Toxins, Health, and Behavior

Roger D. Masters [1]

The debate over so-called "Obamacare" failed to address the extremely high cost of U.S. health care. According to OECD statistics for 2006, overall health care expenditures in the U.S. (over 15% of Gross Domestic Product) were almost twice the average of the 30 industrialized countries in the OECD (8.9%) and only two other countries spent over 10.6% on health. In 2006 the total cost of health care per capita in the U.S. was $6,714 -- over twice the OECD average of $2,824; only Luxembourg, Norway, and Switzerland spent over $4,000 per capita that year.[2] In 2007, total per capita cost for the U.S. health care system was $7,290; OECD ave. was only $2,984,

For the money, life expectancy in the U.S. ranks 19th of the 30 industrialized countries, and our infant death rate (6.9 per 1,000 live births) -- exceeded only by Mexico and Turkey -- was well over the OECD average of 5.2 per 1,000. Before passage of the Affordable Care Act, that's 17 or 18 infants who die before first birthday who would not dely in other OECD countries. What's wrong? In part due to lack of universal health insurance and preventive health care, poor health outcomes are also increased by pollution. Data for all 3141 counties show lead and manganese pollution is a significant factor in rates of seven disease categories (Table 5). These toxins are also linked to costly behavioral disorders (Figures 1-14).[3] Lead, manganese, or other toxins enter cells and interfere with the immune system and normal brain chemistry. Evidence of their effects is shown by comparing pollution and rates of high blood lead, violent crime, and disease in all 3141 U.S. counties.

Because good health and public safety are basic to the "general Welfare," for which the Federal government is explicitly responsible (Constitution, Art. I, Sec. 8), it's time to act on these findings. My research, frequently coauthored with the late Myron J. Coplan (a chemist & former Vice-President of Albany International) reflects interdisciplinary collaboration that's often absent in academic research. Our research shows that silicofluorides (H_2SiF_6 and Na_2SiF_6) -- untested toxins added to water supplies of over 120 million Americans -- are linked to harmful effects on behavior and health. Among the multiple factors associated with high blood lead in children (Figs 1-7, 14 & Tables 1-3), ending use of silicofluorides is a virtually no cost way to reduce children's blood lead or manganese levels. Ethnic differences (Figs. 6-7) add urgency to this policy: due to greater frequency of lactose intolerance, Blacks tend to absorb substantially more lead than Whites -- and this problem is made significantly worse for all children exposed to silicofluorides (Figs. 5 & 6). Without screening and treatment for elevated levels of these toxins, many children are deprived of their natural rights to "life, liberty, and the pursuit of happiness."

Since toxins like lead are linked to higher rates of violent crime (Figures 8-11), learning disabilities (Fig. 12), and substance abuse (Fig. 13), diagnosis and treatment of these effects is badly needed. Research in neurotoxicology indicates that a head hair test is inexpensive, non-invasive, and well adapted to population screening for many toxic elements (for an example, see Table 6).[4] Routine health exams could then easily include screening for 17 toxins and 23 other essential elements, assessing the results, and "chelating" (removing toxins) with a suppository, oral liquid, or pill. For those who have absorbed a high level of lead or manganese, while cycling blood through EDTA is well established, less invasive EDTA treatment with suppository, oral

[1] ENDNOTES ON P. 20.

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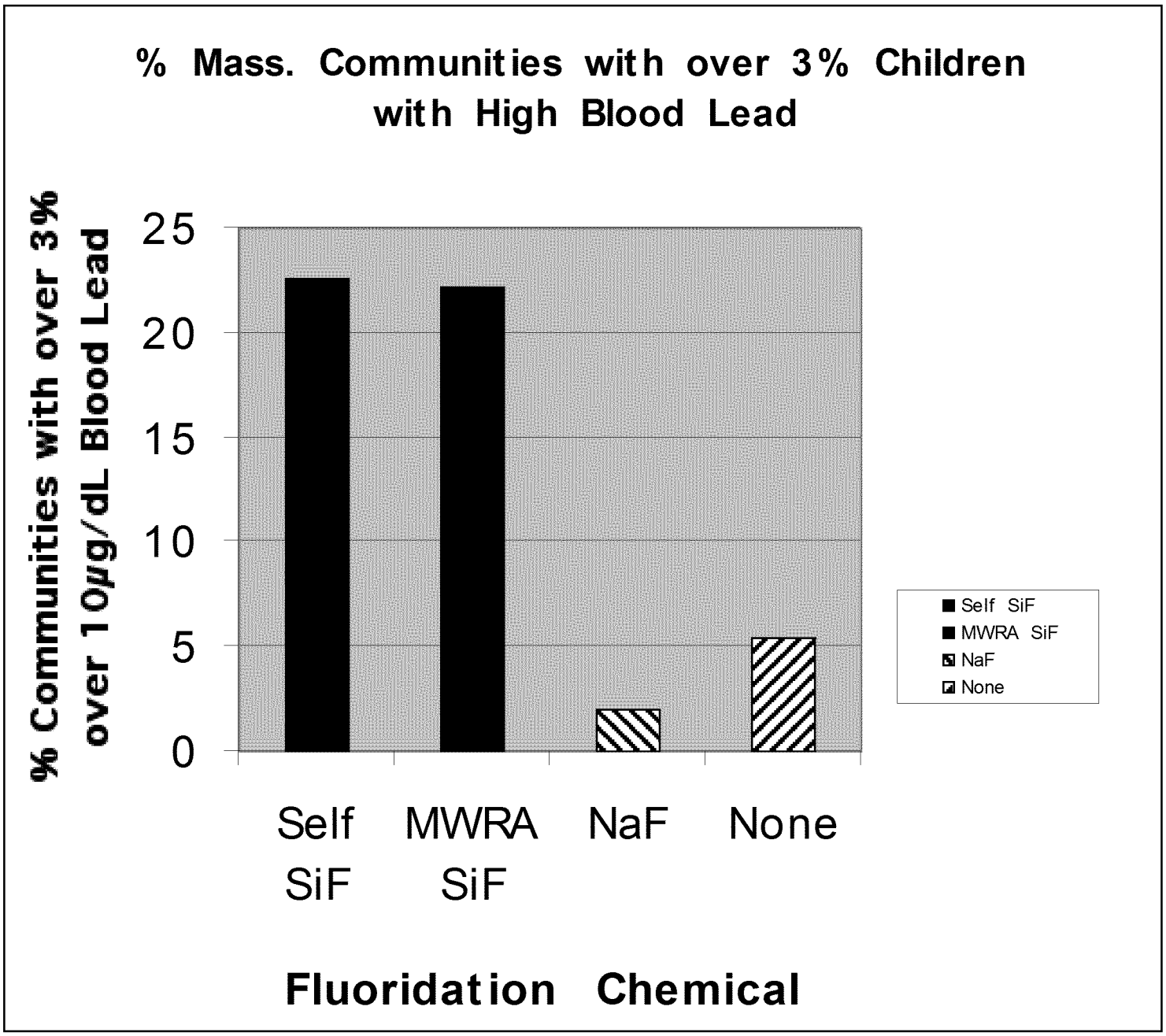
liquid, or pill promise effectiveness (Table 7)[5] with less discomfort and cost. Combining a moratorium on adding silicofluorides to public water supplies with other steps to reduce health and behavioral costs of heavy metal pollution could thus save American taxpayers $billions at a time of serious budget deficits.

FIGURE 1



NOTE: "Self SiF" = communities with local water treatment using silicofluorides; "MWRA" = Greater Boston Communities served by Metropolitan Water Resource Authority, which adds silicofluorides; NaF" = sodium fluoride. "None" no fluoride. Excluded: 3 communities with naturally fluoridated water. These statistics illustrate harmful effects (increased absorption of lead) linked to silicofluorides regardless of size of community.

