen in young boys and test animals. The unions also pointed out recent work by Richard Maas of the Environmental Quality Institute, University of North Carolina that links increases in lead levels in drinking water systems to use of silicofluoride fluoridating agents with chloramines disinfectant.

[The letter to EPA Administrator Stephen Johnson](http://www.nteu280.org/Issues/Fluoride/flouride.unions.epa.a.2005.htm) asked him to issue a public warning in the form of an advanced notice of proposed rulemaking setting the health-based drinking water standard for fluoride at zero, as it is for all known or probable human carcinogens, pending a recommendation from a National Academy of Sciences’ National Research Council committee. That committee’s work is not expected to be done before 2006.

The unions also asked Congress and EPA’s enforcement office, or the Department of Justice, to look into reasons why the Harvard study director, Chester Douglass, failed to report the seven-fold increased risk seen in the work he oversaw, and instead wrote to the National Institute of Environmental Health Sciences, the federal agency that funded the Harvard study, saying there was no link between fluoridation and osteosarcoma. Douglass sent the same negative report to the National Research Council committee studying possible changes in EPA’s drinking water standards for fluoride.

The unions who signed the letters represent EPA employees from across the nation, including laboratory scientists in Ohio, Oklahoma and Michigan, regulatory support scientists and other workers at EPA headquarters in Washington, D.C. and science and regulatory workers in Boston, New York, Philadelphia, Atlanta, and San Francisco. They are affiliated with the National Treasury Employees Union, the American Federation of Government Employees, Engineers and Scientists of California/International Federation of Professional and Technical Engineers, and the National Association of Government Employee/Service Employees International Union.

The unions’ letter is online at <http://nteu280.org/Issues/Fluoride/fluoridesummary.htm>

**FOR INFORMATION CONTACT:**

**Dr. William Hirzy, Vice-President**

**NTEU Chapter 280**

**Phone(cell) 202-285-0498**

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**Water Fluoridation Impacts the Environment**

By [Niamh Marnell](http://www.dcbureau.org/author/niamh), on July 6th, 2010



Fluoride pollution from aluminum smelters has long been known to cause problems such as damage to plants and risk to livestock grazing grasses exposed to the chemical. But there are not many highly publicized studies that look at the ecological impact of fluoridating municipal water supplies. Past research, however, shows that the practice hailed by the CDC as one of the greatest public health advances of the 20th century for humans may be causing damage to the environment.

An excerpt from a research review by Edward Groth III, a former staff member of the Environmental Studies Board of the National Research Council, sets the stage:

“To date, except for instances of gross spillage of fluoride into the air or water, fluoride has received relatively little attention as a contaminant of the ecosystem. In the case of water pollution especially, there have been many other pollutants which have been present in massive amounts, and which have had a very significant impact. It is easy to understand how a pollutant like fluoride, which is usually present at fairly low levels, and which has more subtle, insidious effects, when it has effects at all, has been given relatively low priority, both in terms of research attention and regulatory control. It is possible that fluoride may have had some adverse effects on aquatic life, but that such damage has been masked by the far more severe effects of untreated sewage, industrial effluents, pesticides, and other major pollutants. As controls on these more easily recognized pollution problems are becoming more effective and widespread, attention can turn to less prominent pollutants such as fluoride, whose impacts may be more easily detected as water quality improves in respect to other parameters.”

**At the Source**

Ninety percent of artificially fluoridated water supplies in the U.S. do not purchase pharmaceutical grade fluoride but instead purchase fluosilicic acid, a waste product mainly of the phosphate fertilizer industry.

The fluosilicic acid is extracted from wet scrubbers, according to [Michael Connett](http://www.fluoridealert.org/phosphate/overview.htm), Research Director of the Fluoride Action Network, an international coalition of scientists, medical professionals, environmentalists, and others working for fluoride awareness. Connett describes wet scrubbers as pollution management tools that were devised to capture the fluoride gases produced during phosphate fertilizer production. The designated hazardous waste, which is too toxic to be dumped in rivers or soil, is recovered from the scrubbers, packaged unrefined, and sent out to municipalities across the U.S. ready to be applied to local drinking water.

In a Canadian Broadcasting Company piece from 1967 called “[Air of Death](http://www.fluoridealert.org/cbc-transcript.htm),” the severe toxicity of the waste from the fertilizer industry and the need for pollution control is clear.

