

# THE INSANITY OF WATER FLUORIDATION

*Why is an Environmental Pollutant Which is Poisoning Us and Corroding Pipes and Plumbing Fixtures Added to Our Drinking Water?*

By Gary Krasner

Should the government place a substance that is 37 times more toxic than lead in our drinking water? Furthermore, should they add it at a concentration 400 times greater than what the EPA allows for lead? The Mayor and City Council of the City of New York say yes, and they've been doing just that since 1965.

Since 1992, the federal EPA set the MCLG (Maximum Contaminant Level Goals) allowed for lead in public drinking water to 0.0 mg/L. In effect since 1986, the EPA's MCL for fluoride in public drinking water is 4.0 mg/L. That's 400 times greater than what the EPA allows for lead. Yet fluoride is approximately 37 times more poisonous than lead (refer to chart below).

Toxicity of Fluoride		
From the textbook, Clinical Toxicology Of Commercial Products. 5th Edition. Baltimore, MD: Williams & Wilkins Company. (c)1984. (And also found in the National Library of Medicine's ratings of toxic substances):		
Toxicity Rating or Class	Probable Oral Lethal Dose (Human) Concentration for a 150 Pound Person	Common Substances:
6.0 = super toxic	below 5 mg/kg (below 7 drops)	cyanide salts
5.0 = extremely toxic	5—50 mg/kg (7 drops to 1 tsp.)	arsenic, iodine
4.5		fluoride salts
4.0 = very toxic	50—500 mg/kg (1 tsp.to 1 oz.)	benzene, aspirin
3.5		lead compounds
3.0 = moderately toxic	0.5—5 gm/kg (1 oz. to 1 pint)	acetone, salt (nacl)
2.0 = slightly toxic	5—15 gm/kg (1 pint to 1 qt.)	cryolite
1.0 = practically nontoxic	over 15 gm/kg (1 qt. to 2.2 lbs.)	

Common sense demands that we place *higher* restrictions on the more poisonous contaminants, not lower restrictions. Common sense also demands that we not waste millions of dollars each year in public funds to purposely add poison to our drinking water. But this is exactly what NYC has been doing for over

3 decades. NYC commenced water fluoridation in 1965 by a mandate from the City Council and codified in Public Health Law Article 141.08.

But this is exactly what water fluoridation does and it affects over half of the U.S. population. Quite

logically however, less than 1% of the populace of continental Western Europe have artificially fluoridated water today.

So if fluoride is more toxic than lead and only slightly less toxic than arsenic (see next section), why does the EPA have this double standard on environmental poisons? One answer is that while fluoride became a “protected” pollutant at 1 ppm, the cost of filtering excess fluoride out of naturally fluoridated water sources across the U.S. placed political pressure upon the EPA from local governments to raise the maximum amount of fluoride allowable in freshwater sources to 4 PPM in 1986.

Another reason for the acceptance of fluoridation is that since 1950 the U.S. Public Health Service (USPHS) approved and then promoted the addition of fluoride at 1 PPM to public water supplies as a measure to reduce tooth decay in children. The decision was based on an incomplete and flawed population study begun in Michigan in 1945 with behind the scenes coercion by vested interests and outright conflicts of interest among public officials responsible for policy decisions. For example, the Alcoa Aluminum Co., who were eager to, and subsequently did, sell their fluoride waste product to public health agencies, indirectly funded fluoride studies in the 1930's. And their company lawyer later became head of the USPHS. It is now, very difficult, as Ralph Nader later explained, for public health officials to back away from a position they strongly supported for 40 years and to still be able to maintain 'credibility and public confidence on their past and future policy decisions.

The Centers for Disease Control (Atlanta) and the British Ministry of Health admitted that no laboratory experiment has ever shown that 1 ppm fluoride in water is effective in reducing tooth decay. They also admit that there are no double—blind epidemiological studies on humans showing that fluoridation reduces tooth decay. In his decision of 2/26/82 to halt fluoridation in Illinois, State Supreme Court Justice Ronald Nleemann stated, “This record is barren of any credible and reputable scientific epidemiological studies and/or analysis of statistical data which would support the Illinois Legislature’s

determination that fluoridation of public water supplies is both a safe and effective means of promoting health.” Indeed, there are numerous studies show that there are no significant differences in tooth decay rates, or even In dental costs, between fluoridated and unfluoridated areas.

