Toxins, Disease, and Behavior

Roger D. Masters [1]

Lead and manganese are heavy metals that are often associated with disease (Table 1) and behavioral disorders (Figures 1-14). [2] One mechanism for these effects is that if toxins weaken or puncture the membrane of a cell, lead or manganese or other poisons can enter the "cell matrix" (the main body of the cell between the nucleus and the membrane). Since the immune system is in the cell matrix, the absorption of lead and/or manganese could interfere with this system (explaining the mechanism underneath the attached statistics).

Due to the links between these toxins and 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 -- and is now possible with a program of using heavy metal screening (by sampling head hair), assessing the results, and "chelating" (removing toxins) with a new suppository called Detoxamin.[3]

Recent research in neurotoxicology indicates that a head hair test is well adapted to population screening of absorbed toxins as well as necessary elements (for the example of the author's head hair, see Table 2). It's inexpensive, non-invasive, and gives a great deal of information.[4] If an individual has indeed absorbed a high level of toxins, Detoxamin provides a treatment that is effective (Table 3). Since this EDTA suppository used at bedtime three times a week, thereby avoiding the uncomfortable and more costly method of cycling blood through EDTA, Detoxamin is more likely to achieve widespread compliance and effectiveness than alternative methods of chelation.

This approach to populaton screening and treatment is feasible, since materials for both head hair testing and Detoxamin are over the counter and widely available. Even if they cannot ethically be prescribed as medical treatment by those who aren't doctors, routine screening and treatment for high levels of heavy metals could become a relatively inexpensive way to reduce the exceptionally high cost of health care in the U.S. According to OECD statistics, overall health care expenditures in the U.S. are the highest in the world ($6,401 per capita in 2005, whereas 26 of the other 30 OECD countries spend less than $3.500 per capita per year and only Luxembourg, Norway, and Switzerland spent over $4,000 per capita -- but less than $5.000 per capita -- that year).[5] In addition, there are incalculable costs of pain, discomfort, and disability.

It is thus of the greatest importance to address the linkages between diseases and toxins. Our research shows the silicofluorides (H_2SiF_6 and Na_2SiF_6) -- untested toxins added to water supplies of over 160 million Americans -- would perhaps be the easiest to identify and remedy. Given the multiple factors associated with high blood lead in children (Figs 1-7, 14 & Table 1), ending the use of silicofluorides (untested toxins that increase lead absorption) is a virtually no cost and feasible way to reduce children's blood lead levels. Then, if funding is available, screening and treatment for elevated levels of heavy metals would focus attention on the most obvious remaining sources of disease and behavioral dysfunction from these toxins.

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[1] Research Professor & Nelson A. Rockefeller Professor of Government Emeritus, Dartmouth College, Hanover, NH 03755.

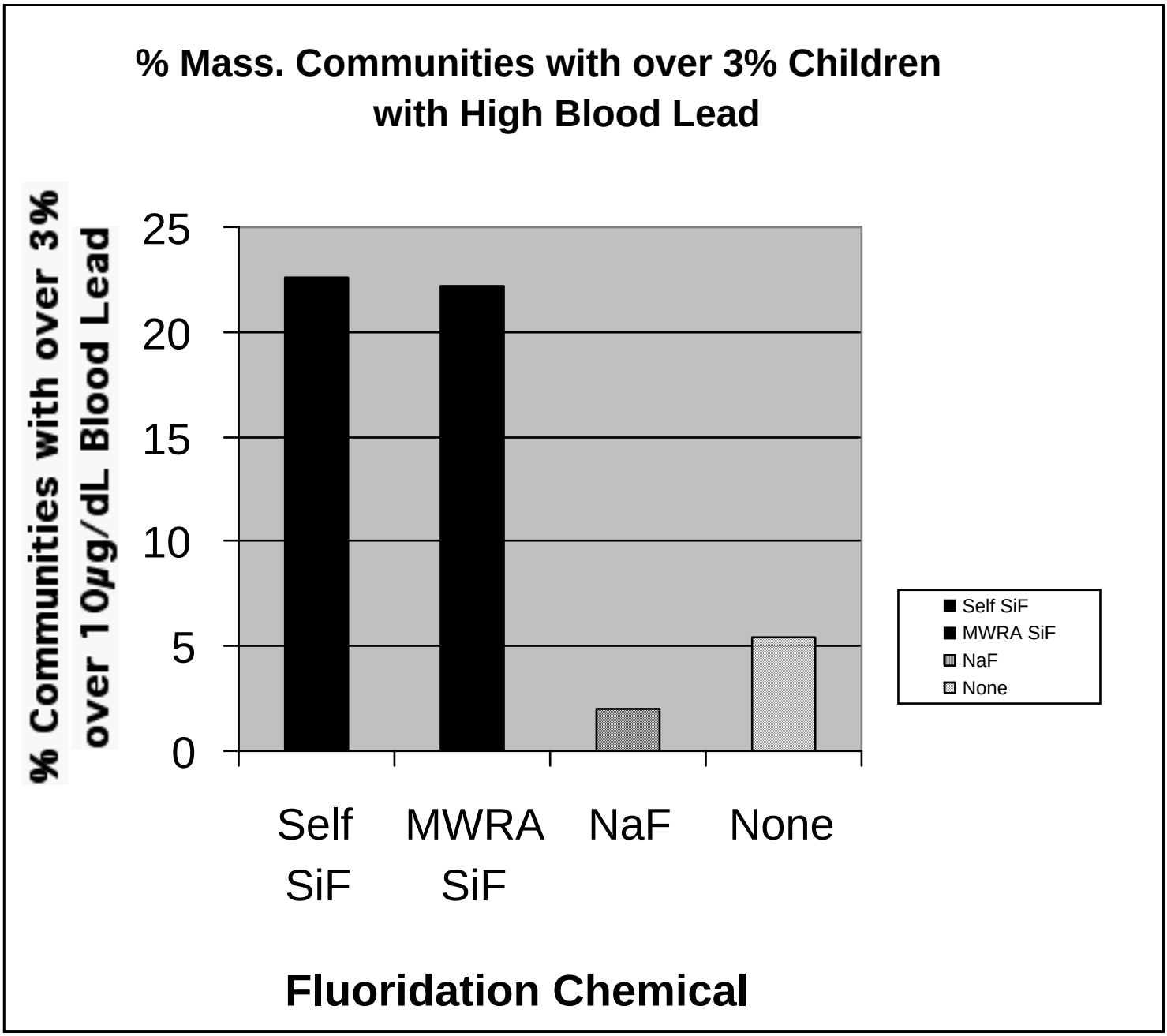
[2] For a bibliograpy, see <http://www.dartmouth.edu/~rmasters/AHABS>. Rather than multiply footnote references here, multiple examples of specific findings are attached as Figures 1-14 and Tables 1-3.