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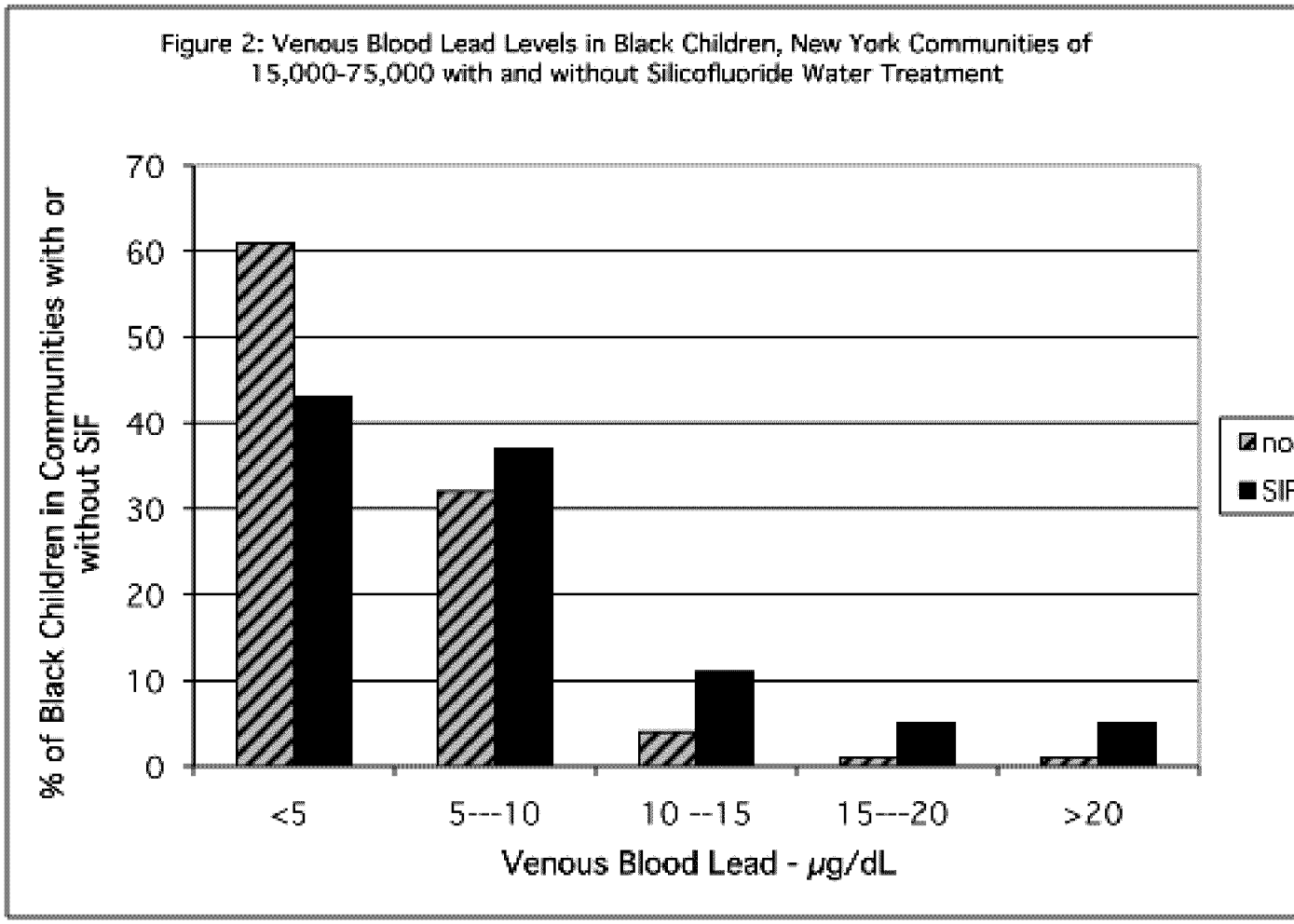
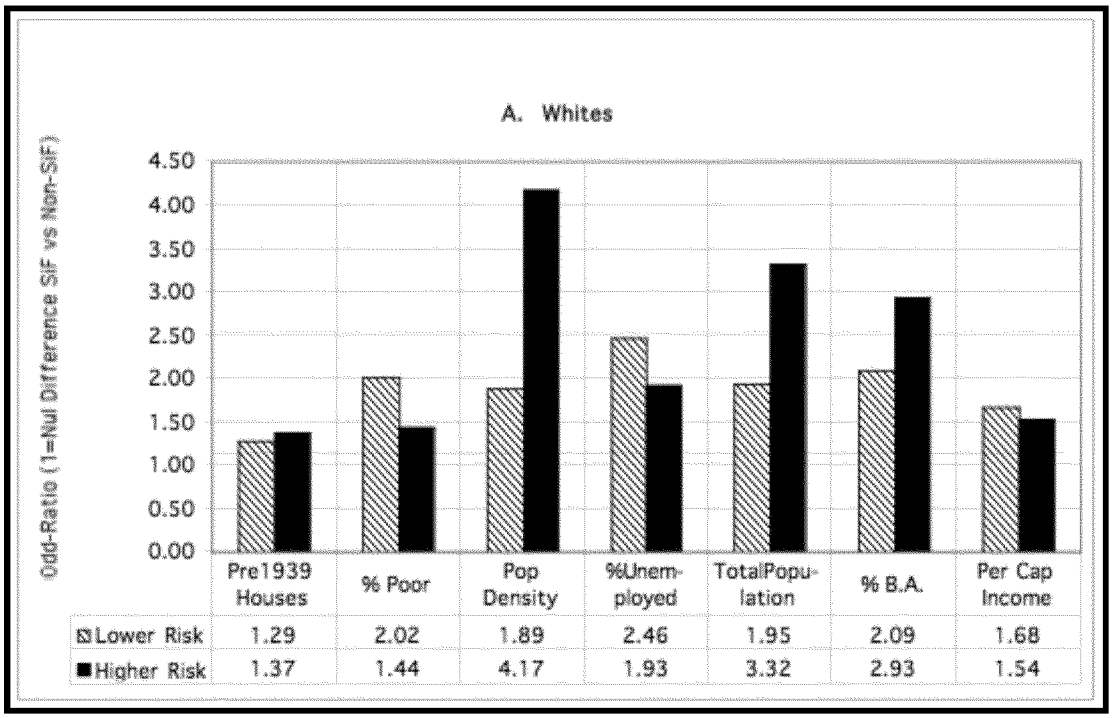


Figure 2: Venous Blood Lead Levels in Black Children, New York Communities of 15,000-75,000 with and without Silicofluoride Water Treatment
% of Black Children in Communities with or without SIF
70
60
50
40
30
20
10
0
<5
5---10
10 --15
15---20
>20
Venous Blood Lead - µg/dL
no
SIF

.

Figure 3: Logistic Regression for Odds of Higher Blood Lead If Exposed to Silicofluorides, Controlling for Other Risk Factors For High Blood Lead: White & Black Children, NY State



Black Bars = Higher Risk Striped bars = Lower Risk 1.0 = SiF no difference

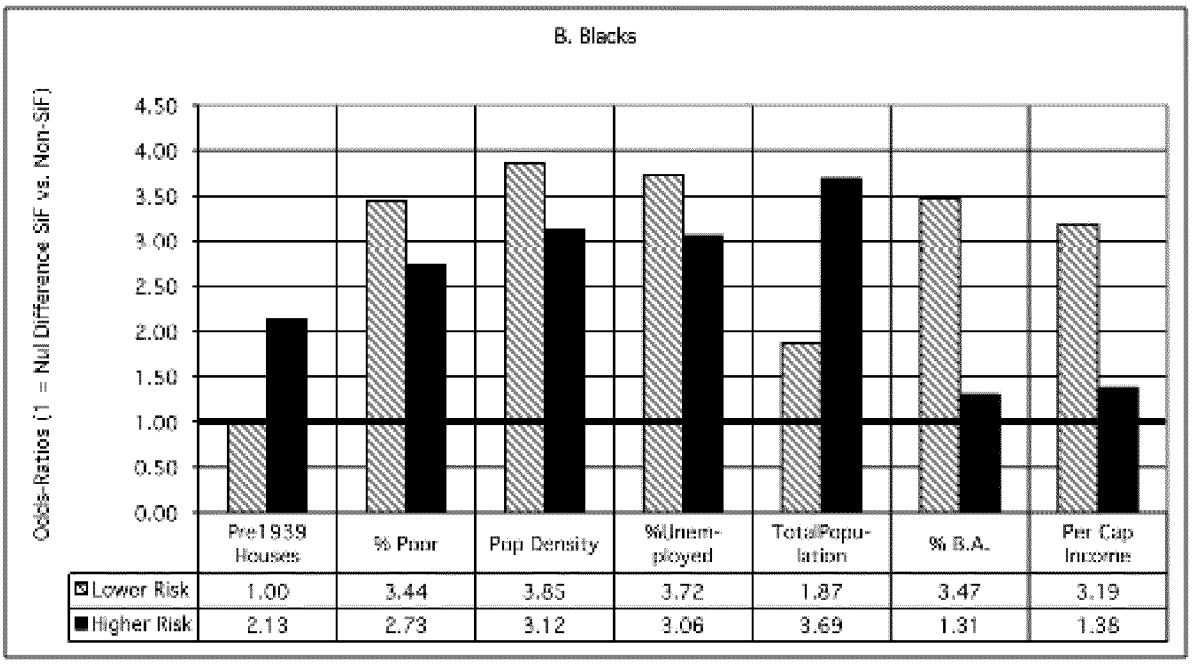
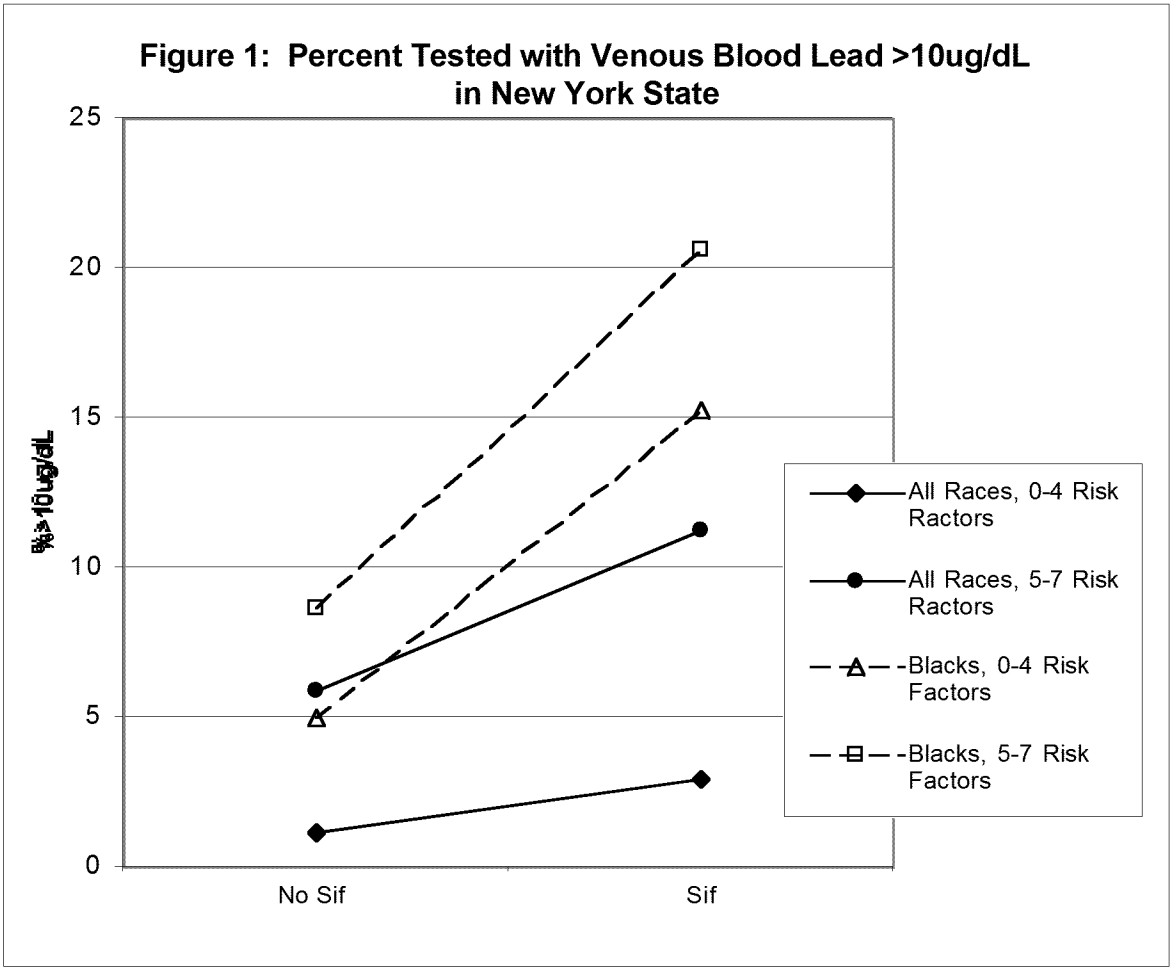


