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NEWS RELEASE: ENDING SILICOFLUORIDE USE CAN REDUCE CHILDREN'S BLOOD LEAD AND VIOLENT CRIME

INTRODUCTION: Peer reviewed scientific studies over the last decade, summarized in the attached Graphs and Table, reveal that exposure to silicofluoride compounds has harmful side effects on human behavior and health. Millions of Americans are exposed to residue from these chemicals, which are used in 90% of fluoridated public water supplies. Because the harmful effects are not associated with the use of sodium fluoride, the problem is not linked to every form of "fluoride." Unlike sodium fluoride, silicofluorides are waste products from weapons-grade uranium processing and, despite having been nominated for testing by the National Toxicology Program in 2002, they still have never been properly tested.

BACKGROUND: Although water fluoridation has been hotly debated for over 50 years, neither proponents nor critics have focused on the specific chemical compounds used for that purpose. During World War II, when nuclear weapons were secretly developed, it was necessary to find a discrete means of disposing of toxic waste products from uranium processing. Under the cover of water "fluoridation" for dental health, the substitution of fluorosilicic acid (H_2SiF_6) or sodium silicofluoride (Na_2SiF_6) for sodium fluoride (NaF) served this purpose. Both silicofluorides are toxic before dissolving partially in water, and -- unlike sodium fluoride -- neither "dissociates" totally into their component elements, as was assumed when the Public Health Service formally approved them for use in 1950. This historical context explains why water fluoridation has been debated without reference to the chemical compounds that most communities use to accomplish it. Today, however, the practice urgently needs to be re-examined in the light of findings in neurotoxicology over the last decade.

SILICOFLUORIDES, BRAIN CHEMISTRY, AND BEHAVIOR: Peer reviewed scientific studies, published in journals such as *Neurotoxicology*, and the *International Journal of Environmental Studies*, show the link between silicofluoride use and harmful side effects on behavior and health. Because these harmful side effects are not observed where sodium fluoride is added to water, not all fluoridation systems present the dangers discussed here. After Westendorf (1975) linked silicofluorides to

acetylcholinesterase inhibition and poor impulse control, others found they increase children's blood lead levels and reduce the activity of dopamine, another neurotransmitter essential for self-control. The foregoing discoveries have identified reasons that significantly higher rates of violent crime, substance abuse, and learning disabilities are found where silicofluorides are added to public water supplies.

Although it may seem implausible that we are poisoning our own children, it's essential to consider the circumstances in which silicofluorides were introduced -- and to remember the tragedy often attributed to lead water pipes in ancient Rome. Moreover, this is not the only time in history that government bureaucrats and entrenched interest groups have refused to admit they made a mistake. What's telling is that repeated offers to debate silicofluoride safety have consistently been ignored by dentists and doctors who claim water fluoridation is safe regardless of the chemical used for the purpose. Following publication of the first findings described here, in 2002 the National Toxicology Program nominated the silicofluorides for government testing -- but no such studies have been done.

RESEARCH FINDINGS

ONE: Controlling for socio-economic and ethnic factors, silicofluorides are associated with increased lead absorption from industrial pollution and old housing. (See Figure 1). These effects are confirmed by multivariate analyses of three large population studies (total sample over 400,000 children).

TWO: Lead is known to interfere with the neurotransmitter dopamine, an effect which increases impulsive behavior. That silicofluoride is linked to harmful effects on brain chemistry and behavior is confirmed by evidence of a greater frequency of learning deficits and higher rates of violent crime where water is treated with these chemicals (Figures 2a-2b). This effect is NOT found for rates of property crime, which is less likely to be impulsive than acts of violence.

THREE: Where silicofluoride use is combined with addition of chloramine as a disinfection agent, laboratory experiments show increased leaching of lead from brass meters, faucets, or other water fixtures (Table 1).

FOUR: Since minorities and poor children are significantly more vulnerable to blood lead levels over 10μg/dL (Figure 3a-b), these findings reflect a grave injustice.