[3] For this method, see <http://www.doctorsdata.com/repository.asp?id=1270>. Note how this example reveals deficits in *"essential and other"* elements as well as levels of toxins in the author's head hair.

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

[5] "OECD in Figures," *OECD Observer 2007, Supplement 1,* pp. 8-9.

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.

Figure 2: Venous Blood Lead Levels in Black Children, New York Communities of 15,000-75,000 with and without Silicofluoride Water Treatment

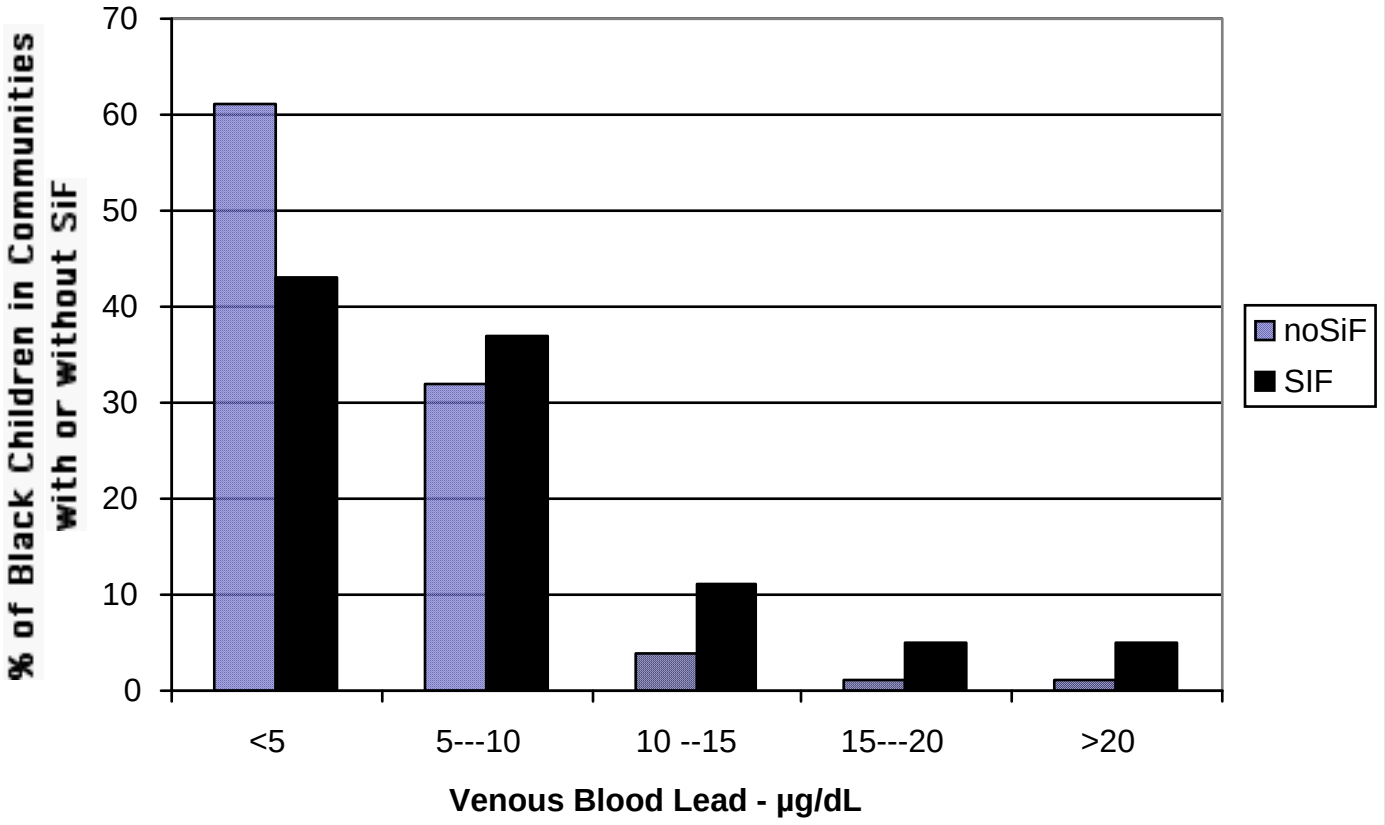


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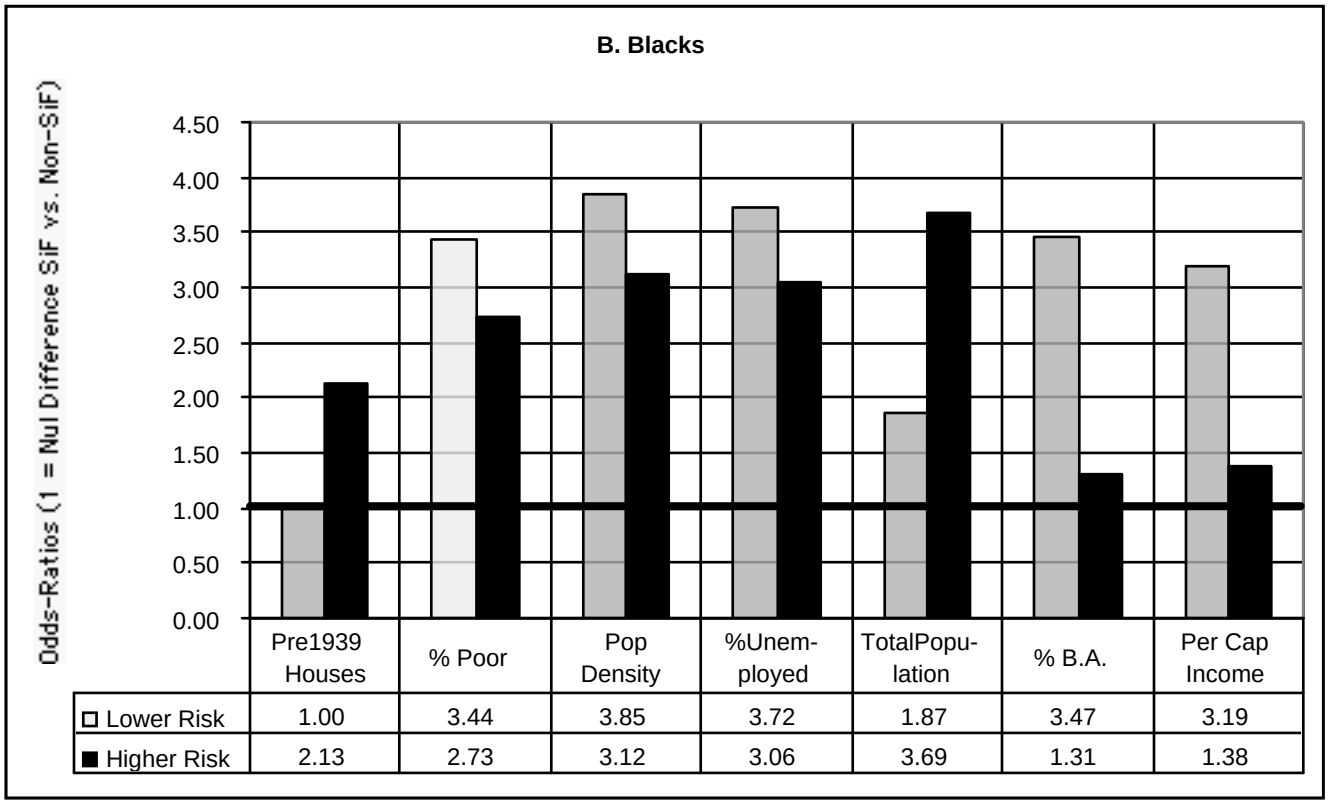
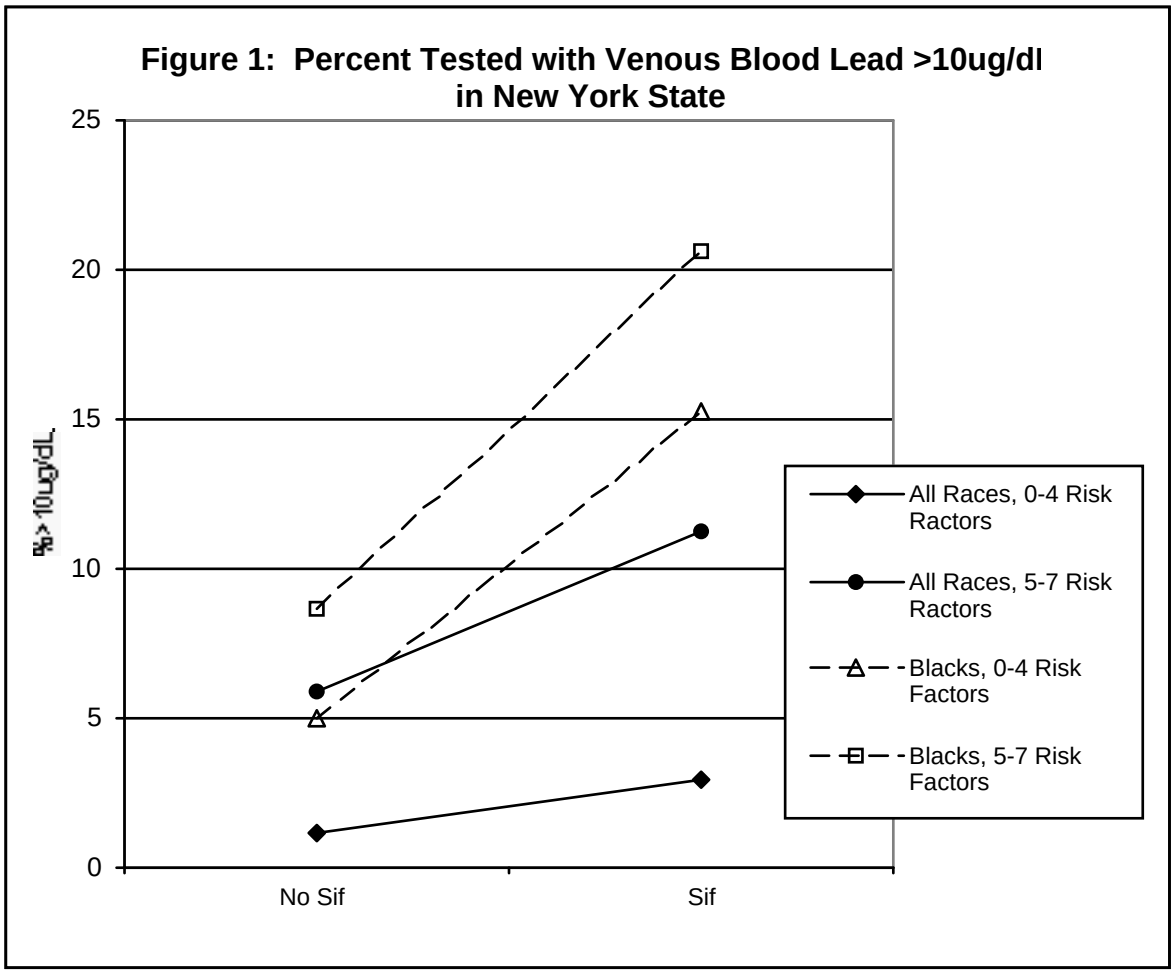
Figure 3: Logistic Regression for Odds of Higher Blood Lead If Exposed to Silicofluorides, Controlling for Other Risk Factors For High Blood Lead: Black Children, NY State