FIGURE 4



This figure divides all New York communities into those with above average levels of 0-4 of the risk factors and communities with 5-7 of these risk factors. For each level of risk, blood lead levels are higher where silicofluorides are in use; and this effect especially pronounced for blacks

FIGURE 5

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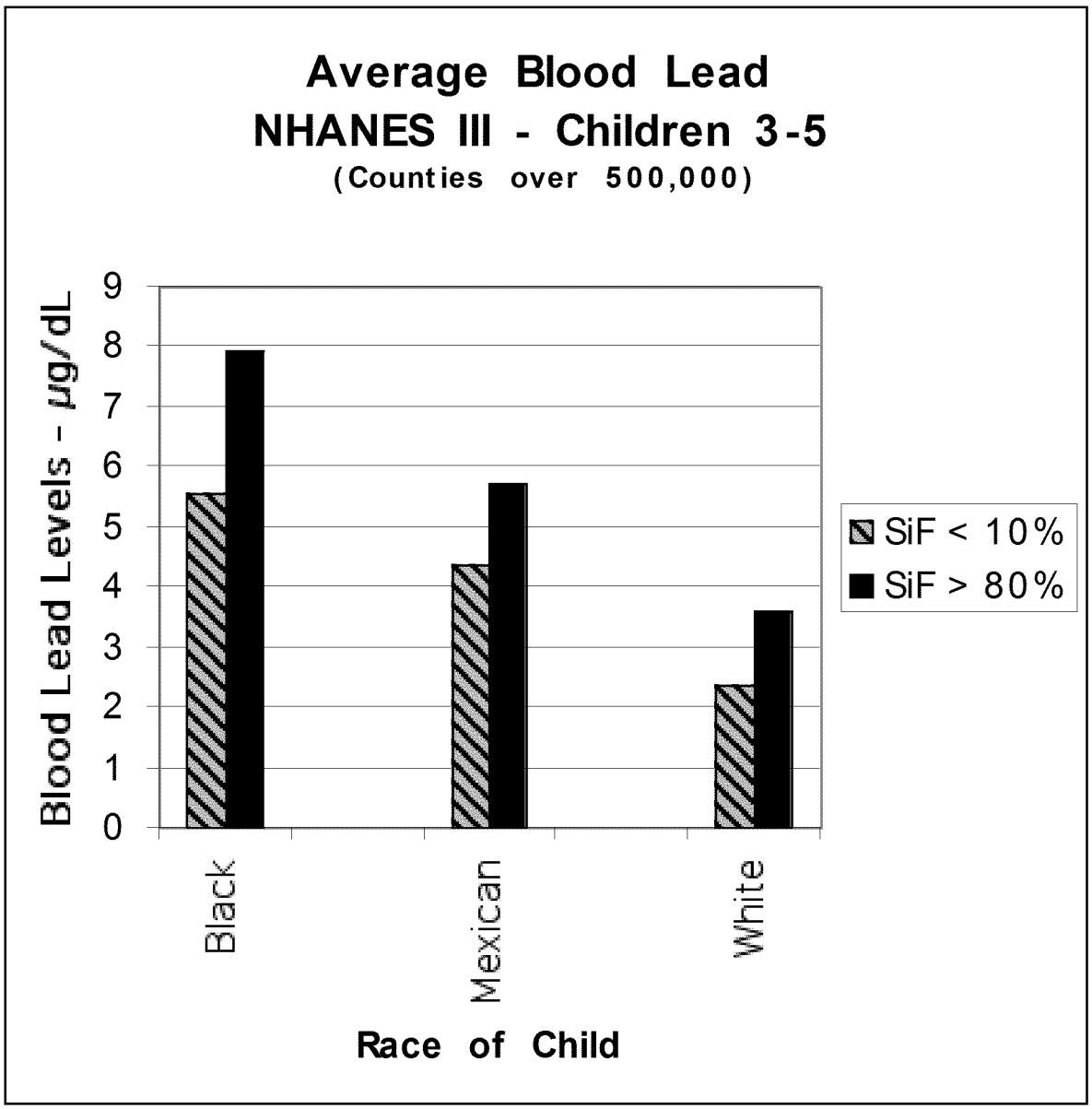
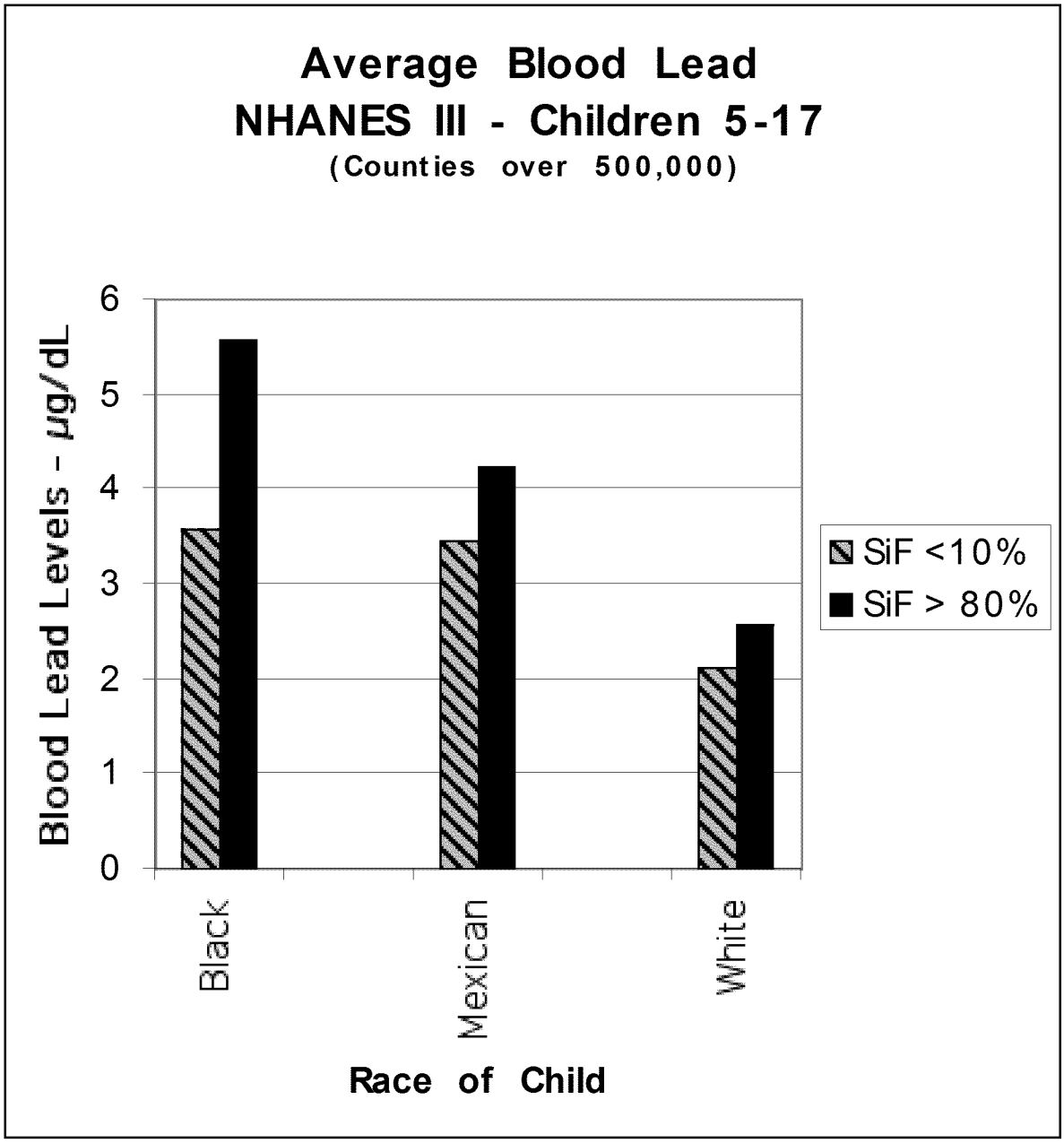


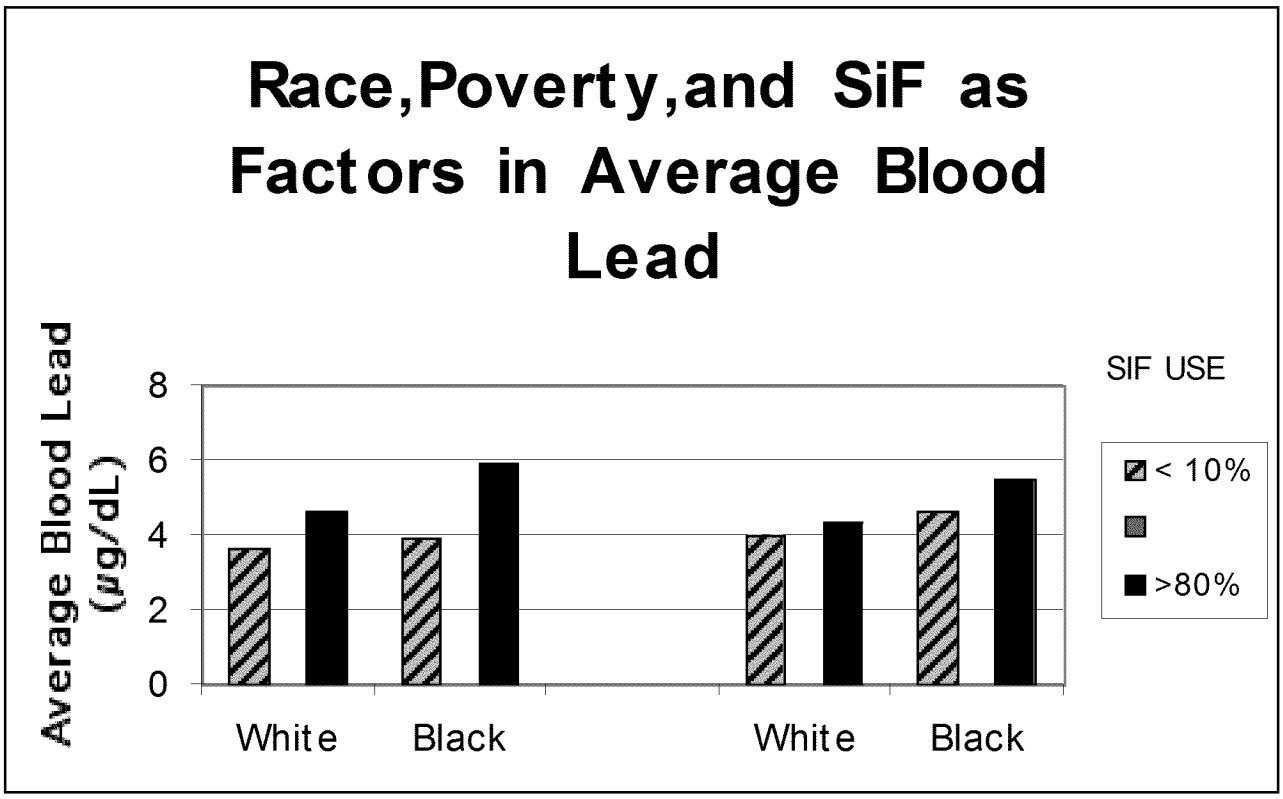
For NHANES III Children 3-5, mean blood lead is significantly associated with fluoridation status (DF 3, F 17.14, p < .0001) and race (DF 2, F 19.35, p < .0001) as well as for poverty income ratio (DF 1, F 66.55, p < .0001). Interaction effect between race and fluoridation status: DF 6, F ;3.333, p < .0029;

