



The Fluoride/Lead Connection

Provided By



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Poisoning the Well:

Neurotoxic Metals, Water Treatment, and Human Behavior

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SiF treated water can increase the transport of heavy metals across the gut-blood and blood-brain barriers, increasing rates of toxic uptake and behavioral dysfunction. Minorities are especially at risk.

The brain is the most sensitive chemical organ in the body. ... In contemporary society, these effects take on a different character. Environmental pollution and dangerous water treatment procedures are human activities whose results are both economically costly and morally unjust. Innocent children should not be poisoned by public water supplies.

Summary: Heavy metals compromise normal brain development and neurotransmitter function, leading to long-term deficits in learning and social behavior. At the individual level, earlier studies revealed that hyperactive children and criminal offenders have significantly elevated levels of lead, manganese, or cadmium compared to controls; high blood lead at age seven predicts juvenile delinquency and adult crime. At the environmental level, our research has found that environmental factors associated with toxicity are correlated with higher rates of anti-social behavior. For the period 1977 to 1997, levels of violent crime and teenage homicide were significantly correlated with the probability of prenatal and infant exposure to leaded gasoline years earlier. Across all U.S. counties for both 1985 and 1991, industrial releases of heavy metals were -- controlling for over 20 socio-economic and demographic

factors -- also a risk-factor for higher rates of crime. Surveys of children's blood lead in Massachusetts, New York, and other states as well as NHANES III and an NIH study of 24 cities point to another environmental factor: where silicofluorides are used as water treatment agents, risk-ratios for blood lead over 10µg/dL are from 1.25 to 2.5, with significant interactions between the silicofluorides and other factors associated with lead uptake. Communities using silicofluorides also report higher rates of learning disabilities, ADHD, violent crime, and criminals who were using cocaine at the time of arrest.

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Poisoning the Well: Neurotoxic Metals, Water Treatment, and Human Behavior

Roger D. Masters

I. Heavy metals, Neurotransmitter deregulation, and Anti-social Behavior

A. Toxic heavy metals such as lead, manganese and cadmium, combined with prenatal or neonatal developmental insults, dietary deficits, and stress, damage the brain structures and down-regulate essential neurotransmitters. Previous research in this area has found:

- 1) Because lead and other toxic metals are retained in bone and astroglial cells in the brain, uptake during fetal development and early childhood has long-lasting effects on development and behavior.
- 2) Among the toxic effects of lead is a reduction of dopamine function (which disturbs the behavioral inhibition mechanisms in the basal ganglia) and glutamate (which plays an essential role in the long term learning associated with the hippocampus).
- 3) Manganese can downregulate serotonin function, reducing sociability and increasing aggressiveness or depression.

B. Prior research at the individual level showed that the uptake of heavy metals is associated with higher levels of learning disabilities, hyperactivity, substance abuse, violent crime, and other forms of anti-social behavior.

- 1) In seven different samples of prison inmates, violent offenders had significantly higher levels of lead, cadmium, or manganese in head hair than non-violent offenders or controls.
- 2) In two prospective studies, high lead levels at age 7 (one measuring lead in blood, the other bone lead) predicted juvenile delinquency and adult crime.
- 3) A substantial proportion of individuals diagnosed with ADD/ADHD are likely to have dangerously high levels of lead, manganese, or cadmium in bodily tissues.
- 4) Because alcohol, cocaine and other drugs temporarily restore neurotransmitter functions that are abnormal, substance abuse may often be crude self-medication in response to the effects of toxicity. For example, because lead downregulates dopamine and cocaine is a non-selective dopamine reuptake inhibitor, lead toxicity could increase the risk of cocaine abuse.

II. Heavy Metals, Blood Lead and Crime

A. Our own research shows that, for all U.S. counties, communities with industrial releases of lead or manganese had, controlling for socio-economic and demographic factors, higher violent crime rates in 1991. The comparable multiple regression analysis for 1985 replicates this finding.

B. Across the U.S., rates of violent crime and drug use have fallen continuously since 1993. This effect may be explained by long-term benefits of the ban on leaded gasoline in the 1970's. The delay reflects the years needed before the appearance of teenage cohorts that had not been exposed to leaded fumes during fetal development and early childhood.

- 1) Leaded gasoline was worse than lead toxicity in paint or water, since aerosol lead is absorbed 40-50% whereas only 5-15% of ingested lead is retained in the body.