	Pre1939 Houses	% Poor	Pop Density	%Unem-ployed	TotalPopu-lation	% B.A.	Per Cap Income
Lower Risk	1.00	3.44	3.85	3.72	1.87	3.47	3.19
Higher Risk	2.13	2.73	3.12	3.06	3.69	1.31	1.38

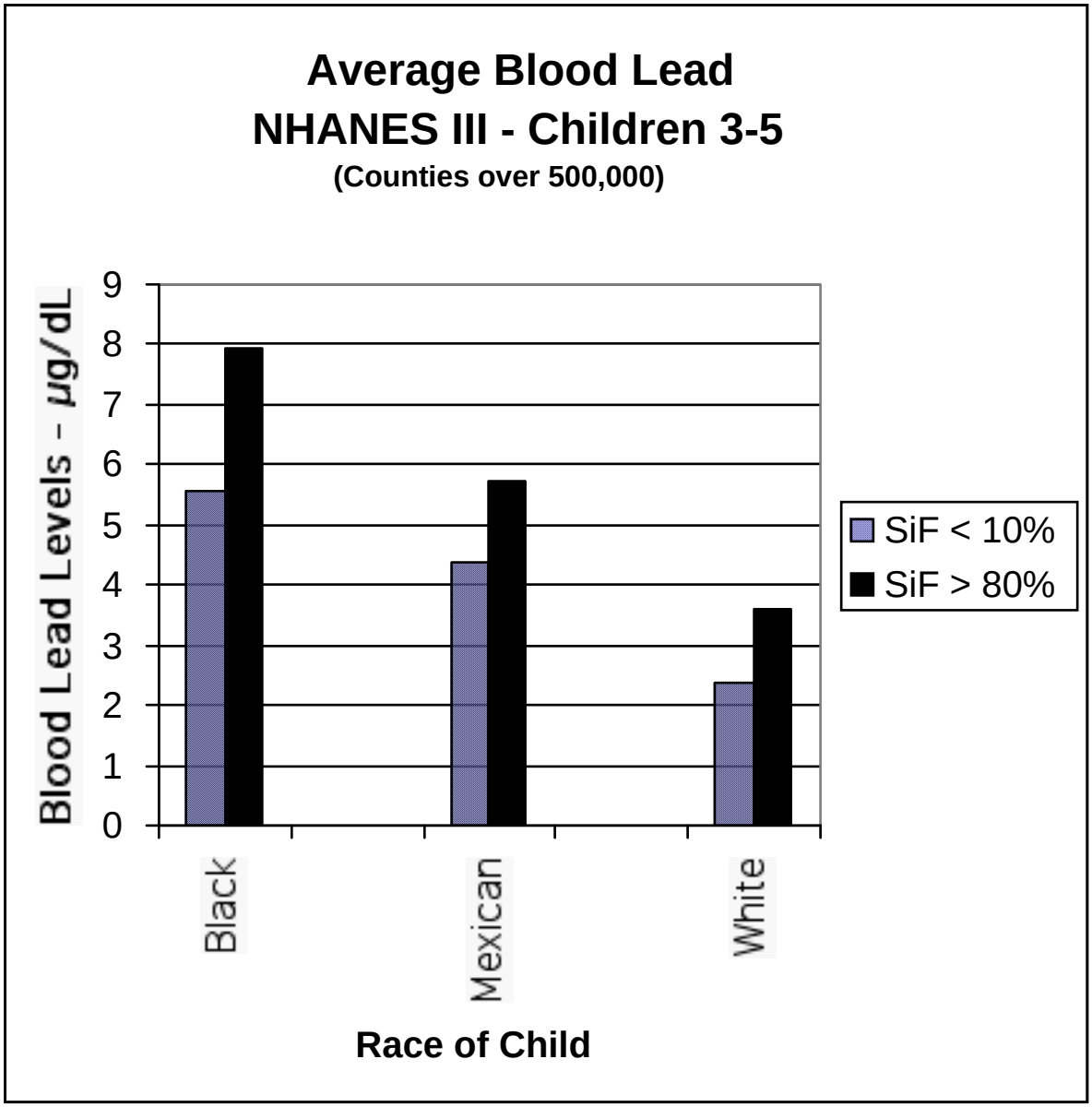
For each of seven factors associated with high blood lead, odds of children having blood lead over 10µg/dL were compared in commujnities with and without silicofluorides. In this chart, the odds ratio of 1.0 equals a 50-50 chance or no effect of silicofluorides, Where risks are present, silicofluorides ALWAYS make the odds worse.