FIGURE 6



Significance, for ages 5-17: fluoridation status (DF 3, F 57.67, $p < .0001$), race (DF2, 28.68, $p < .0001$), Poverty-Income Ratio (DF 1, 252.88, $p < .0001$). Interaction between race and fluoridation status DF 6, F 11.17, $p < .0001$

FIGURE 7



Counties with <12.8% Poor **Counties with >12.8% Poor**

Overall population averages:
Counties with < 12.8% Poor (wealthy) < 10% SiF = 3.72µg/dL
>80% SiF = 5.17µg/dL

Counties with > 12.8% Poor (poor): <10% SiF = 4.10µg/dL
> 80% SiF = 5.07µg/dL

Anova for BLACKS: SIF Usage: F 6.634, p = .0042; %County in Poverty: n.s.; Interaction – n.s.
WHITE: SiF Usage: n.s., % County in poverty, n.s., Interaction, n.s.

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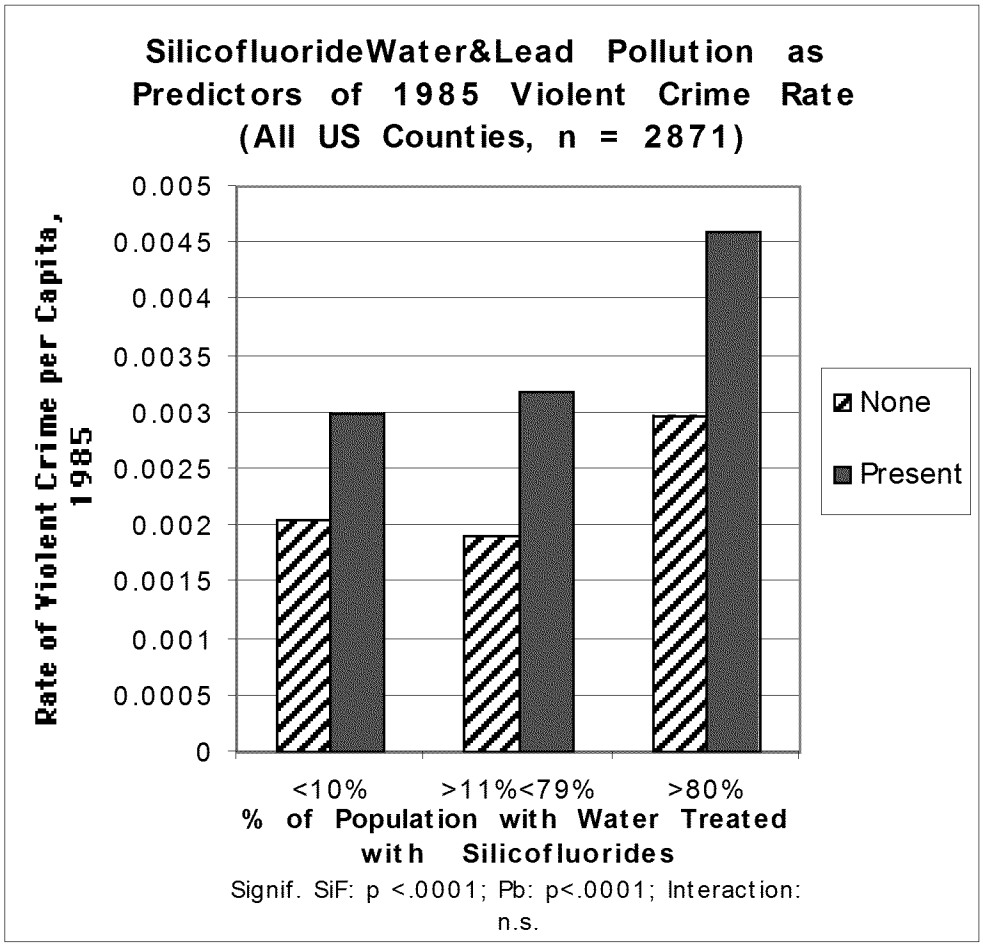
FIGURE 8.



Lead Pollution: EPA Toxic Release Inventory: solid bars = lead pollution present; diagonal stripes = no lead pollution.

FIGURE 9

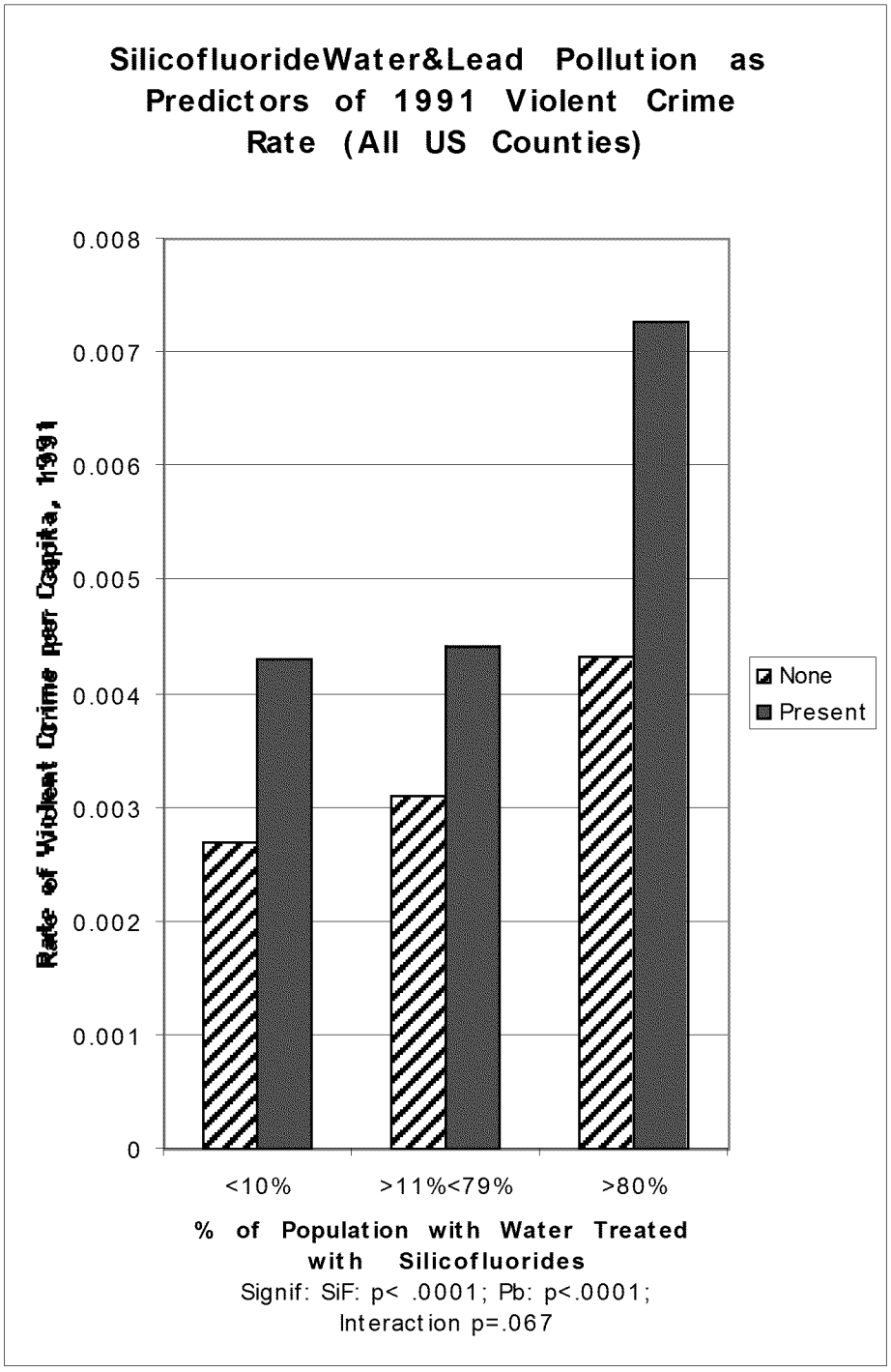

SilicofluorideWater&Lead Pollution as Predictors of 1991 Violent Crime Rate (All US Counties)
Rate of Violent Crime per Capita, 1991
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
<10%
>11%<79%
>80%
% of Population with Water Treated with Silicofluorides
None
Present
Signif: SiF: p< .0001; Pb: p<.0001;
Interaction p=.067

Table 3
Toxins, Ethnicity, and Children's Blood Lead Levels (in µg/dL)

Effects of Ethnicity (Blacks vs. Whites) and Exposure to Silicofluoride Treated Water on Children's Blood Lead Levels (all reporting U.S. Counties)

Factors Associated with higher Children's Blood Lead Levels (Race and Silicofluoride Exposure)	Age of Children 3 - 5 years	5 – 17 years
*Black and more than 80% of County Exposed to a Silicofluoride	8.0	5.6
*Black and less than 80% of County Exposed to a Silicofluoride	5.5	3.5
*White and more than 80% of County Exposed to a Silicofluoride	3.5	2.1
**White and less than 80% of County Exposed to a Silicofluoride	2.25	2.2

*Statistical significance of this combination of race and exposure to a silicofluoride
as an influence on children's blood lead levels: p = .0001 (1 chance in 10,000 of error).
** Statistical significance of this combination of race and exposure to a silicofluoride
as an influence on children's blood lead levels: p = .0029 (29 chances in 10,000 of error).