- 2) Leaded gasoline sales from 1950 to 1980 are highly correlated with the overall violent crime rate 18 years or later ($r = .902$ or higher).
- 3) The effect confirmed by correlating leaded gasoline sales from 1950 to 1980 with homicides by teenagers aged 14 to 17, which drop more sharply after 1993 than those by older offenders.
- 4) The negative effects of leaded gasoline on impulse control are also suggested by the high correlation ($r = .811$) between leaded gas sales between 1949 and 1993 and the contemporary year's sales of hard liquor -- a pattern that is not found for the consumption of beer or wine.

III. Water Treatment Procedures, Lead toxicity and crime.

A. The agent used to fluoridate public water supplies was shifted from sodium fluoride (NaF) to fluosilicic acid (H_2SiF_6) or sodium silicofluoride (Na_2SiF_6) -- the silicofluorides (SiF) -- on the basis of questionable biochemical assumptions and without adequate testing.

- 1) Although virtually all studies of fluoridation have continued to use NaF, over 90% of Americans drinking fluoridated are exposed to supplies treated with SiF.
- 2) Although it is claimed that SiF is completely dissociated after injection in water supplies, this assumption is inconsistent with published research and is highly unlikely under the actual conditions of water treatment.

B. Because sodium fluoride and silicofluorides have very different biological effects, undissociated SiF residues may be dangerous.

- 1) As early as 1935, animal studies showed that excess fluoride derived from SiF is excreted through the kidneys, whereas fluoride residues from NaF are more likely to be excreted in feces (indicating more active fluorine transport across the gut-blood barrier after exposure to SiF).
- 2) Recent research on dental preparations shows that SiF compounds may be as much as 19 times more biologically active than NaF.

- 3) Through one of several plausible mechanisms, SiF treated water can increase the transport of heavy metals across the gut-blood and blood-brain barriers, increasing rates of toxic uptake and behavioral dysfunction.

IV. Communities using SiF have higher levels of lead in children's blood and higher rates of anti-social behavior than locations with nonfluoridated or NaF treated water.

A. In Massachusetts, communities using SiF to fluoridate have higher rates of children with over 10 μ g/dL of blood lead and higher rates of crime. Average levels of lead in children's blood were: H₂SiF₆ = 2.78 μ g/dL; Na₂SiF₆ = 2.66 μ g/dL; NaF = 2.07 μ g/dL; non-fluoridated = 2.02 μ g/dL.

- 1) Within Massachusetts, those communities where the EPA reported lead levels in water over 15ppb, this effect was more pronounced: H₂SiF₆ = 3.27 μ g/dL; Na₂SiF₆ = 4.38 μ g/dL; NaF = 1.90 μ g/dL; non-fluoridated = 2.18 μ g/dL.
- 2) These effects were confirmed in a matched sample of 30 SiF and 30 non-SiF suburban middle-class communities: 1.94% of children exposed to SiF treated water had blood lead over 10 μ g/dL, whereas only 0.76% of children not so exposed had blood lead over this level (risk ratio = 2.55).
- 3) Rates of crime were also higher in Massachusetts communities using SiF fluoridation.
- 4) Similar effects were confirmed in rural counties in six additional states (Georgia, Wisconsin, Texas, Illinois, Alabama, and North Carolina).

B. Among 30,000 criminals in 24 cities studied by NIJ, those living where SiF is in water were more likely to have been using cocaine at the time of their arrest (H₂SiF₆ = 44%; Na₂SiF₆ = 43%; non-fluoridated = 32%).

- 1) There was no comparable difference for other drugs whose usage is not associated with chemicals influenced by lead toxicity.
- 2) Crime rates in the cities using SiF were significantly higher than in non-fluoridating cities (H₂SiF₆ = 1486 per 100,000; Na₂SiF₆ = 1480 per 100,000; non-fluoridated = 1100 per 100,000), as were rates of death from alcoholism (H₂SiF₆ = 56.1 per 100,000; Na₂SiF₆ = 53.8 per 100,000; non-fluoridated = 44.1 per 100,000). ...

C. Geographic analysis of data from NHANES III shows that in counties where over 90% of the children receive SiF treated water, average blood lead is 5.1 µg/dL, compared to 3.7µg/dL where less than 10% of the children are exposed (risk ratio = 1.38). This effect is highly significant ($p < .0001$) both for children 3-5 and for those 5-17.