“Farmers noticed it first… Something mysterious burned the peppers, burned the fruit, dwarfed and shriveled the grains, damaged everything that grew. Something in the air destroyed the crops. Anyone could see it… They noticed it first in 1961. Again in ‘62. Worse each year. Plants that didn’t burn, were dwarfed. Grain yields cut in half…Finally, a greater disaster revealed the source of the trouble. A plume from a silver stack, once the symbol of Dunville’s progress, spreading for miles around poison – fluorine. It was identified by veterinarians. There was no doubt. What happened to the cattle was unmistakable, and it broke the farmers’ hearts. Fluorosis – swollen joints, falling teeth, pain until cattle lie down and die. Hundreds of them. The cause – fluorine poisoning from the air.”

Following incidents such as the one detailed above, the phosphate fertilizer industry has drastically cleaned up in large part due to stringent Environmental Protection Agency regulations. And large amounts of fluoride are no longer finding their way into our air, water, and soil. Much smaller amounts of fluoride from the phosphate fertilizer industry, however, are still finding their way into the environment and stricter limits on these lower levels of the waste have yet to be set.

**Industrial Waste in the Water**

The risk to the environment from fluoride comes as the sewage effluent from municipalities enters rivers and streams after processing.

Groth, who has a PhD in biological sciences, says aside from some waste still coming from industry, another significant source of fluoride water pollution is domestic sewage.

In his [1975 review of the environmental impact of fluoride](http://www.fluoridealert.org/groth-1975.htm) Groth explained that most of the fluoridated water used in urban areas is returned through sewage systems to the aquatic environment. Groth described a number of studies that related environmental fluoride concentrations to specific sources. One such study measured tributaries of the East Gallatin River above the town of Bozeman, Montana, as containing 0.1 ppm (parts per million) fluoride or less, while the river below the city’s sewage outfall (the only fluoride source in the area) was found to have concentrations of 0.3 to 0.8 ppm. This clearly illustrates that fluoride added to municipal water supplies finds its way to our rivers through our sewage systems and raises background levels of the chemical.

Groth also mentions a study of fluoride input to Narragansett Bay, in Rhode Island, which showed that “36 percent of the fluoride entering the bay was due to fluoridation of water supplies in five communities on rivers feeding into the estuary. In midsummer, pollution from these sources was enough to double the fluoride content of the rivers.”

**Fluoridated Fish**

In a 1994 research review, [Impact of Artificial Fluoridation on Salmon Species in the Northwest USA and British Columbia, Canada](http://sonic.net/kryptox/environ/salmon.htm), researchers Richard G. Foulkes and Anne C. Anderson reviewed the literature to find that concentrations of fluoride lower than 1.5 ppm, the level “permissible” by the U.S. Environmental Protection Agency (EPA), has both lethal and adverse effects on salmon.

The EPA allowed a “permissible level” of 1.5 ppm for fluoride discharged into fresh water. But the researchers suggest a level of 0.2 ppm is required to remove the risk to aquatic species. British Columbia’s “recommended guideline” is actually 0.2 ppm, but it does not have legislation to back it up.

The research review covers a field study, which demonstrated that relatively low level fluoride contamination from an aluminum smelter 1.6 km above the John Day Dam caused inhibition of migration in the salmon, which led to high salmon loss at on the Columbia River from 1982-1986. In 1982, the average daily discharge of fluoride caused a fluoride concentration of 0.5 ppm at the dam and a migration time of more than 150 hours leading to a 55% loss of the salmon. In 1983, the concentration was reduced to 0.17 ppm and the migration time to less than 28 hours with a loss of 11%. In 1985, the concentration was 0.2 ppm with a salmon loss of 5%. This study clearly shows that even lower levels of fluoride, the same levels that are discharged from artificial fluoridation of municipal water supplies, can cause a large loss of the salmon population

Other studies reviewed by Foulkes and Anderson support the findings that fluoride levels below 1.5 ppm have lethal and other adverse effects on aquatic species. One study shows delayed hatching of rainbow trout at 1.5 ppm; another shows brown mussels died at 1.4 ppm; yet another shows that levels below 0.1 ppm were lethal to the water flea.