FIGURE 4



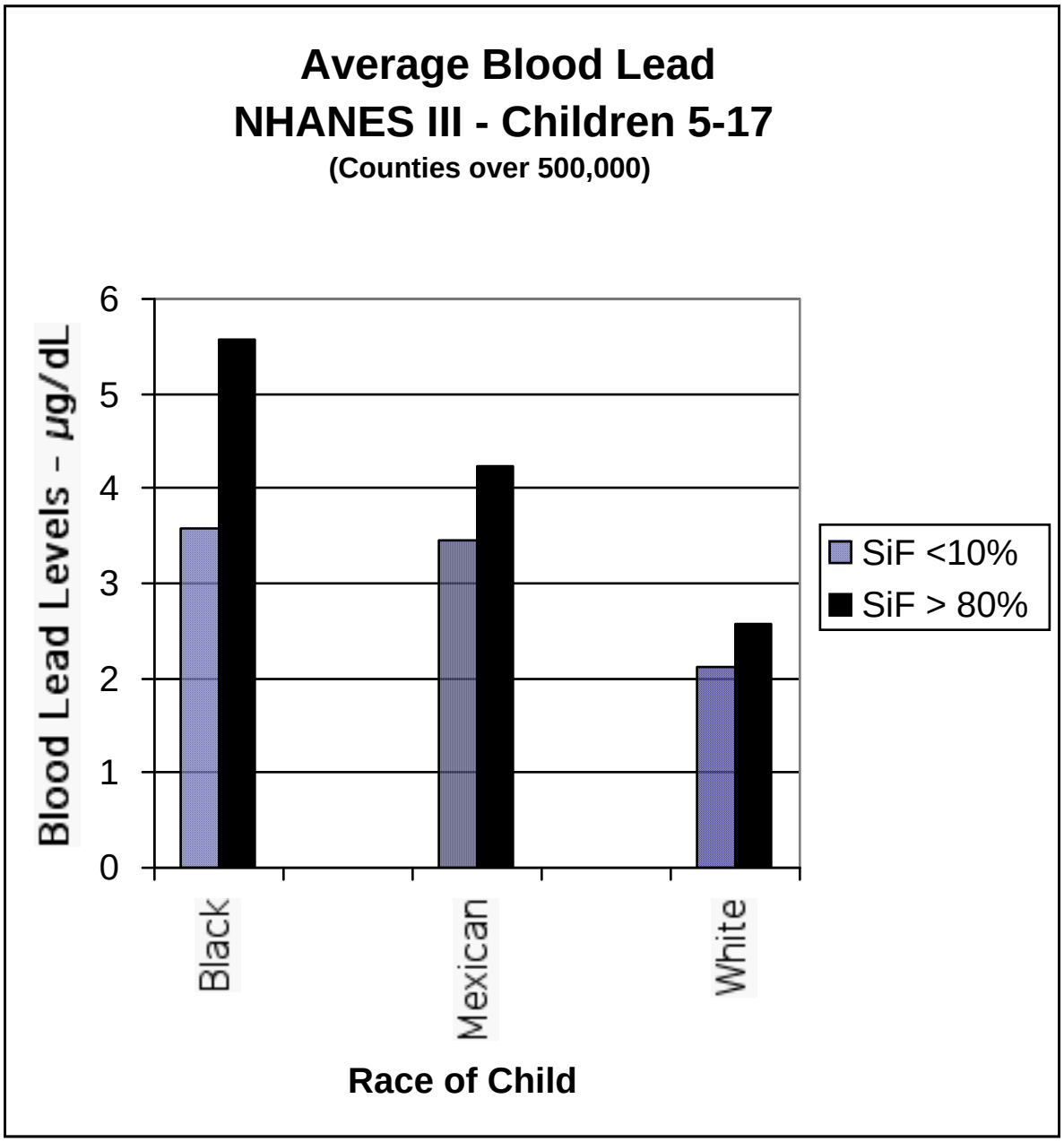
This figure divides all New York communities into those with above average levels of 0-4 of the risk factors and communities with 5-7 of these risk factors. For each level of risk, blood lead levels are higher where silicofluorides are in use; and this effect especially pronounced for blacks