These and other research findings co-authored by the undersigned justify an immediate moratorium on using silicofluorides. Such a ban should not be lifted unless objective peer-reviewed studies demonstrate silicofluorides are safe and thus provide an alternative explanation of our findings. More information (including a full bibliography and access to Westendorf's thesis) is available at: <http://www.dartmouth.edu/~rmasters>. For further information or hard copies of technical publications, contact:

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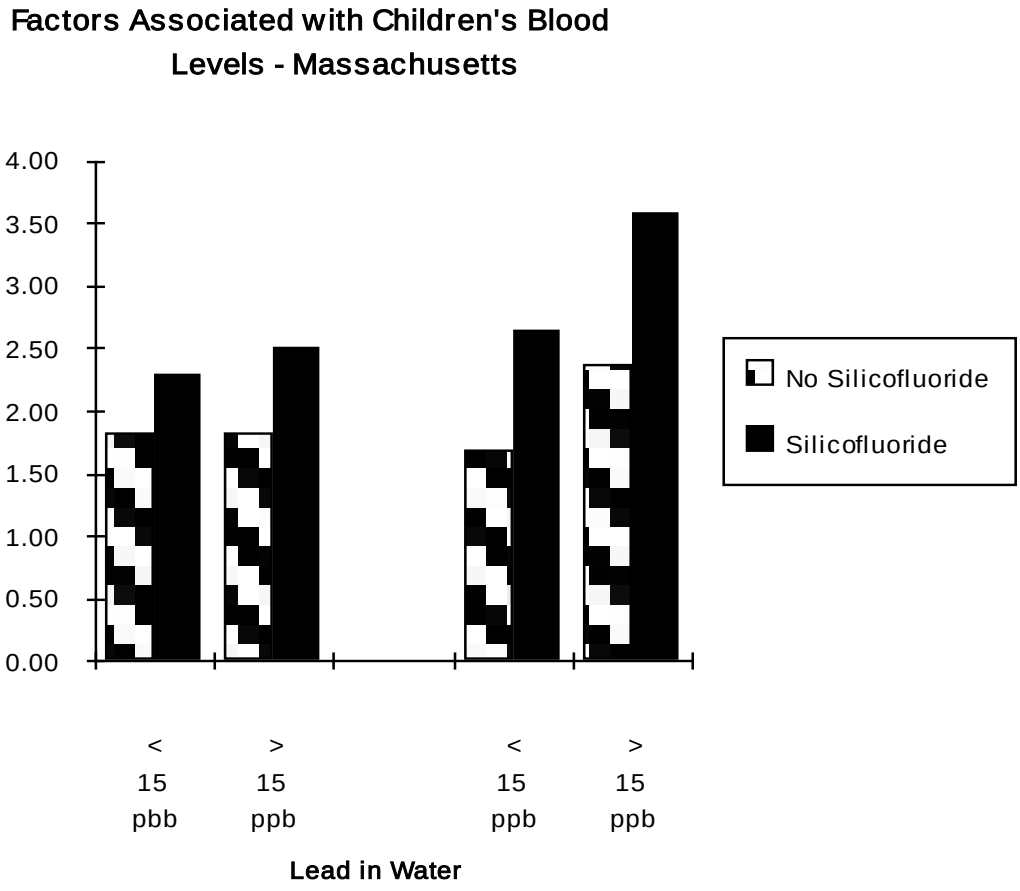
Figure 1