The researchers argue that these studies provide evidence that the “safe” level of fluoride in the fresh water habitat of salmon species is not 1.5 ppm but, 0.2 ppm. They also make the point that the decline in salmon stocks, especially Chinook and Coho, is a major economic problem for both commercial and sport fisheries and that fluoride pollution, even at relatively low levels, plays a role in this problem. The researchers argue that “until evidence to the contrary based on impartially, conducted field studies, is available, the “critical level” of fluoride, in fresh water, to protect salmon species in the US Northwest and British Columbia, should be 0.2 ppm.”  They say this would require, among other actions, the cessation of deliberate metering of fluoride waste into community water supplies.



[**Niamh Marnell**](http://www.dcbureau.org/author/niamh)

Niamh Marnell earned a master's degree in social sciences from the University of Chicago where she examined organizations and power from the perspective of political science and sociology. You can follow her at http://twitter.com/NiamhMarnell.

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# Statement from Dr. Phyllis Mullenix on the Neurotoxicity of Fluoride

from [www.HolisticMed.com/add/](http://www.holisticmed.com/add/)

*DR. PHYLLIS J. MULLENIX, Ph.D. is a pharmacologist and toxicologist by training... In the 1980s, Dr. Mullenix was Head of the Toxicology Department at the Forsyth Dental Center, a world renowned dental research institution affiliated with the Harvard Medical School. She was invited to start Forsyth's Toxicology Department because of her expertise in neurotoxicology. She is presently a Research Associate in Psychiatry at the Children's Hospital Medical Center in Boston. Dr. Mullenix's academic appointments, professional positions held, teaching experience, awards, honors and many published scientific research articles to her name are numerous.

The first test Dr. Mullenix was asked to perform at the Forsyth Dental Center was a test related to neurotoxicity of fluoride. The person who asked her to perform this test was Dr. Harold C. Hodge, one of the founders of the Society of Toxicology. Since that time, Dr. Mullenix has conducted additional research related to fluoride including one study which is about to be published. She is considered one of the foremost experts on the neurotoxicity of fluoride compounds..

Please join me in welcoming Dr. Mullenix to the ADD-Holistic list! Don't forget to post your questions after Dr. Mullenix' first post on Monday.

Best Wishes,
- Mark**mgold@tiac.net*

*September 14, 1998*

***Statement from Phyllis Mullenix, Ph.D.***

It was 1982 when fluoride was first brought to my attention as a substance in need of investigation. At that time, I was in the Departments of Psychiatry at Boston's Children's Hospital and Neuropathology at the Harvard Medical School. My studies focused on detection procedures for neurotoxicity, and they typically considered a variety of environmental and therapeutic agents, i.e., radiation, lead, amphetamine, phenytoin, nitrous oxide. Dr. John Hein, then Director of Forsyth's Dental Infirmary for Children in Boston, was interested in neurotoxicity studies and invited me to continue this research at Forsyth and to apply it to substances used in dentistry. Fluoride was prominent on his list.

Five years lapsed before our investigations of fluoride began. The delay was due to time spent on technological improvements, specifically development of a computer pattern recognition system for the objective quantification of behavior in an animal model. In early June of 1986, the Forsyth Dental Center was noted for this achievement in the Wall Street Journal and the Boston Herald, and applications of our research grew. The new technology enabled us to study the clinically recognized neurotoxicity associated with the treatment for childhood leukemia. Simultaneously, we started investigations of fluoride, the "safe and effective" treatment for dental caries.

Initially, the fluoride study sparked little interest, and in fact we were quite anxious to move on to something academically more exciting. Using an animal model developed for the study of dental fluorosis, we expected rats drinking fluoride-treated water would behave the same as matching controls. They did not. The scientific literature led us to believe that rats would easily tolerate 175 ppm fluoride in their drinking water. They did not. Reports in the literature indicated that fluoride would not cross the blood brain barrier. But it did. Prenatal exposure to fluoride was not supposed to permanently alter behavioral outcome. It did. Like walking into quicksand, our confidence that brain function was impervious to fluoride was sinking.

Our 1995 paper in Neurotoxicology and Teratology was the first laboratory study to demonstrate in vivo that central nervous system (CNS) function was vulnerable to fluoride, that the effects on behavior depended on the age at exposure and that fluoride accumulated in brain tissues. The behavioral changes common to weanling and adult exposures were different from those after prenatal exposure. Whereas prenatal exposure dispersed many behaviors as seen in drug-induced hyperactivity, weanling and adult exposures led to behavior-specific changes more related to cognitive deficits. Brain histology was not examined in this study, but we suggested that the effects on behavior were consistent with interrupted hippocampal development (a brain region generally linked with memory).