For simplicity, some of the poisons listed in rank are the average of the toxicities of the (dissolved) ions of the soluble salts from which they're derived. Nevertheless, the toxicity of the fluorides range only between 4 and 4.5, depending mostly on degree of solubilities. Fluoride is a general protoplasmic poison (cell killer). Fluoride poisoning can be induced by any soluble compound which dissociates (dissolves) fluoride ion. It is erroneous to conclude that freshwater containing naturally occurring fluoride compounds, such as calcium fluoride or magnesium fluoride, is any less toxic than water containing the compounds with which some cities use to fluoridate. First, at the concentrations we are dealing with—up to 4 ppm—both “natural” and artificial fluorides are equally soluble and all are completely soluble when below 10 ppm (10 *mg/L*). Secondly, it is only to a small degree, if at all, that the presence of calcium in “natural” fluoride would reduce the uptake of fluoride by the body. There are no indications that it mitigates the bone damaging effects of the fluoride ion. And medical studies do not demonstrate differences in any of the health effects between “natural” and artificially fluoridated water.

Once in the body, the fluoride ion can bond tightly with hydrogen, thus inactivating the active group of an enzyme. Or it can replace a hydroxyl group due to its similarity in size. It will also chelate the body's calcium or magnesium thus removing essential components of enzyme proteins. The U.S. National Academy of Sciences, the W.H.O. and others have published lists of enzymes that are inhibited at fluoride levels of 1 ppm or less. Fluoride inhibits many different enzymes of people in fluoridated areas by accumulating in soft tissue. In addition to inorganic, there are numerous organic (fluorinated carbon) compounds formed which are extremely poisonous. Radioactive tracer techniques show that the fluoride ion tears normal molecules apart and forms unacceptable new compounds.

## Just How Reactive is Fluoride?

Dr. Isaac Asimov's essay ("Death in the Laboratory", © 1965 Mercury Press) on the history of the effort of chemists to break the bonds of fluoride compounds to isolate the free fluorine element—he referred to it as, "a pale yellow-green assassin", because exposure to it led to their premature deaths—describes how Heinrich Schwanhard in 1670 first observed how fluorine vapor attacked and partially dissolved glass. Indeed, the subsequent difficulty of chemists for almost 3 CENTURIES (until 1962) to isolate and hold fluorine gas was due to its extremely high reactivity and strong tendency to bond (react with) any container that held it. As the most electronegative of all the elements, fluorine is the strongest oxidizing agent that we know. When liquid fluorine combines with hydrogen, the reaction produces a temperature of 4700 degrees Celsius. Wood or rubber placed in a stream of liquid fluorine bursts into flames. Even asbestos becomes incandescent.

Most notably, fluoride appears to be responsible for the disruption of collagen synthesis in cells. Fluoride probably damages cells by interfering with enzymes essential for setting up the proper conditions for producing intact collagen. The body loses its ability to discriminate between which tissues should mineralize and which should not, and this leads to conditions such as arthritis, arteriosclerosis, brittle bones, wrinkled skin, etc.

Clinical and epidemiological studies firmly link fluoride to these conditions in humans. And based on carefully controlled animal studies, the concentration which initiates the chemical process leading to these conditions is as low and even lower than 1 ppm (1 mg/L). Like lead and strontium-90, even though fluoride accumulates primarily in the mineralized part of the bone, it does not exhibit its toxic effect due merely to its presence there. The damage is caused by its biochemical effects on living cells which give rise to formation of bone as well as soft tissue.

The 1983 Surgeon General's report on fluoride noted "The effects of various levels of fluoride intake on rapidly developing bone in young children are not well understood...".

In animal studies, at levels recommended by the NCI in testing for cancer, fluoride has been shown to transform normal cells into cancer cells and to produce melanotic tumors; and at 1 ppm, to increase tumor growth rate by 25%. The 1977 Burk—Yiamouyiannis study, which has withstood tremendous scientific scrutiny and challenges in the

courts, showed that 10,000 or more fluoride linked cancer deaths occur yearly in the U.S.