Statistical Significance of Analysis of Variance (ANOVA):
Main EFFECTS

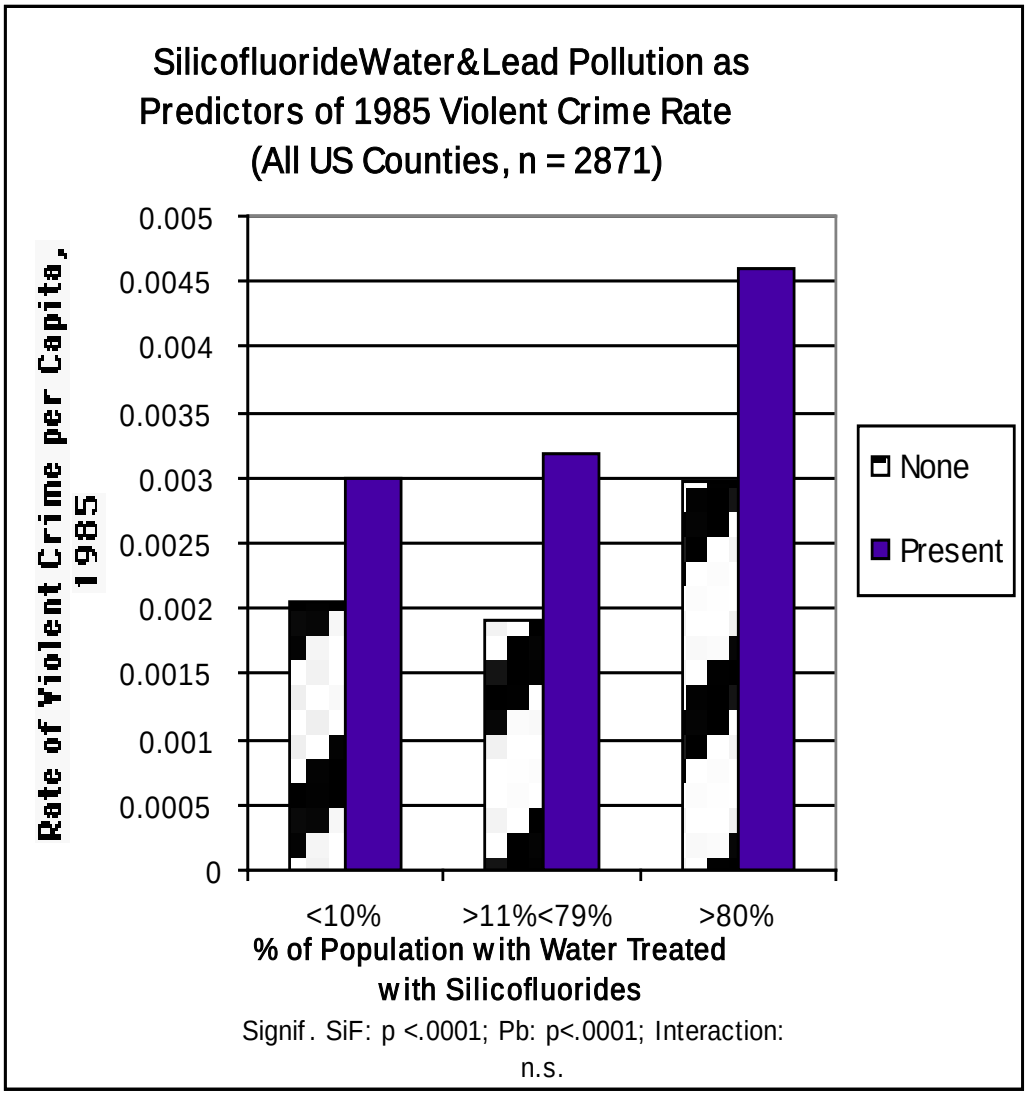
% Houses pre 1940: p = .00901, F 21.17
90th percentile 1st Draw Lead > 15ppb: p = .0101, F 6.75
Silicofluoride use: p = .0177, F 5.63