Several factors in these measures of children's blood lead deserve emphasis.

1) Younger children always absorb more lead than those who are older: this is important because neurotoxins have greater effects on the developing brain in very young children.
2) Black children always absorb more lead than Whites in the same environment (one probable explanation is that Blacks have higher levels of lactose intolerance, a genetic trait that can be explained by the role of domesticated cattle in human evolution).
3) Since high blood lead is linked to lower educational success and weaker behavioral self control, this evidence indicates that neurotoxic effects probably

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can play a major role in violent crime. Since lead levels can be measured inexpensively with a non-invasive head hair test, and high lead levels can be removed in the process called "chelation," unlike other environmental factors linked to violent crime in Milwaukee that seem impossible to control, it's possible to monitor and treat high blood lead levels in both children and older violent offenders.

Table 4
Significance of Exposure to Toxins and Higher Rates of Violent Crime
Relation of Violent Crime to Silicofluoride Water Treatment and Lead Pollution‡

Combination of % of County Population Exposed to Silicofluoride Treated Water and EPA Reported Lead Pollution	Violent Crime Rate by County (Crimes per 10,000 population) 1985	1991
Less than 10% on Silicofluoride Water and No Lead Pollution	20	28
Less than 10% on Silicofluoride Water and Lead Pollution	30	43
More than 80% Silicofluoride Water and No Lead Pollution	30	43
More than 80% Silicofluoride Water and Lead Pollution	46	75

‡ Source of Data: NHANES III survey, all U.S. counties population over 500,000

Statistical Significance (Probability of Error) for Presence of Each Neurotoxin*		
Silicofluoride (either H_2SiF_6 or Na_2SiF_6) is Added to over 80% of County Water Supplies	.0001	.0001
Industrial Lead Pollution in County Reported by EPA	.0001	.0001
"Interaction of Silicofluoride & Lead (i.e., BOTH are present)	not sig.	.0670

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*A “neurotoxin” is a chemical that affects brain cells in a harmful manner. A “statistical significance” of p = .0001 means there is only 1 chance in 10,000 that the relationship between more of either neurotoxin and violent crime is an accident. The standard “level of significance” for scientific evidence to be acceptable is usually p = .05 (that is, only 5 chances in 100 for error, though sometimes p = .10 is accepted). Therefore p = .0001 is a very solid correlation between *either* silicofluorides *or* lead pollution and higher rates of violent crime. Note that the combination of silicofluoride water treatment AND lead pollution is either not significant or very marginal. This confirms that it is no accident that violent crime rates are increased in U.S. counties where almost all of the population *either* drinks water treated with a silicofluoride (fluorosilicic acid or sodium silicofluoride), *or* in counties where there is industrial lead pollution.

N.B. These figures were studied because scientific evidence finds that, in the same environment, children exposed to water treated with either fluorosilicic acid or sodium silicofluoride absorb more lead than children whose water isn’t treated with a silicofluoride. Since these neurotoxins influence behavior for reasons linked to effects on brain chemistry (notably lowering activity of dopamine and acetylcholinesterase), there is evidence that many of the behavioral traits usually linked to violent crime are probably due in good part to brain chemistry.

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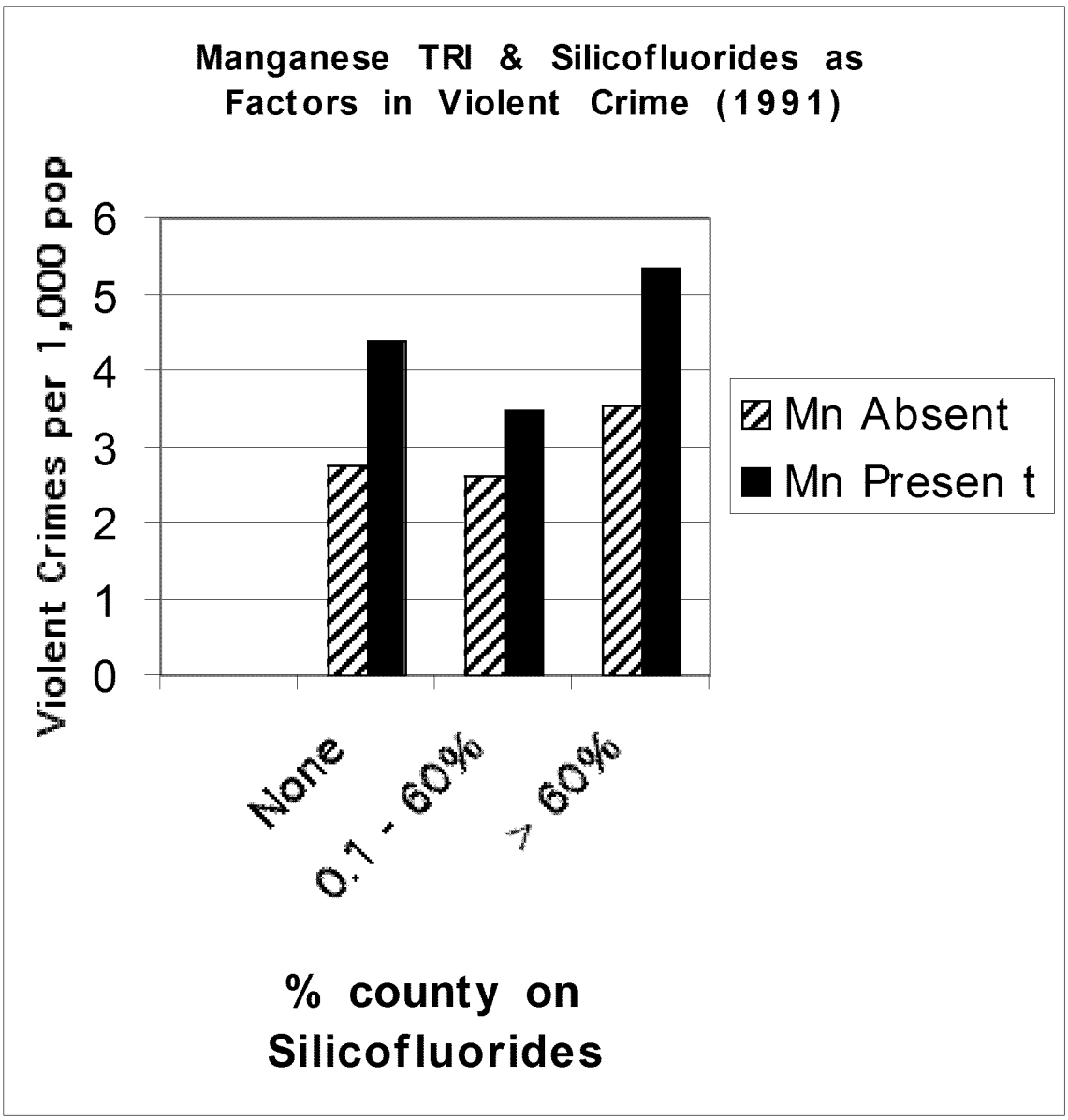
Figure 10



Significance:

Silicofluoride Usage: p = .0001, F 27.605;
Manganese Pollution: p = .0001, F 79.005;
Interaction of SiF and Mn: p = .0239, F 3.739

NOTE: For the 369 US counties where over 60% received water treated with silicofluorides, and there is no Toxic Release Inventory record for manganese, the violent crime rate in 1991 (3.53 per 1000) was intermediate between rates in the 109 counties with manganese TRI and no silicofluorides (4.40) or the 217 counties with between 0.1 and 60% receiving silicofluorides (3.49). Where both silicofluorides are delivered to over 60% of the population and manganese TRI is present, the crime rate was 5.34. In 1991, the national county average was 3.12 violent crimes per 1000.

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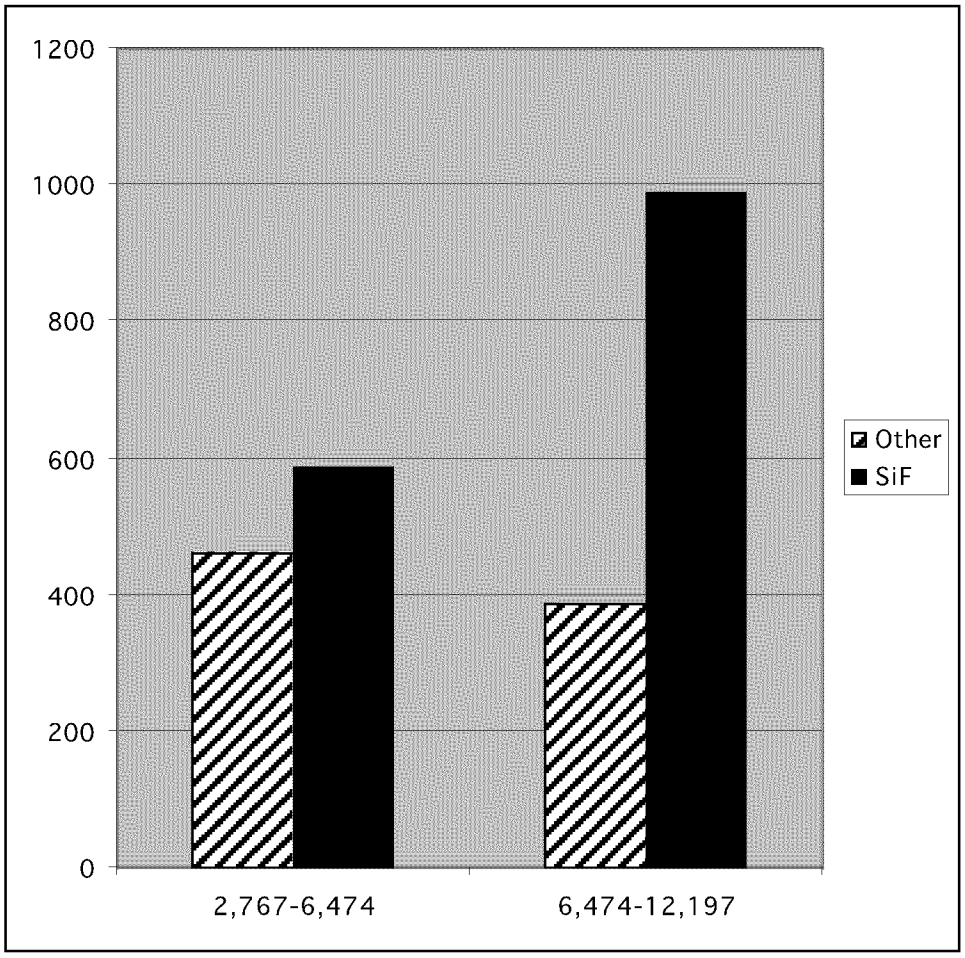
Figure 11