- 1) Minorities are especially at risk. In high SiF exposure counties, blood lead levels average 6.26 µg/dL among Black children, 4.86 µg/dL among Mexican-Americans, and 3.05 µg/dL among Whites; in low SiF exposure counties, Blacks average 4.37µg/dL, Mexican-Americans 3.86µg/dL, and Whites 2.03µg/dL (risk ratios between 1.26 and 1.50). For both 3-5 and 5-17 age-groups, the interaction effect between a child's race and SiF exposure as factors in higher blood lead is highly significant ($p < .0001$).
- 2) Although NHANES III data also shows some benefits of fluoridation on lower tooth decay, these effects are weaker and are not found among White children aged 5-17. Moreover, lower rates of caries are not found among children 15-17 (perhaps because fluoride can slow tooth eruption, which could lead to misleading data when comparisons match age for children of different races).

D. A preliminary survey of high school nurses and administrators in sixteen comparable middle sized New York cities shows higher rates of ADHD cases treated with medication and higher rates of learning disabilities in communities using SiF (risk ratio = 1.38).

V. Conclusion: the need to integrate neurotoxicology, environmental research and the study of human behavior.

- A. The brain is the most sensitive chemical organ in the body. While discussions of toxins heretofore focused on cancer and disease, ADD/ADHD, alcoholism, substance abuse, and crime need to be studied in terms of the latest biology and neuroscience of early development and brain function.
- B. The effects of toxic heavy metals are consistent with the perspective of Darwinian medicine: since lead and manganese are widely found in soils but uptake depends on dietary deficits in calcium and other key elements, for most of hominid evolution the effects discussed above would only have occurred in time of dietary shortfall, when increased male-male conflict was not necessarily mal-adaptive.
- C. In contemporary society, these effects take on a different character. Environmental pollution and dangerous water treatment procedures are human activities whose results are both economically costly and morally unjust. Innocent children should not be poisoned by public water supplies.

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. His E-mail address is <hirzy.john@epa.gov>

EPA's Union of Scientists' "WHITE PAPER"

Why Union Opposes Fluoridation

May 1, 1999

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 Luke⁷ 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 Kingston⁸.

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 issue⁹. 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 important¹⁸. 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 paste²². 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 watersupplies.

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 media²³, 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 0.001mg/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. His E-mail address is <hirzy.john@epa.gov>

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FOR IMMEDIATE RELEASE:

JAN 20, 1999 / CONTACT: BILL HIRZY 202-260-4683(V) 202-401-3139(F) EMAIL: HIRZY.JOHN@EPA.GOV

SCIENTISTS ACCUSE NATIONAL ACADEMY OF SCIENCES OF UNSCIENTIFIC BEHAVIOR IN PROMOTING FLUORIDE

Four scientists and an attorney today accused the National Academy of Sciences of unscientific behavior by promoting fluoride as a "beneficial element." Citing research on fluoride, some from NAS's own publications, Drs. Albert Burgstahler, University of Kansas, Paul Connett, St. Lawrence University, Lennart Krook, Cornell University, and William Hirzy, National Treasury Employees Union at EPA, and New York attorney Paul Beeber said NAS was engaging in "linguistic de-toxification" of fluoride.

Professor Krook linked fluoride with increased risk of hip fractures in the elderly. He said peer reviewed publications showed weaker bones result from drinking fluoridated water. He also discussed several studies showing fluoride causes bone cancer in animals and humans, studies NAS downplays.

Professor Burgstahler pointed out errors in NAS's publication that purports to establish a safe upper limit of exposure to fluoride and expressed concern over bias among the NAS panelists. Burgstahler said NAS has previously cited 13 studies showing fluoride causes bone toxicity below the doses NAS now says are "tolerable."

Dr. Hirzy said EPA treats fluoride as a "protected pollutant." He gave several examples including EPA's drinking water standard, set at a level known to cause adverse effects on teeth, its reliance on NAS rather than its own staff for advice on fluoride risks, and its firing of the senior drinking water toxicologist for refusing to keep quiet about fluoride's ability to cause cancer. He said the professionals' union voted to support citizens fighting fluoridation after union scientists reviewed recent research on fluoride.

Paul Beeber discussed a new report that shows, after a fifty-year trial, no difference in the dental cavities rates in children in fluoridated Newburgh and un-fluoridated Kingston, NY. The report shows children in Newburgh to have about twice the rate of dental fluorosis, the earliest sign of fluoride toxicity, as children in Kingston.

Professor Connett said, "If we add the new evidence of fluoride's damage to the brain and the pineal gland to its carcinogenicity and its known toxicity to teeth, bones, the reproductive and other systems, and consider the ineffectiveness of fluoride in drinking water in preventing dental cavities, it is insane for NAS to promote fluoride as a beneficial element. Fluoride is a very toxic substance, and the less our children get the better."