Consequently, Congress mandated the National Toxicology Program (branch of NIH) to begin rodent tests of fluoride's carcinogenicity. Released in Feb. 1990, the results of the NTP study showed that fluoride is carcinogenic at several hundred times less concentration than such established carcinogens as benzene, trichloroethelene, or red dye #3.

### Environmental Effects of Fluoride

Since fluoride has been given a free ride as a pollutant, it is pervasive in our environment. It enters our foods falling on crops via industrial emissions, up through the roots from soil irrigated with fluoridated water and in foods which are processed in fluoridated areas. Airborne fluoride has been linked to lung cancer (FLUORIDE 7:153—165.1974. & others). The American Lung Association identified fluoride as one of the top ten air pollutants.

A 1977 report by the National Research Council (NRC) of Canada, citing over 500 studies, concluded that fluoride is an environmental hazard, inducing "metabolic & biochemical changes ...". The NRC also estimated that 150,000 metric tons of fluoride were discharged over North America in 1972. In 1970, the U.S. Dept. of Agriculture claimed that "more worldwide damage to domestic animals is caused by fluoride than any other air pollutant". The NRC report said samples of beef contained 13.6 to 41.7 mg of fluoride per kilogram. In 1979 the Ministry of the Environment of Quebec issued a

report citing dozens of independent studies, concluded that “fluorides are highly toxic for humans and a narrow margin separates an “acceptable level’ from a toxic level”. It recommended “an indefinite moratorium on water fluoridation”. Despite the political pressures to support water fluoridation, some

organizations have taken a position against it: The Sierra Club (NYC), Natural Resources Defense Council, NYS Parent-Teachers Assn., Long Island Federation of Women’s Clubs (62 clubs in Queens and Long Island totaling 100,000 members).

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## The Costs That Fluoridated Cities Pay

New York City Could Eliminate Lead Contamination of The Water Supply Virtually Overnight, Without Spending a Dime. In Fact, We Would Actually Save Millions.

*For over 3 decades the city has been placing a chemical additive in the water supply that dramatically increases the levels of lead in our tap water. The chemical makes the water corrosive enough to leach significant amounts of lead from pipes and solder joints. The chemical is fluoride. Studies have shown that dissolved fluoride compounds at 1 mg/L are the prime reason that lead levels are so high in tap water in cities that fluoridate.*

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### How Much Lead is in Our Water?

In 1992 the Environmental Quality Institute of the University of North Carolina-Asheville (EQI) released their findings from an ongoing study of the lead content of New York City’s tap water. The results showed that 31% of the samples taken exceeded the EPA’s limits of 0.015 mg/L. In Queens, it was as high as 36% of the samples. Low income residents living in housing with older plumbing are more adversely affected. Begun in 1988, EQI is considered the nation’s largest program for the testing of lead in drinking water.

Lead enters drinking water mainly from the corrosion of lead-containing household plumbing. The federal EPA requires local water suppliers to prevent lead and other metal contamination by controlling the corrosiveness (acidity) of the water supply. If corrosion control is not sufficient, then lead-containing materials may have to be replaced (faucets are allowed to contain as much as 8% lead).

### What Makes Water Corrosive?

Several studies conducted jointly by the city of Seattle, the federal EPA, and other institutions had been undertaken to determine the cause of the severe

plumbing corrosion problems in that city since 1970. The most detailed and comprehensive of these investigations was performed by the Kennedy Engineers, Inc., of Tacoma, Washington. Their findings showed convincingly that fluoridation of Seattle’s water, with or without chlorination, had significantly increased the rate of corrosion for copper, galvanized steel, and black steel piping. They estimated that fluoride added to the water at the standard 1 PPM (1 mg/L) increased pipe corrosion and led to an increased cost of plumbing repairs as high as \$12 million annually. The Seattle Internal Corrosion Study Advisory Committee that supervised and surveyed all the studies came to the same conclusions, and a summary of their report was published in the 12/79 issue of the Journal of the American Water Works Association.