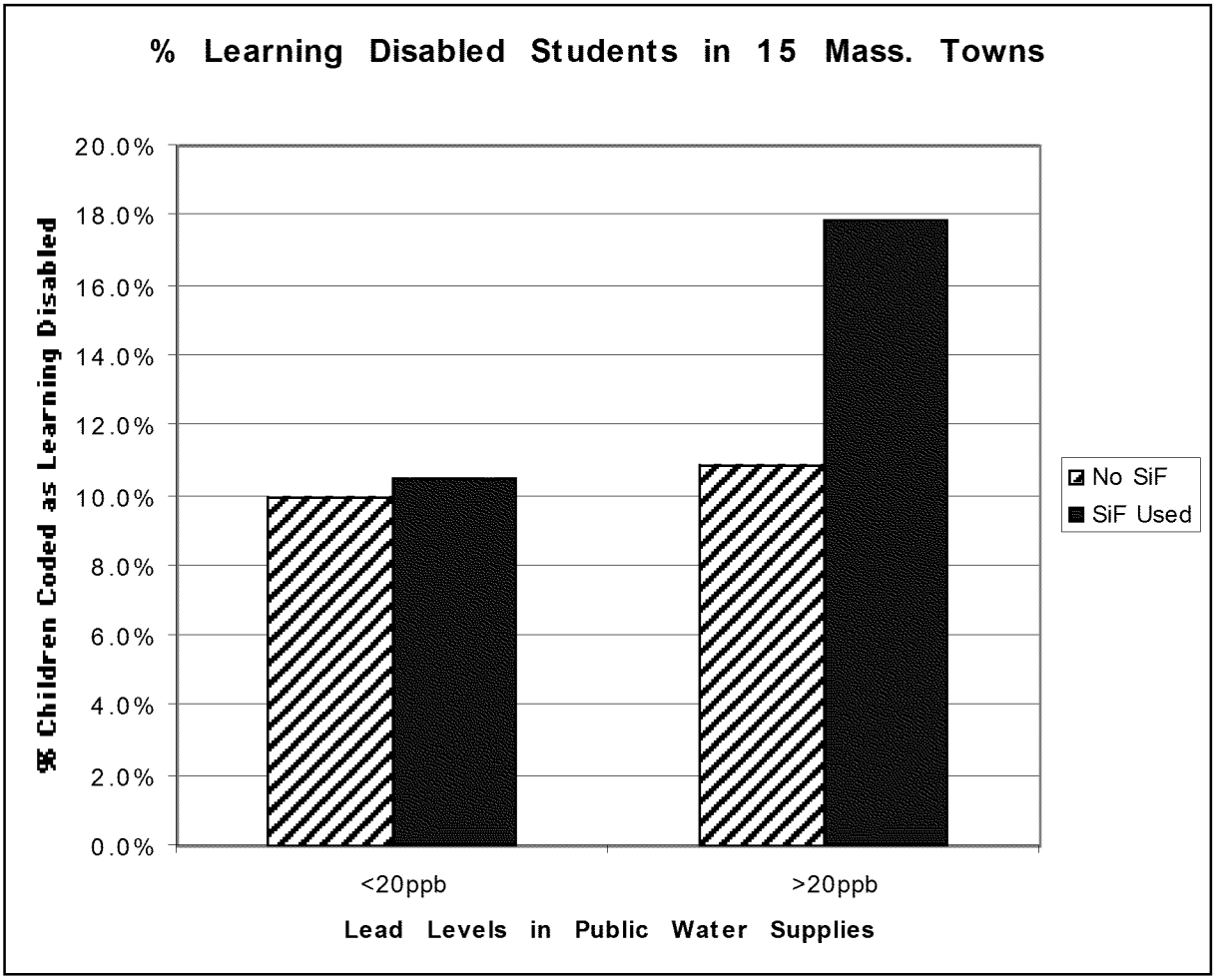
Violent Crime Rate 1998 & 1999 Combined
New Jersey Communities –
population 2,767-12,197



Sample size:

Town population: 2,767-6,474: Silicofluoride = 3, Non SiF = 76
5,474-12,197: Silicofluoride = 3, Non-SiF = 79

Figure 12



Lead Levels in Public Water Supply: 90th % first draw sample of water had lead level above or below 20 ppb.
SiF: Community water supply does not or does use either fluosilicic acid or sodium silicofluoride (SiFs) as fluoridation agents (CDC Fluoridation Census).
% Learning Disabilities: Results of author's informal survey. Sample is too small for statistical reliability, but note same pattern also found for children's blood lead: SiF enhances negative effects of lead pollution in environment.

	Lead in Water	
	< 20ppm	>20ppb
No SiF	n=7	n=1
SiF	n=2	n=5

Average % Learning Disabled Students by SiF use:
No SiF = 10.2% (n=8) SiF = 15.8% (n = 7):

Figure 13

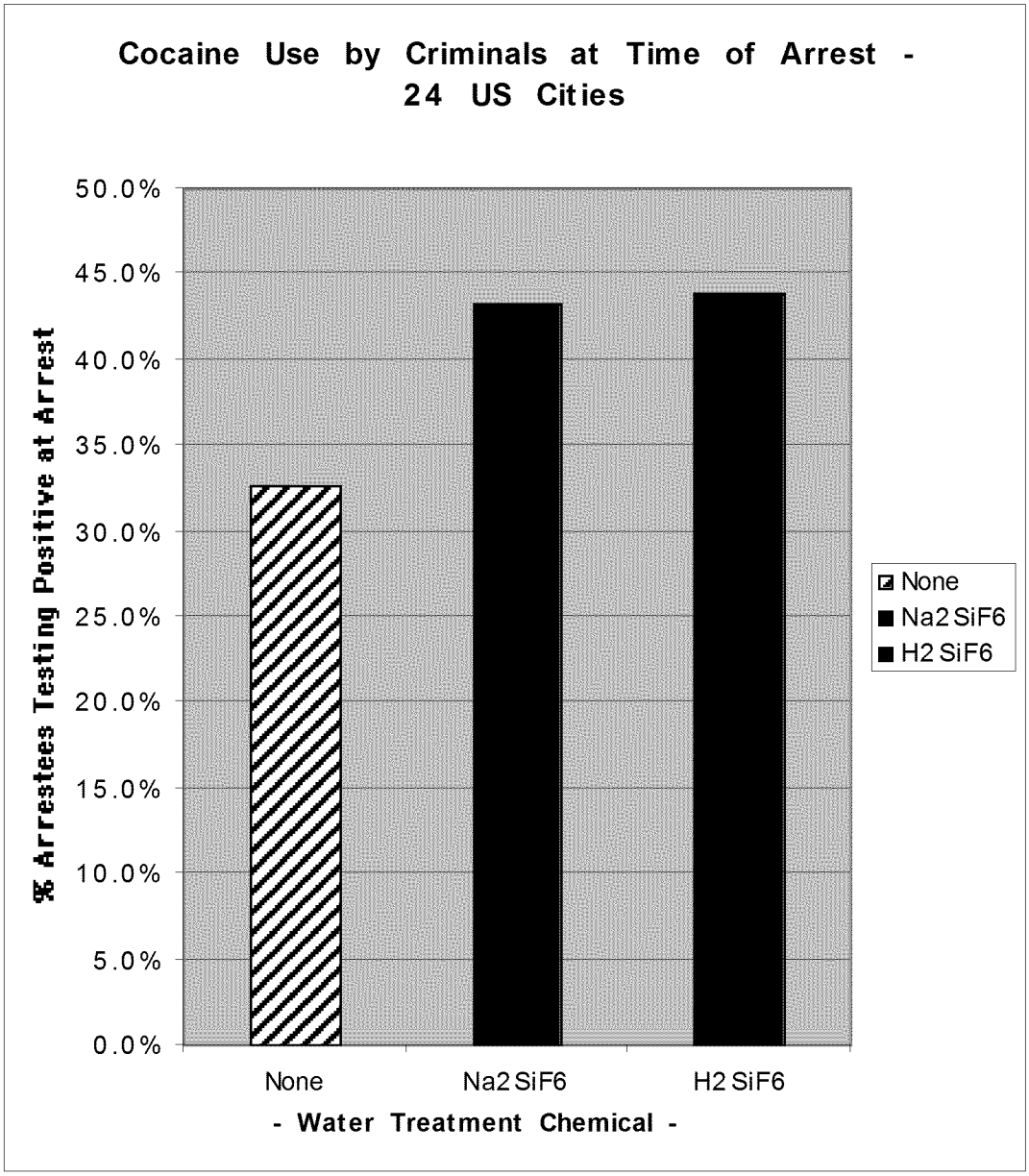
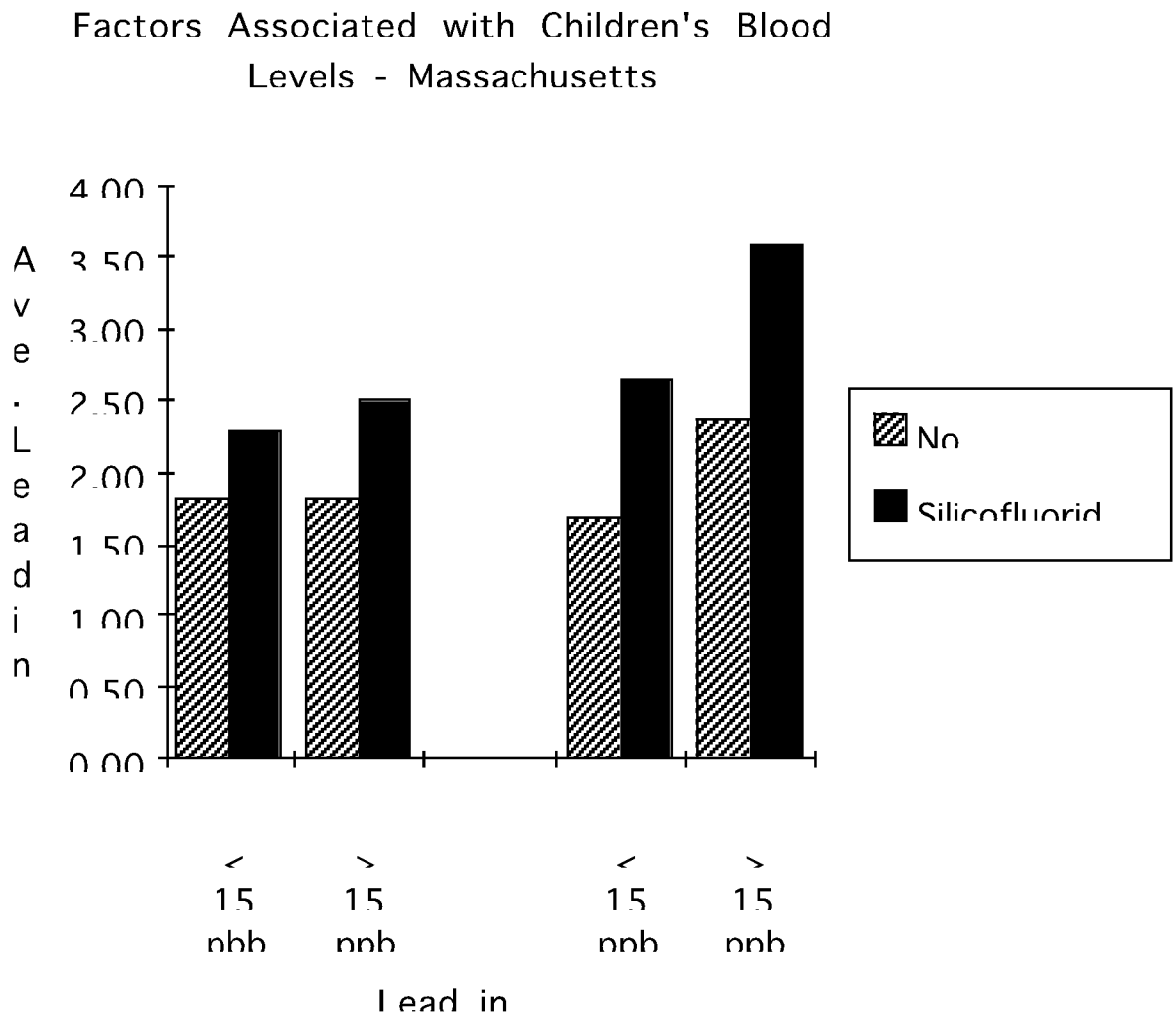