FIGURE 5



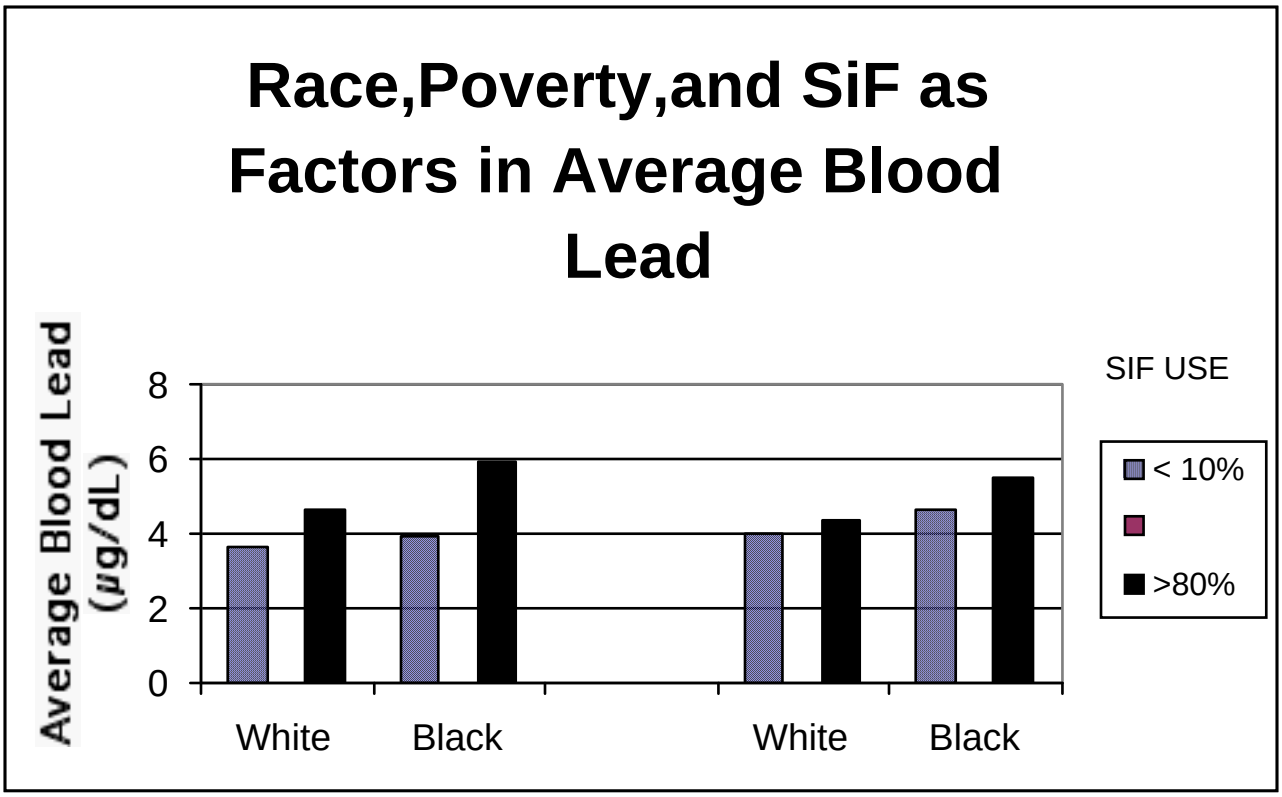
For NHANES III Children 3-5, mean blood lead is significantly associated with fluoridation status (DF 3, F 17.14, $p < .0001$) and race (DF 2, F 19.35, $p < .0001$) as well as for poverty income ratio (DF 1, F 66.55, $p < .0001$). Interaction effect between race and fluoridation status: DF 6, F ;3.333,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