Establishing a threshold dose for effects on the CNS, in rats or humans, was not the intent of this initial investigation. Yet, one fact relevant to human exposure emerged quite clear. When rats consumed 75-125 ppm and humans 5-10 ppm fluoride in their respective drinking waters, the result was equivalent ranges of plasma fluoride levels. This range is observed with some treatments for osteoporosis, and it is exceeded ten times over, one hour after children receive topical applications of some dental fluoride gels. Thus, humans are being exposed to levels of fluoride we know alters behavior in rats.

We concluded that the rat study flagged potential for motor dysfunction, IQ deficits and/or learning disabilities in humans. Confident as we were, the data were only one piece of the puzzle, the overall picture was still emerging. Soon thereafter we learned of two epidemiological studies (Fluoride, 1995-1996) from China showing IQ deficits in children over-exposed to fluoride via drinking water or soot from burning coal. A recent review (International Clinical Psychopharmacology, 1994) listed case reports of CNS effects in humans excessively exposed to fluoride, information that spans almost 60 years. A common theme appeared in the reported effects: impaired memory and concentration, lethargy, headache, depression and confusion. The same theme was echoed in once classified reports about workers from the Manhatten Project. In all, our rat data seem to fit a consistent picture.

Information linking fluoride and CNS dysfunction continues in 1998.

1) A recent study in Brain Research demonstrated that chronic exposure to fluoride in drinking water of rats compromised neuronal (hippocampal) and cerebrovascular integrity (blood brain barrier) and increased aluminum concentrations in brain tissues.

2) Masters and Coplan have reported (International Journal of Environmental Studies, in press) that silicofluorides in fluoridated drinking water increased levels of lead in children's blood, a risk factor that predicts higher crime rates, ADD and learning disabilities.

3) Luke at the International Society for Fluoride Research (ISFR) meeting in August reported that fluoride accumulated in the human pineal gland, as much or more so than in bones and teeth, and the pineal gland's melatonin biosynthesis pathway is affected by fluoride.

4) Also at the ISFR meeting, I reported that the fluorinated steroid (dexamethasone) disrupts behavior in rats to a greater degree than does the nonfluorinated steroid (prednisolone). This finding matched results just completed in a study of children receiving steroids as a part of their treatment for childhood leukemia. Dexamethasone, compared to prednisolone, further reduced IQ, specifically impairing reading comprehension, arithmetic calculation and short-term working memory.

Exposure to fluoride goes well beyond that in our drinking water, toothpastes and mouth rinses. Fluoridation of water dictates that it is in food and processed beverages. Pesticides such as cryolite also increase fluoride content of foods. The trend toward fluorinating pharmaceuticals increases fluoride exposure via medication. Fluoride, in various compounds, plays a heavy role in occupational exposures and for people living in close proximity to industry, i.e., aluminum, steel, brick, glass, petroleum, etc. With exposure so common, we can no longer afford to ignore potential CNS consequences of fluoride.

I would be happy to answer questions about any of the above material.

Phyllis J. Mullenix, Ph.D.

*The following are responses from Dr. Mullenix to questions asked by Mark Gold.*

*September 17, 1998*

***Response to Questions from Mark Gold***

Hi Mark,

Thank you for the questions and interest in our work. The following are responses to your questions.

1) You have the dose for the Brain Research paper correct. It was essentially 1 ppm fluoride in the drinking water for 52 weeks (not an equivalent dose). This was indeed a very low dose, but one close (or even lower) to that consumed by humans. Note that our study in rats included higher doses, but for shorter periods of time (6 or 20 weeks duration). We realized at the time that the duration of exposure was just as critical as the dose. We proposed studies looking at much lower doses with longer durations, but that was where our research was cut off. Hmmm, indeed.