May 10, 1999:

U.S. Rep. Calvert asks EPA's Browner to Justify Policy to Promote Fluoride

From: Jeff Green / greenjeff@home.com / Director, [Citizens For Safe Drinking Water](#), / (800) 728-3833.

To: Recipient List Suppressed;; <Recipient List Suppressed;>

Date: Tuesday, June 08, 1999 1:18 PM

Subject: E-Copy/Rep. Calvert Req. to EPA Browner

F. JAMES SENSENBRENNER, Jr., Wisconsin. Chairman GEORGE E. BROWN, JR., California
Ranking Minority Member

U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON SCIENCE

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May 10, 1999

The Honorable Carol M. Browner
Administrator
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Dear Administrator Browner:

The Committee on Science has received a number of letters recently regarding the potential health risk from fluoride in drinking water at the current maximum contaminant level (MCL). According to the enclosed Salon article and other information I have received, the current MCL may harm human health, particularly in certain sensitive subpopulations such as the young, the elderly, diabetics and athletes. In addition, the article states the Clinton Administration's goal to

increase the percentage of the population receiving fluoridated water from 62% to 75% by next year.

I would like to request your agency's response to some questions I have regarding the fluoride:

(1) I understand that EPA does not endorse water fluoridation. Has the Agency taken any steps to have EPA removed from the list of endorsers of water fluoridation published by the American Dental Association? If you have, have they complied?

(2) What chronic toxicity test data are there on sodium fluorosilicate? On hydrofluorsilicic acid?

(3) What steps have you taken to address questions related to the EPA's Maximum Contaminant Level Goal (MCL[G]) for fluoride in drinking water? If you have not taken steps to address these questions, why not? If not, when will you take such steps? When do you estimate that the work involved in addressing these questions will be complete?

(4) Do you interpret Section 101(b)(4) of the Safe Drinking Water Act of 1996 as requiring EPA to set its MCL(G)s at a level that protects all persons, including sensitive subpopulations, such as infants, children, people who drink 4 or more liters of water per day, people with allergies or hypersensitivity to fluoride, and people with renal disease?

(5) Is the Agency satisfied with fluoride doses delivered to the public via drinking water under and MCL(G) of 4 milligrams/liter (mg/l) when added to the fluoride intake from dental products, pesticide residues, food and beverages will not cause an adverse health effect?

(6) What is the margin of safety for infants who consume drinking water containing 4 mg/l of fluoride?

(7) What is the margin of safety for persons receiving kidney dialysis treatment, diabetics or those who have a hypersensitivity or allergy to fluoride who consume drinking water containing 4 mg/l of fluoride?

(8) Does the incidence of dental fluorosis among at least 22% of American children indicate that, at least among these children, an overdosing is occurring?

(9) What steps has the Agency taken to address the hazards identified with fluoride exposure in the following publications that appeared

since the EPA reaffirmed its drinking water standards for fluoride? These publications include:

(a) Neurotoxicity of sodium fluoride in rats. Mullenix, P.J., Denbesten, P.K., Schunior, A. and Kernan, W.J., *Neurotoxicology and Teratology* 17 169-177 (1995).

(b) Influence of chronic fluorosis on membrane lipids in rat brain. Z.Z. Guan, Y.N. Wang, K.Q. Xiao, D.Y. Dai, Y.H. Chen, J.L. Liu, P. Sindelar and G. Dallner, *Neurotoxicology and Teratology* 20 537-542 (1998).

(c) Chronic administration of aluminum-fluoride or sodium-fluoride to rats in drinking water: alterations in neuronal and cerebrovascular integrity. Varner, J.A., Jensen, K.F., Horvath, W., and Isaacson, R.L. *Brain Research* 784 284-298 (1998).

(d) Effect of high fluoride water supply on children's intelligence. Zhao, L.B., Liang, G.H., Wu, X.R. *Fluoride* 29 190-192 (1996).

(e) Effect of fluoride exposure on intelligence in children. Li. X.S., Zhi, J.L., and Gao, R.O., *Fluoride* 28 (1995).

(f) Effect of fluoride on the physiology of the pineal gland. Luke, J.A., *Caries Research* 28 204 (1994).

Please provide the committee with copies of any EPA publications, studies, reports or memos relating to the fluoride MCL.

I respectfully request your response to our concerns. Thank you for your attention to this matter.

Ken Calvert
Chairman
Subcommittee on Energy and Environment

enc.
KC/tjv