Cocaine Use by Criminals at Time of Arrest - 24 US Cities
% Arrestees Testing Positive at Arrest
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
None
Na2 SiF6
H2 SiF6
- Water Treatment Chemical -
None
Na2 SiF6
H2 SiF6

Figure 14



Houses pre 1940 Less than 29.5% **Houses pre 1940 Over 29.5%**

ANOVA Significance:
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

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Table 5:
MULTIVARIATE ANOVA: Toxins, Silicofluoride and Race as Risk Factors for Disease

	All Cancer	Diabetes Deaths	Liver Disease	Hypertensive HeartDisease	Lung Disease	Major Cardiovas-cular HeartDisease	All Death
Average. Levels of Diseases in Counties with Above Average Pollution or Over 8.56% Blacks							
All Counties	**164**	**15.3**	**7.7**	**10.2**	**52.3**	**835**	**691**
Trich SiF[∀]	248	23.9	11.2	17.2	80	826	1047
Lead TRI*	853	50.5	30.8	38.6	176.9	3571	2429
Manganese TRI*	189	43.5	25	31.9	152.6	3072	2048
Black>8.6%	286	26.5	14.9	21.8	64.2	814	1228
	Significance Levels of Each Cell in ANOVA						
Trich SiF[∀]	NS	NS	NS	NS	NS	**0.0001**	NS
Lead TRI*	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***
Manganese TRI*	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***
Black>8.6%[Φ]	0.0001	0.0001	0.0001	0.0001	0.0001	0.04	0.0001
Pb&Mn	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***
SiF & Pb	**0.0005**	**0.0001**	**0.0034**	N.S.	**0.006**	**0.0001**	**0.0001**
SiF & Mn	N.S.	N.S.	N.S.	N.S.	N.S.	**0.0001**	N.S.
Pb&%Black	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.0001***	***0.06***	***0.0001***
Mn&%Black	***0.001***	***0.0003***	***0.0003***	***0.004***	***0.0014***	***0.06***	***0.0004***

d

[6]TOP HALF OF TABLE: COUNT OF NUMBER OF CASES IN HIGH RISK COUNTIES (Based on above average % of Blacks in population and EPA Toxic Release Inventory for lead. BOTTOM: PROBABILITY MEASURE OF STATISTICAL SIGNIFICANCE OF ASSOCIATION IN ANOVA

*"TRI" = EPA's "Toxic Release Inventory" of industrial pollution in each county (n = 3141) present or absent
[∀]"Trich SiF": silicofluoride treated water delivered to < 10% of population, 11% to 79% of population, or >80% of population
[Φ] "% Black ": percent of county population dichotomized at national mean (8.57%).

NOTE:Used Analysis of Variance to identify interaction terms in the multivariate web of causal influences on disease. Results show utility of this unconventional technique a high percentage of population exposed to water treated with silicofluorides (either H_2SiF_6 or Na_2SiF_6) only has a significant main effect on rates of Cardiovascular heart disease whereas its "interaction term" with lead is significantly associated ($p < .006$) with six of seven categories (four of which have $p < .0001$). Frequently, other interaction terms (see also Figures 5, 6, 9, 10, and 14) are also significant, indicating that the links at issue for a web of complex influences rather than a single causal pathway.

Significance: **bold** = Silicofluoride (alone or increasing effect of lead or manganese)
bold italics = heavy metals (lead and/or manganes

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Pb,Mn,Black	***0.0026***	***0.0004***	***0.003***	***0.005***	***0.008***	***0.04***	***0.001***
SiF, Pb, &Mn	N.S.	N.S.	N.S.	N.S.	N.S.	**0.0001**	N.S.

Table 6:
Doctor's Data Test of Author's Head Hair

HAIR ELEMENTS

DOCTOR'S DATA INC

LAB#: H090416-0200-1
PATIENT: Roger D. Masters
ID: MASTERS-R-10005
SEX: Male
AGE: 75

CLIENT#: 21235
DOCTOR: Roger D. Masters, RES

6108 Silsby Hall
Hanover, NH 03755

POTENTIALLY TOXIC ELEMENTS

TOXIC ELEMENTS	RESULT µg/g	REFERENCE RANGE
Aluminum	2.7	< 7.0
Antimony	0.027	< 0.066
Arsenic	0.031	< 0.080
Barium	0.14	< 1.0
Beryllium	< 0.01	< 0.020
Bismuth	0.082	< 2.0
Cadmium	0.068	< 0.065
Lead	0.11	< 0.80
Mercury	1.4	< 0.80
Platinum	< 0.003	< 0.005
Thallium	< 0.001	< 0.002
Thorium	< 0.001	< 0.002
Uranium	0.001	< 0.060
Nickel	0.10	< 0.20
Silver	0.04	< 0.08
Tin	0.30	< 0.30
Titanium	0.63	< 0.60
Total Toxic Representation		

PERCENTILE: 68th, 95th

ESSENTIAL AND OTHER ELEMENTS

ELEMENTS	RESULT µg/g	REFERENCE RANGE
Calcium	227	200- 750
Magnesium	29	25- 75
Sodium	30	20- 180
Potassium	12	9- 80
Copper	11	11- 30
Zinc	130	130- 200
Manganese	0.14	0.08- 0.50
Chromium	0.46	0.40- 0.70
Vanadium	0.027	0.018- 0.065
Molybdenum	0.022	0.025- 0.060
Boron	1.3	0.40- 3.0
Iodine	4.6	0.25- 1.8
Lithium	0.005	0.007- 0.020
Phosphorus	260	150- 220
Selenium	1.3	0.70- 1.2
Strontium	0.31	0.30- 3.5
Sulfur	41300	44000- 50000
Cobalt	0.005	0.004- 0.020
Iron	9.2	7.0- 16
Germanium	0.033	0.030- 0.040
Rubidium	0.034	0.011- 0.12
Zirconium	0.070	0.020- 0.44

PERCENTILE: 2.5th, 16th, 50th, 84th, 97.5th

SPECIMEN DATA

COMMENTS:

Date Collected:
Date Received: 4/16/2009
Date Completed: 4/18/2009
Client Reference:
Methodology: ICP-MS

Sample Size: 0.2 g
Sample Type: Head
Hair Color:
Treatment:
Shampoo:

V010.08

RATIOS

ELEMENTS	RATIOS	EXPECTED RANGE
Ca/Mg	7.83	4- 30
Ca/P	0.873	0.8- 8
Na/K	2.5	0.5- 10
Zn/Cu	11.8	4- 20
Zn/Cd	> 999	> 800

©DOCTOR'S DATA, INC. • ADDRESS: 3755 Illinois Avenue, St. Charles, IL 60174-2420 • CLIA ID NO: 14D0646470 • MEDICARE PROVIDER NO: 148453

Table 7.
CHELATION EFFECTS OF DETOXAMIN[α]
Red Blood Cell Elements Pre-Post Treatment Comparisons*