2) There is no question that fluoride crosses the blood brain barrier, and it is also likely that some neurological effects can be reversed. The key variables to reversibility may involve: 1) the age at exposure- the earlier in brain development when exposed, the more likely changes will not be reversible. 2) the dose and duration of exposure. There are more than one mechanism by which fluoride could be causing problems for the brain. Repeated peak exposures to fluoride for a short duration of time may be a problem if the peaks occur during critical periods of brain development. The mechanism to be suspicious of here is fluoride's ability to interfere with the G2 phase of the cell cycle. In other words, it can interfere with brain development the same way that x-irradiation does. In contrast, low steady doses of long duration can still be a problem for the brain, even if the brain is well developed. However, the mechanism to be suspicious of here is the accumulation of fluoride. This situation is more likely to be reversible, but the problem is stopping the exposure to allow the body time to rid itself of the deposits so that the brain can recoup. Remember, there are major storage sites for fluoride in the body (bones, teeth and the pineal gland). Every time bones remodel, they kick out fluoride which can then be recirculated and go back into other soft tissues, including the brain. Ridding the body of fluoride can take years, even if you accomplished the difficult task of stopping all sources of fluoride exposure.

3) There are ways to restrict fluoride exposure:
**a)**drink distilled water or bottled water with known low fluoride content (i.e., Evian)
**b)** avoid drinking processed beverages made with fluoridated water- colas, etc.
**c)** avoid drinking tea
**d)** avoid foods sprayed with cryolite- used often on potatoes (outer peel may have as much as 20 ppm fluoride)
**e)**avoid foods that labs have confirmed as being high in fluoride- some cereals (fruit loops, wheaties), vegetables grown next to industries- spinach, celery
**f)** whenever possible, switch from fluorinated to nonfluorinated medications. Besides steroids, antibiotics, anesthetics (methoxyflurane) and antidepressants (prosac and paxil) contain fluorine in chemical structure. When metabolized, they may contribute to fluoride levels in blood.
**g)** get plenty of calcium in diet (magnesium can help some too).

4) The link of fluoride with fibromyalgia has not been explored in any depth. The new data showing fluoride's impact on melatonin biosynthesis, and the high concentrations in the human [pineal gland](http://www.fluoridealert.org/ifin-269.htm), should be a real eye opener for many. I am ill at ease with this enzyme poison (fluoride) being that close to the hypothalamic-pituitary-axis functions in the body. Research is needed immediately, but will it happen for this politically sensitive subject?

I'm sorry if these answers are long, but there is much to say and learn.

Phyllis J. Mullenix, Ph.D.

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EPA Fluoride Standards Database

http://www.fluoridealert.org/health/epa/index.html

**NOTABLE QUOTES:**

"You would have to have rocks in your head, in my opinion, to allow your child much more than 2 ppm."
- Dr. Stanley Wallach, [Surgeon General Committee on Non-Dental Health Effects of Fluoride](http://www.fluoridealert.org/health/epa/media/medtrib890420.html), April 19, 1983. (EPA ended up enacting a standard of 4 ppm).

"I've never seen scientific evidence discounted and refused to be looked at the way they're doing with fluoride."
- Jacqueline Warren, [Natural Resources Defense Council](http://www.fluoridealert.org/health/epa/nrdc/index.html), November 25, 1985

"The EPA was pressured by supporters of fluoride, however well-meaning, and by states that would have to remove excess fluoride, to raise the standard to a level that now borders on unsafe, according to EPA's own scientific review. EPA's actions were not driven by science, but by political pressure from supporters of fluoride."
- [Journal of the Academy of General Dentistry](http://www.fluoridealert.org/health/epa/media/agd-feb87.html), February 1987

"Up to now EPA, under the Safe Drinking Water Act, has regulated fluoride in order to prevent children from having teeth which looked like they had been chewing brown shoe polish and rocks... EPA in response to new studies, which only confirmed the old studies, and some flat out political preasure, has decided to raise the standard to 4 mg/L. This increase will allow 40% of all children to have teeth gross enough to gag a maggot."
- [Paul Price](http://www.fluoridealert.org/health/epa/dental-fluorosis.html), EPA Drinking Water Analyst, October 31, 1985.

"This whole thing is politics. You're not talking science at all."
- Dr. Robert Carton, [President of EPA Headquarters Union](http://www.fluoridealert.org/health/epa/media/bglobe851125.html), November 25, 2005

**BRIEF HISTORY of EPA's FLUORIDE SAFETY STANDARD:**

Because of fluoride's ability to harm human health, the [US Environmental Protection Agency](http://www.epa.gov/safewater/hfacts.html) (EPA) regulates the amount of [fluoride](http://www.epa.gov/safewater/mcl.html#inorganic) that can be legally present in drinking water.