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

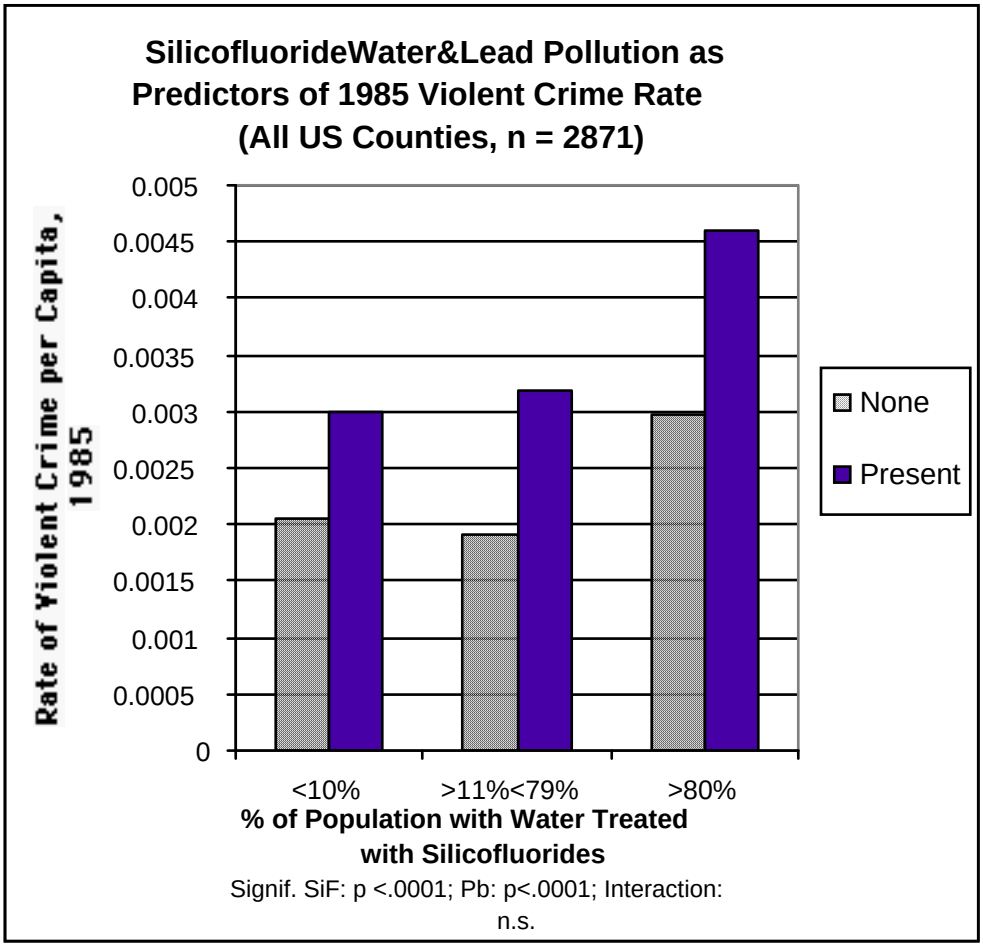


Overall population averages:
Counties with < 12.8% Poor (wealthy) < 10% SiF = 3.72µg/dL
>80% SiF = 5.17µg/dL

Counties with > 19.8% 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.

FIGURE 8.