Elsewhere, water works engineers had encountered demonstrably accelerated corrosion after fluoridation began in Schenectady (NY), Concord (NH), Wilmington (MA), South Bend (WA), and San Francisco (CA), and other cities. Increased costs due to water pipe corrosion has been the main reason many cities and towns have discontinued water fluoridation, and why others have not started it. Riverhead (Long Island), for example, alternately reinstated then gave up fluoridation three times

before finally abandoning it because of pipe damage. Corrosion was a major concern of NYC water engineers before fluoridation commenced in 1965. Dr. Arthur Ford, former Water Commissioner of the City of New York, told the Board Of Estimate, “The water supply system of this city is not a gigantic medicine bottle into which one may combine ingredients and shake well before using. We control the concentration of fluoride going into the water at the beginning. But no one knows what concentration will reach the households, except that it will be different all over the city.”

### How Fluoridation Increases Lead Contamination

Fluoride is extremely acidic, and has a great affinity for iron oxide. It will soften previously hard pipe scale, or the iron oxide surfaces of pipes and tanks. The softened scale is loosened and carried away from its previously fixed location, thus allowing new iron oxide (rust) to form and corrode and weaken pipes and tanks under pressure. Not only does this process leach lead and other metals into the water, but it also contributes to fluoride chemical spills and equipment failures that have led to the accidental poisoning of segments of the population where it has occurred.

William Marcus, Ph.D., Senior Science Advisor in the Office of Science and Technology under the federal EPA, has recommended that cities discontinue water fluoridation. In 1995 he stated that, “the corrosive action of fluoride extracts lead from pipes and solder joints, increasing lead exposure of the young.” He noted that babies up to 3 months absorb 16 times as much lead per unit of body weight than adults, and warned that samples of fluoridated water have contained as high as 400 mg/L of lead.

On 7/2/97, Local 2050 of the National Federation of Federal Employees, the Union of Scientists of the U.S. EPA, which represents 1600 EPA professionals, had voted officially and unanimously to oppose fluoridation of water supplies. Despite long-time political pressures to support water fluoridation, many organizations have taken a position against it: The Sierra Club (NYC), Natural Resources Defense Council, NYS Parent-Teachers Association, Long Island Federation of Women’s Clubs (62 clubs in Queens and LI totaling 100,000 members).

### How Does NYC “Control” Lead?

Hydrofluosilicic acid, the waste product of phosphate fertilizer production and the chemical with which most cities fluoridate, is so acidic that it has to be neutralized by other chemicals. Even fluoridation at the standard 1 mg/L reduces the pH of the water enough to require the addition of toxic alkalizing agents—notably sodium hydroxide (caustic soda; lye)—to mitigate the corrosive effects of fluoride. However, sodium hydroxide is too toxic to be added in amounts large enough to completely neutralize the water, thereby plaguing fluoridated cities with more frequent water-main ruptures and plumbing problems than cities that do not fluoridate their water. The Kennedy Engineers in the aforementioned Seattle Study warned that sodium hydroxide would at most, decrease the rate of corrosion by only 25%. The NYC also adds calcium orthophosphate to the water supply, hoping to create a protective film inside pipes which is intended to reduce the release of metals. However, according to EQI, it has had no effect on lead breaking off of corroded lead solder joints, and only a limited effect on plumbing and fixtures leaching high levels of lead.

### The Sensible Solution to Lead Contamination

Lead, fluoride, and sodium hydroxide are all cellular poisons. According to National Library of Medicine’s ratings of toxic substances, or any textbook on the clinical toxicology of commercial products, fluoride is only slightly less poisonous than arsenic, and about 37 times more poisonous than lead. In the standard ranking, from 6 (super toxic) to 1 (practically nontoxic), arsenic, fluoride, and lead are rated 5, 4.5, and 3.5, respectively.

Placing additional poisons in public drinking water (such as sodium hydroxide) in the effort to counter the corrosive effects created by the first poison that was added (fluoride) is ecologically unsound, and to be blunt, rank stupidity. A saner course would be to keep all toxic contaminants out of the water we drink. We should discontinue fluoridation, as well as replace chlorination with a safer, less corrosive process known as chloramine purification.

Less than 1% of the populace of continental Western Europe have artificially fluoridated water today. Our federal government is prohibited by statute from ordering local governments to add any substance to their water supply. It is solely our local governments that are adding these chemicals to our water.

We must urge the NYC Council to rescind Public Health Law Article 141.08, and their 1965 mandate that began fluoridation in NYC.

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