In 1975, following passage of the [Safe Drinking Water Act](http://www.epa.gov/safewater/sdwa/index.html) (SDWA), EPA promulgated a Maximum Contaminant Level (MCL) for fluoride of 1.4-2.4 ppm. EPA issued the MCL in order to prevent children from developing advanced forms of [dental fluorosis](http://www.fluoridealert.org/health/epa/dental-fluorosis.html) (a brown and and black [discoloration of teeth](http://www.fluoridealert.org/health/teeth/fluorosis/moderate-severe.html) with pitting and cracking of the enamel).

Because of the costs involved in removing fluoride from water, EPA's decision to issue an enforceable standard for fluoride caused a backlash from states (e.g. South Carolina) with high-fluoride areas. The decision also angered the [pro-fluoride dental lobby](http://www.fluoridealert.org/health/epa/media/ada800324.html), which believed EPA's regulation of fluoride as a contaminant would interfere with its [promotion of water fluoridation](http://www.fluoridealert.org/health/epa/memos/astdd-resolution1980.pdf) (0.7-1.2 ppm) as a [cavities prevention program](http://www.fluoridealert.org/health/teeth/caries/fluoridation.html).

In response to the [objections](http://www.fluoridealert.org/health/epa/media/progressive-1990.html) raised by the [State of South Carolina](http://www.fluoridealert.org/health/epa/media/wpost811210.html) and the dental lobby, the EPA began a [review](http://www.fluoridealert.org/health/epa/media/progressive-1990.html) of its MCL in the early 1980s. As part of this review, EPA consulted with multiple scientific panels, including the [Surgeon General](http://www.fluoridealert.org/health/epa/media/medtrib890420.html), the [National Institute of Mental Health](http://www.fluoridealert.org/health/epa/reports/NIMH-1984.pdf), and the [National Drinking Water Advisory Council](http://www.fluoridealert.org/health/epa/memos/ndwac1984.pdf).

The majority of the medical panels consulted by EPA concluded that advanced dental fluorosis is an [adverse health effect](http://www.fluoridealert.org/health/epa/dental-fluorosis.html) which should be prevented by enforceable regulations no greater than 2.4 ppm - a [view](http://www.fluoridealert.org/health/epa/memos/kimm072684.pdf) shared by [most](http://www.fluoridealert.org/health/epa/media/progressive-1990.html) EPA professionals working on the standard.

EPA Administrators, however, under significant legal pressure from the State of South Carolina, rejected the advice of the medical panels and, in 1985, issued a [new MCL](http://www.fluoridealert.org/health/epa/media/bglobe851125.html) (4 ppm) for fluoride which would allow [up to 40%](http://www.fluoridealert.org/health/epa/memos/press-release103185.pdf) of children to develop [advanced dental fluorosis](http://www.fluoridealert.org/health/teeth/fluorosis/moderate-severe.html).

EPA's decision to weaken the MCL drew intense criticism from the [Natural Resources Defense Council](http://www.fluoridealert.org/health/epa/nrdc/index.html) (NRDC), which - in 1986 - took the EPA to [Court](http://www.fluoridealert.org/health/epa/nrdc/index.html) to challenge the new standard. As [noted](http://www.fluoridealert.org/health/epa/media/bglobe851125.html) by an NRDC lawyer at the time, the EPA was "changing the [fluoride] standard for reasons that have nothing to do with science."

In addition to NRDC's concern that EPA [unjustifiably altered](http://www.fluoridealert.org/health/epa/dental-fluorosis.html) its definition of dental fluorosis, NRDC was also [concerned](http://www.fluoridealert.org/health/epa/media/bglobe851125.html) that EPA had inadequately examined the evidence indicating [other toxic effects](http://www.fluoridealert.org/health/index.html) from fluoride at levels below 4 ppm. (Much of the [research](http://www.fluoridealert.org/health/epa/industry.html) EPA used to defend its new 4 ppm standard came directly from [industry-funded scientists.](http://www.fluoridealert.org/health/epa/industry.html))

The NRDC was not alone in its criticism of the Agency's decision. In an unusual and [unprecedented](http://www.fluoridealert.org/health/epa/media/c%26e880801.html) move, a [Union of EPA scientists and professionals](http://www.fluoridealert.org/health/epa/memos/union/index.html) voted to join the NRDC it its suit against the EPA. A court, however, later ruled that the group of EPA scientists were [prohibited](http://www.fluoridealert.org/health/epa/media/c%26e880801.html) from entering the suit against their own Agency.