Interaction effect

silicofluoride use * 1st Draw Lead in Water: p = .0422, F 4.18

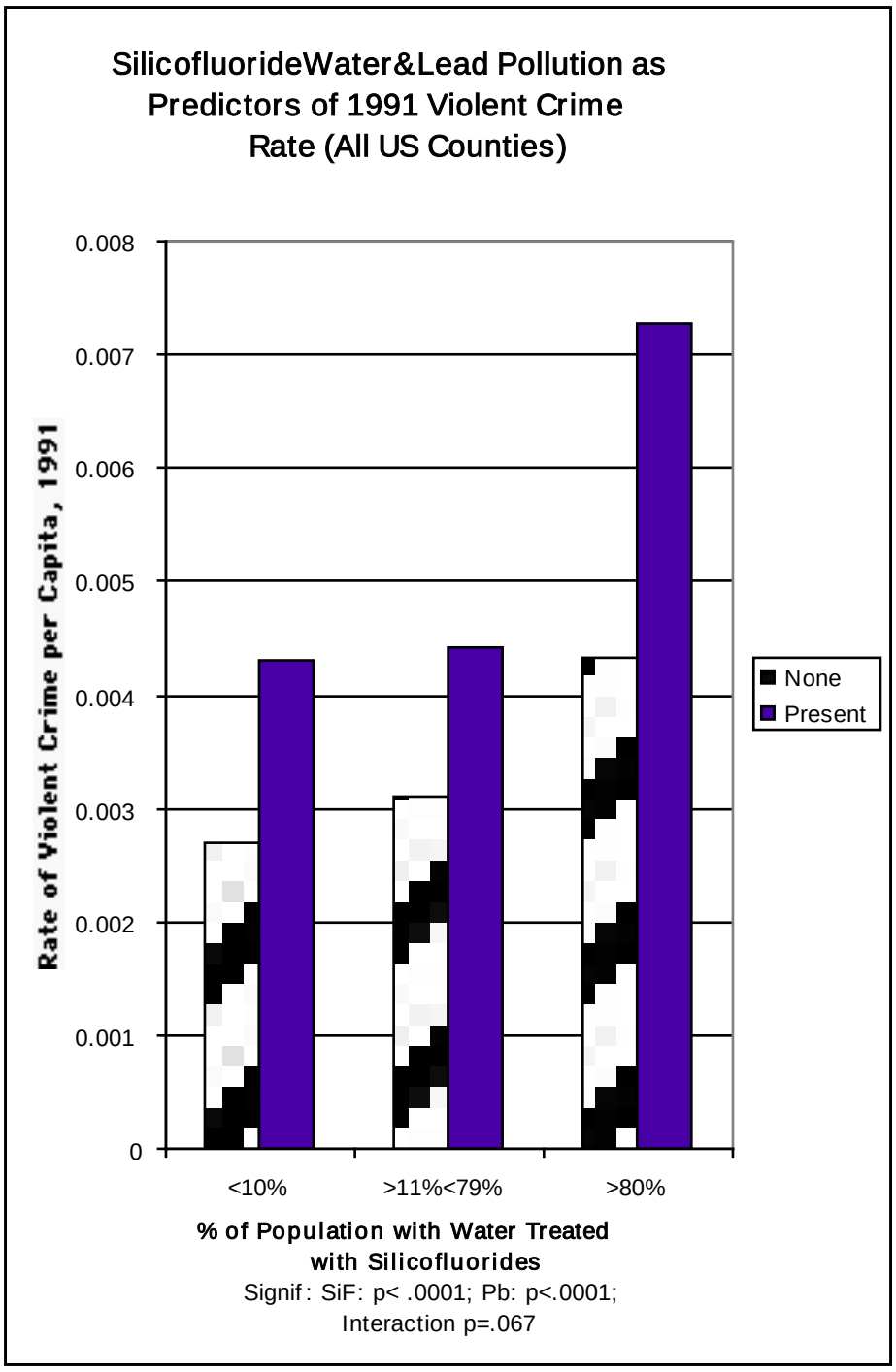
Source: Masters & Coplan, "Water Treatment with Silicofluorides and Lead Toxicity," *International Journal of Environmental Studies*, 56: 435-439 (1999), Fig. 1.

FIGURE 2a.