Element	Pre-Treatment	SD	Post-Treatment	SD	MeanChange	SD	Min	Max	Test Statistic	p > |t|	p > t	p < t
Overall Changes Statistically Significant (p > |t|)												
Lead	0.0286	0.0122	0.0214	0.0091	-.073	0.0056	-0.023	0.004	-7.23	0.0000	1.0000	**0.0000**
Copper	0.5667	0.0457	0.6035	0.0504	0.0358	0.0387	-0.05	0.1	5.15	0.0000	**0.0000**	1.0000
Boron	0.0534	0.0282	0.0676	0.0354	0.0142	0.0223	-0.03	0.064	3.56	0.0013	**0.0006**	0.9994
Molybdenum	0.0009	0.0002	0.0012	0.0003	0.0003	0.0004	-0.0007	0.0011	3.53	0.0014	**0.0007**	0.9993
Magnesium	43.9677	3.7281	45.7097	3.6805	1.7419	2.8162	-3	7	3.44	0.0017	**0.000**	0.9991
Cadmium	0.0011	0.0002	0.0010	0.0001	-0.0001	0.0003	-0.001	0	-2.42	0.0217	0.9892	**0.0108**
Arsenic	0.0051	0.0041	0.0044	0.0029	-0.0007	0.0019	-0.006	0.003	-2.12	0.0425	0.9787	**0.0213**
Zinc	11.6903	0.8931	11.4742	0.9518	-0.2161	0.5734	-1.6	1.2	- 2.10	0.0444	0.9778	**0.0222**
Calcium	12.2258	1.9615	13.1613	1.6752	0.9355	2.5682	- 7	6	2.03	0.0515	**0.0258**	0.9742
Overall Changes Not Significant												
Potassium†	78.3871	2.5518	79.1290	2.7418	0.7419	2.6073	-4	5	1.58	0.1236	**0.0618**	0.9382
Mercury	0.0051	0.0052	0.0043	0.0040	-0.0007	0.0027	-0.009	0.005	-1.53	0.1358	0.9321	**0.0679**
Iron	934.838	38.827	943.483	32.289	8.6452	32.701	-58	67	1.47	0.1515	**0.0757**	0.9243
Manganese	0.0152	0.0049	0.0148	0.0044	-0.0003	0.0019	-0.006	0.002	-0.96	0.3442	0.8279	0.1721
Vanadium	0.0002	0.0000	0.0002	0.0001	0.0000	0.0001	-0.0002	0.0003	0.57	0.5722	0.2861	0.7139
Selenium	0.3632	0.2145	0.3571	0.1650	-0.0061	0.0838	-0.34	0.09	-0.41	0.6868	0.6566	0.3434
Phosphorus	567.903	31.442	569.096	23.873	1.1935	22.983	-48	61	0.29	0.7745	0.3872	0.6128
Chromium	0.0008	0.0004	0.0008	0.0007	0.0000	0.0008	-0.0017	0.0035	0.24	0.8107	0.4053	0.5947
Thallium	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000	0	0	1.00	1.0000	1.0000	1.0000

*Results reported as mg/g or ppm
†Results reported as mEq/g

[α] **Source**: Reformatted from:
Dr. Rita Ellithorpe; Larry Clapp, JD; Dr. Tony Jimenez, Brett Jacques,ND; Robert Settineri5, MS, PhD; and Garth L. Nicolson6, PhD, "Anti-Microbial plus CaNa2EDTA Chelation Suppository Therapy for Chronic Prostatitis/Pelvic Pain Syndrome with or without Prostatic Hyperplasia: Preliminary Study,"
Draft Submittal for Publication in the *World Journal of Urology*

NOTE: The direction of change is more important than the overall measure of significant change ("p > |t|")

At p < .10, elements whose cellular uptake in prostate was significantly **reduced relative to test statistic** by Detoxamin ("p< t") were: lead, cadmium, arsenic, zinc, mercury,

At p < .10, elements whose cellular uptake in prostate significantly **increased relative to test statistic** ("p > t") were**:** magnesium, calcium, copper, potassium, iron, boron, molybdenum.

In short, after laboratory treatment with Detoxamin and an anti-microbial, cellular levels of

harmful elements were more likely to be *reduced*, whereas cellular levels of *beneficial* elements were more likely to be *increased*.

ENDNOTES

[6] Research Professor & Nelson A. Rockefeller Professor of Government Emeritus, Department of Government, Dartmouth College, Hanover, NH 03755. <Roger.D.Masters@Dartmouth.edu>. Tel 603 643 4205.

[2] "OECD in Figures," *OECD Observer 2008* (Paris: OECD, 2008; ISBN 978-92-64-05563-6), pp. 8-9. For 2007 data, see the 2009 edition of this report, ISBN 978-92-64-05199-7.

[3] For a bibliography, see <http://www.dartmouth.edu/~rmasters/AHABS>. Rather than multiply footnote references here, multiple examples of specific findings are attached as Figures 1-14 and Tables 1-3. For an example of the research in question, see Wright JP, Dietrich KN, Ris MD, Hornung RW, Wessel SD, et al. (2008) Association of Prenatal and Childhood Blood Lead Concentrations with Criminal Arrests in Early Adulthood. *PLoS Med* 5(5): e101 doi:10.1371/journal.pmed.0050101)

[4] For this method, see <http://www.doctorsdata.com/repository.asp?id=1270>. This example reveals deficits in *"essential and other"* elements (easily supplemented by vitamin pills) as well as levels of toxins in the author's body.

[5] See <http:// www.detoxamin.com>.

EXPLANATORY NOTE RE "Toxins, Health and Behavior" (not for publication):
BELOW IS LIST OF GRAPHS & TABLES WHICH ARE SPECIFICALLY IMPORTANT AS EVIDENCE OF THE HARMFUL EFFECTS OF WATER TREATMENT WITH EITHER FLUOROSILICIC ACID (H_2SiF_6) OR SODIUM SILICOFLUORIDE (NA_2SiF_6) -- JOINTLY INDICATED BY "SiF".

Figure 1: % children with blood lead > 10µg/dL depending on presence or absence of water fluoridation using SiF (distinguishing communities served by the large Metropolitan Boston water system using SiF, smaller water systems using SiF, systems using sodium fluoride (NaF) or not fluoridating).
Figure 2: %Black children with Venous Blood lead from <5µg/dL to >20µg/dL, comparing communities with and without SiF water treatment
Figure 3: Logistic regression comparing odds ratios for high blood lead (1.0 = 50-50 chance of blood lead >10µg/dL) for Black vs. White children in New York state either likely or unlikely to be exposed to each of 7 risk factors for high blood lead.
Figure 4: Difference between SiF treated water or its absence in ave. % children with blood lead > 10µg/dL, difference between exposure to 0-4 risk factors and 5-7risk factors in N. Y. state data for all races compared to data for Black children only.
Figure 5: Average children's blood lead level for Black, Hispanic, and White Children aged 3-5 in NHANES III national sample (counties over 500,000 population), comparing residents of communities with or without SiF in water treatment.
Figure 6: Average children's blood lead level for Black, Hispanic, and White Children aged 5-17 in NHANES III national sample (counties over 500,000 population), comparing residents of communities with or without SiF in water treatment.
Figure 7: % children's blood lead >10µg/dL for 3 population characteristics: SiF use (yes/no); poverty (counties with more or less than natinal average of 12.8% poor); Black vs. White children.

Figure 8: Rate of violent crime per capita in 1985, all reporting U.S. counties (n=2871) with lead pollution reported in EPA Toxic Release Inventory, and % population with SiF treated water (<10%, >11%-<79%, >80%).
Figure 9: Rate of violent crime per capita in 1991, all reporting U.S. counties with lead pollution reported in EPA Toxic Release Inventory, and % population with SiF treated water (<10%, >11%-<79%, >80%).
Figure 10: Rate of violent crime per capita in 1991, all reporting U.S. counties with manganese pollution reported in EPA Toxic Release Inventory, and % population with SiF treated water (<10%, >11%-<79%, >80%).
Figure 11: % Learning Disabled students in 15 Massachusetts towns with or without SiF water treatment and with lead levels in public water either < 20ppb or >20pbb.
Figure 12: Cocaine use by criminals a time of arrest - 24 U.S. cities, for no SiF, water treated with Na_2SiF_6, or water treated with H_2SiF_6.
Figure 13: Average children's blood lead for presence or absence of three different risk factors: communities with pre 1940 houses (lead paint) either below or above 29.5% average, 90th percentile 1st draw lead either above or below 15pbb, and presence vs. absence SiF water treatment.

Table 1: Multivariate ANOVA of rates of 7 disease categories in communities with above or below average pollution with lead (EPA TRI), with manganese (EPA TRI), and with population % blacks above or below national average of 8.56%.
Table 2: Doctor's Data test of Author's Head Hair
Table 3: Chelation effects of Detoxamin on elements in red blood for 8 elements with significant reduction in amounts absorbed and for 11 elements with significant increases in amounts

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NOTE: IN THESE TABLES, MOST STATISTICAL TESTS USE METHOD CALLED "ANALYSIS OF VARIANCE," WHICH COMPARING RESULTS ABOVE OR BELOW THE MEAN OR OTHER MEASURES OF LEVEL OF RISK FACTORS USED. The simplest way to understand this method is the case of comparing the effects of two variables on % of children classified as learning disabled in communities throughout the state of Massachusetts (Fig. 12). Consider first simply dividing towns between those with high versus low levels in their public water supply (high being above 20 parts per billion (ppb), low below that level. Then divide towns into those treating water supplies with SiF and those not using these chemicals. Then there are boxes whose % of learning disabled children can be compared:

		Lead in Water	
		<20ppb	>20ppb
SiF	None	10%	10.5%
	Yes	11.5%	18%

This table shows a characteristic of statistical analysis that the mass media rarely describe or explain. If municipal water, for whatever reason, has BOTH high lead levels AND the water treated with SiF: the combination almost DOUBLES the proportion of learning disabled children in this very small and tentative sample.

On many points of this analysis in this study of fluoride chemistry, large scale datasets are used so that "the statistical significance" of each example of data analysis can be measured. This allows, in many large samples, a reliable measure of the probability of the criteria used to set up the table having the outcome observed. Flipping a coin in a fair coin toss has a probability of coming out heads (or tails) of 50%; in scientific publication, that chance or risk of outcome is expressed as a probability (P) of .50.
So if you ask me to predict the outcome of a fair coin toss being heads, and we flip the coin 500 times, you'd expect about 250 heads and 250 tails (with 0% landing on the edge and staying there). A prediction that a coin flip will land on heads only has a probability of 50%, which can be measured as a "statistical significance" of p = .50. That accuracy in the prediction of results in human affairs and public policy decisions is useless; if citizens want to know whether it's safe to add sodium fluoride to a public water system, they want to be sure that the risks of harmful outcomes has a low probability. For outcomes that are only a minor inconvenience, a probability of bad side-effects of p = .05 may be sufficient to approval. For more harmful side-effects as rates of violent crime, a much lower probability of harm -- generally no higher that p = .05 is now required. When choosing a novel to read for pleasure or even selecting a reading assignment in a College course in English literature, a chance of error of 5 out of 100 selections -- that is, 95 times out of 100 a useful book will be chosen. When errors has much

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more costly results, such as an increase in violent crime or arrest for using hard drugs like cocaine, it often seems reasonable to seek a policy that's more effective than 5 of every 100 dysfunctional behaviors.

In most Figures in this collection that measure the harmful effects of lead pollution or other toxins in the environment, the probability of error is "p <.0001" -- which means less than one chance in 10,000 of error in predictions of the association between exposure to a toxic metal like lead and increases in rates of violent crime. In most social scientific research, the average for significant findings is probability of p < .0001. This is an extremely rigorous test of the hunch that or findings are extremely strong.

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