While [NRDC's suit](http://www.fluoridealert.org/health/epa/nrdc/index.html) against EPA was ultimately rejected by the Court (due to the broad deference afforded to EPA administrators in rulemaking matters) EPA's safety standard remains [highly controversial](http://www.fluoridealert.org/health/epa/media/c%26e030825.html) today - 20 years after it was first enacted.

Current controversy over EPA's safe water standard has been [fueled](http://www.fluoridealert.org/health/epa/media/inside-epa.060120.pdf), in part, by EPA's use of the standard in a [recent decision](http://www.ewg.org/issues/fluoride/20050921/index.php) to give [DOW AgroSciences](http://www.ewg.org/issues/fluoride/20050921/index.php) approval to spray a new [fluoride-based fumigant](http://www.fluoridealert.org/health/epa/media/inside-epa.060120.pdf) on a wide series of foods prepared in the US.

**NRC'S REVIEW (2006) of EPA'S SAFETY STANDARD:**

* [Background on NRC Report](http://www.fluoridealert.org/health/epa/nrc/index.html)

**CRITIQUES of EPA'S FLUORIDE SAFETY STANDARD:**

* [Fluoride Action Network](http://www.fluoridealert.org/health/epa/critiques/fan051216.pdf) - December 16, 2005
* [EPA Headquarters Union](http://www.fluoridealert.org/health/epa/memos/union/naep1998.pdf) - September 1998
* [Dr. Edward Groth, Consumers Union](http://www.fluoridealert.org/health/epa/critiques/groth-1986.pdf) - August 25, 1986

**HISTORY of EPA'S SAFETY STANDARD:**

* [A Political History of EPA's MCLG](http://www.fluoridealert.org/health/epa/dental-fluorosis.html) - Michael Connett, March 15, 2006
* [How Industry Influenced EPA’s Fluoride Safety Standards](http://www.fluoridealert.org/health/epa/industry.htm) - Michael Connett, March 18, 2006

**NEWS ARTICLES on EPA'S SAFETY STANDARD:**

* [EPA Recommends Raising Fluoride Limits](http://www.fluoridealert.org/health/epa/media/nyt851101.html) - New York Times, November 1, 1985
* [How much fluoride is too much?](http://www.fluoridealert.org/health/epa/media/bglobe851125.html) - Boston Globe, November 25, 1985
* [The Science and Politics of Fluoride](http://www.fluoridealert.org/health/epa/media/agd-feb87.html) - AGD Impact, February 1987
* [EPA Union's Attempt to Join Lawsuit Opposing Fluoride Standard was Rebuffed](http://www.fluoridealert.org/health/epa/media/c%26e880801.html) - Chemical & Engineering News, August 1, 1988
* [Fluoride's Revenge](http://www.fluoridealert.org/health/epa/media/progressive-1990.html) - The Progressive, January 1990
* [Fluoride Concerns Surface Once Again](http://www.fluoridealert.org/health/epa/media/c%26e030825.html) - Chemical & Engineering News, August 25, 2003
* [Too Much Fluoride on Tap?](http://sciencenow.sciencemag.org/cgi/content/full/2006/322/2) - ScienceNOW, March 22, 2006
* [Government Panel Raises Concern About Fluoride](http://www.fluoridealert.org/health/epa/nrc/wsj.html) - Wall Street Journal, March 23, 20006
* [Warning Sounded On Fluoride](http://pubs.acs.org/cen/news/84/i13/8413notw8.html) - Chemical & Engineering News, March 23, 2006
* [Fluoride foes get validation](http://www.portlandtribune.com/archview.cgi?id=34527) - Portland Tribune, March 24, 2006

**HISTORIC DOCUMENTS** (pdf files):

* [Natural Resources Defense Council Lawsuit Against EPA (1986)](http://www.fluoridealert.org/health/epa/nrdc/index.html)
* [Letters & Statements from EPA Headquarters Union (1985-Present)](http://www.fluoridealert.org/health/epa/memos/union/index.html)
* [EPA's Reports Announcing/Justifying MCL (1985)](http://www.fluoridealert.org/health/epa/reports/index.html)
* [Memos from EPA Officials (1979-1985)](http://www.fluoridealert.org/health/epa/memos/epa.html)
* [Memos from Pro-Fluoride Lobby (1980-1985)](http://www.fluoridealert.org/health/epa/memos/pro-lobby.html)

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