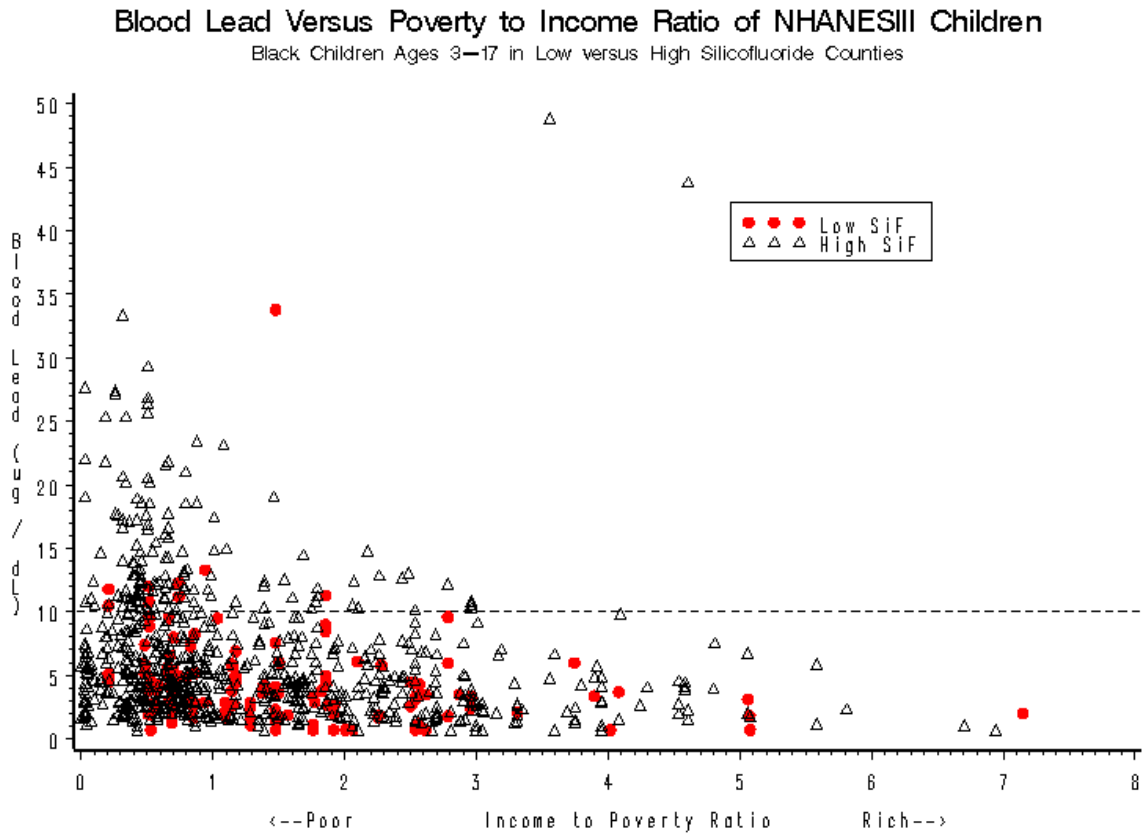
Lead Pollution in EPA Toxic Release Inventory:
solid bars = present; diagonal stripes = absent.
Source: Roger D. Masters, "Biology and Politics: Linking Nature and Nurture," *Annual Review of Political Science* 4 (2001), 345-369, Figure 4a.

Figure 2b



Lead pollution: solid bars. Source: Roger D. Masters, "Biology and Politics: Linking Nature and Nurture," *Annual Review of Political Science* 4 (2001), 345-369, Figure 4b.

Figure 3a:

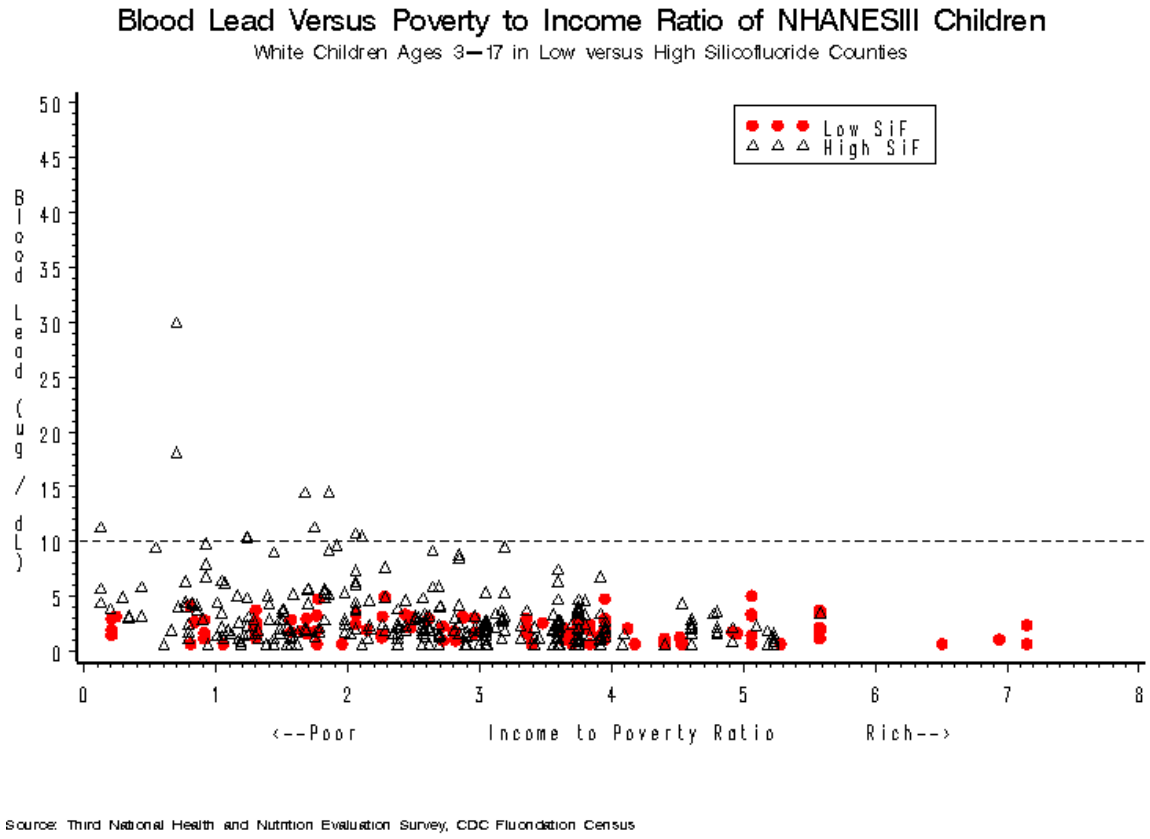


	Number Tested	VBPb>10µg/dL	Odds Ratio	Risk Ratio HiF/LoF
Low SiF	127	10	.079	232/79 =
High SiF	612	142	.232	2.9

Note that among Blacks in NHANES III sample, blood lead levels over 10µg/dL are substantially more frequent than among whites (Fig. 3b below). Almost all Blacks with high blood lead (including the 2 individuals with average wealth) were in counties with high exposure to silicofluoride treated water. With the exception of 2 individuals of average wealth who were exposed to silicofluorides, those Blacks with high blood lead tended to be poor (all living where the poverty-income ratio =/<3 and almost all =/<2). That is, race, poverty, and exposure to silicofluorides are associated with higher risk of dangerous lead levels (as found in other samples).

Source: Myron J. Coplan, et al., "Confirmation of and Explanation for Elevated Blood Lead and other disorders in children exposed to water disinfection and fluoridation chemicals," *Neurotoxicology* 28 (2007), 1032-1042.

Figure 3b:



Source: Third National Health and Nutrition Evaluation Survey, CDC Fluoridation Census

	Number Tested	VBPb>10µg/dL	Odds Ratio	Risk Ratio HiF/LoF
Low SiF	110	0	.00	.032/.00 =
High SiF	310	10	.032	infinite

Note that ALL White children in NHANES III sample who had blood lead over 10µg/dL lived in counties that are relatively poor (income/poverty ratio =/< 2) and lived in counties with a high exposure to silicofluoride treated water.

Source: Myron J. Coplan, et al., "Confirmation of and Explanation for Elevated Blood Lead and other disorders in children exposed to water disinfection and fluoridation chemicals," *Neurotoxicology* 28 (2007), 1032-1042.

Table I*

Maas 2006 Water Lead Data Illustrating Enhanced Brass Corrosion By Combinations of Water Fluoridation and Disinfection Agents

Agent[a] Combinations	Water Lead (ppb) Found After Overnight Dwell[b] During 6 weeks of Flow-through Exposure			
	18 Sample Grand Mean	6 Samples Last 2 weeks	Peak Value	Effect of F agent
(a) CA + FSA	60	39	300	
(b) CA, extra NH_3 + FSA	61	98	150	b/c 2.1, 2.8, 3.0
(c) CA, extra NH_3	29	35	50	
(d) CA, extra NH_3 + NaF	36	51	100	d/c 1.2, 1.5, 2.0
(e) CL + FSA	202	45	1,000	e/g 1.8, 5.3
(f) CL + NaF	151	107	210	f/g 1.3 1.2 1.1
(g) CL alone	115	88	190	

Notes: (a) Agents added as 2 ppm: CA=chloramine; CL=chlorine; FSA=fluosilcic acid; NH_3=ammonia in solution; NaF=sodium fluoride in solution; pH held at 7.2-7.5
(b) Three samples taken per week for six weeks

Note that combining chloramine disinfection with fluorosilicic acid water treatment ("FSA"), whether or not with extra ammonia, roughly doubles lead leaching from brass. Compared to choramine, chlorine greatly increases lead leaching from brass, but fluorosilicic acid also seriously increases lead leaching associated with chlorine.

*Source: Richard Maas et al., "Effects of fluoridation and disinfection agent combinations on lead leaching from leaded brass parts, *Neurotoxicology* 28 (2007), 1023-1031.