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

FIGURE 9

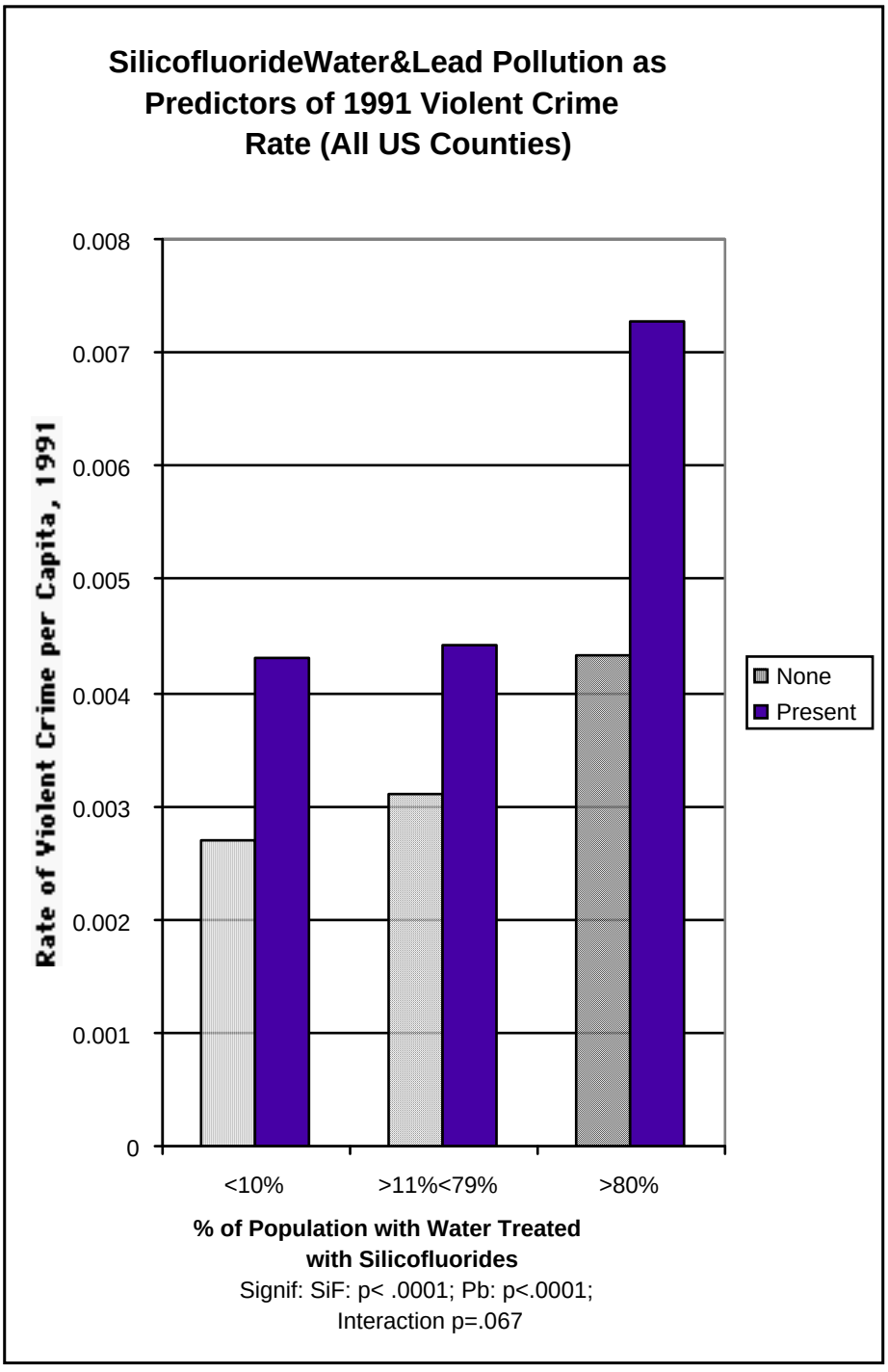
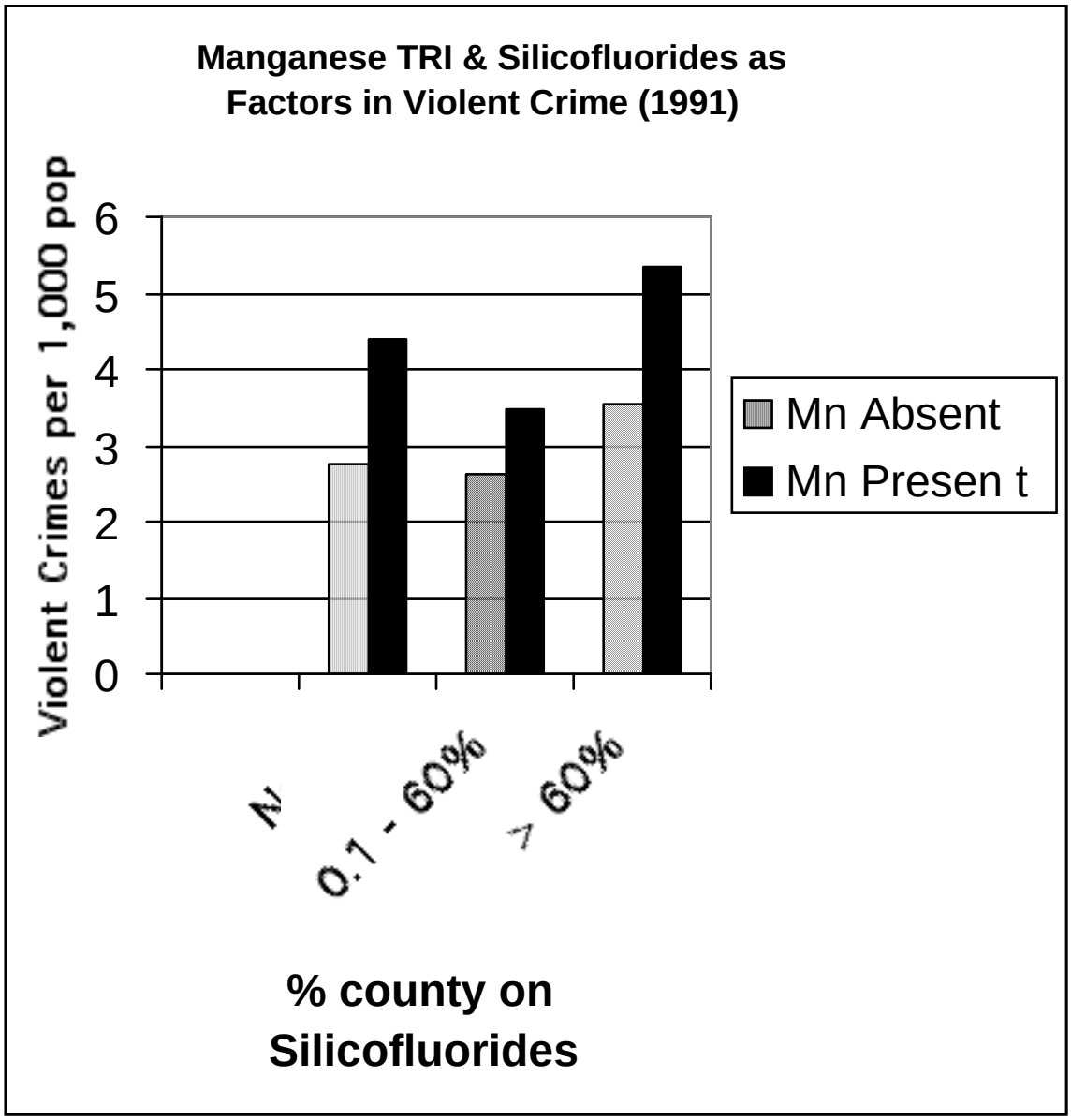

SilicofluorideWater&Lead Pollution as Predictors of 1991 Violent Crime Rate (All US Counties)
Rate of Violent Crime per Capita, 1991
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
None
Present
<10%
>11%<79%
>80%
% of Population with Water Treated with Silicofluorides
Signif: SiF: p< .0001; Pb: p<.0001;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

Figure 10



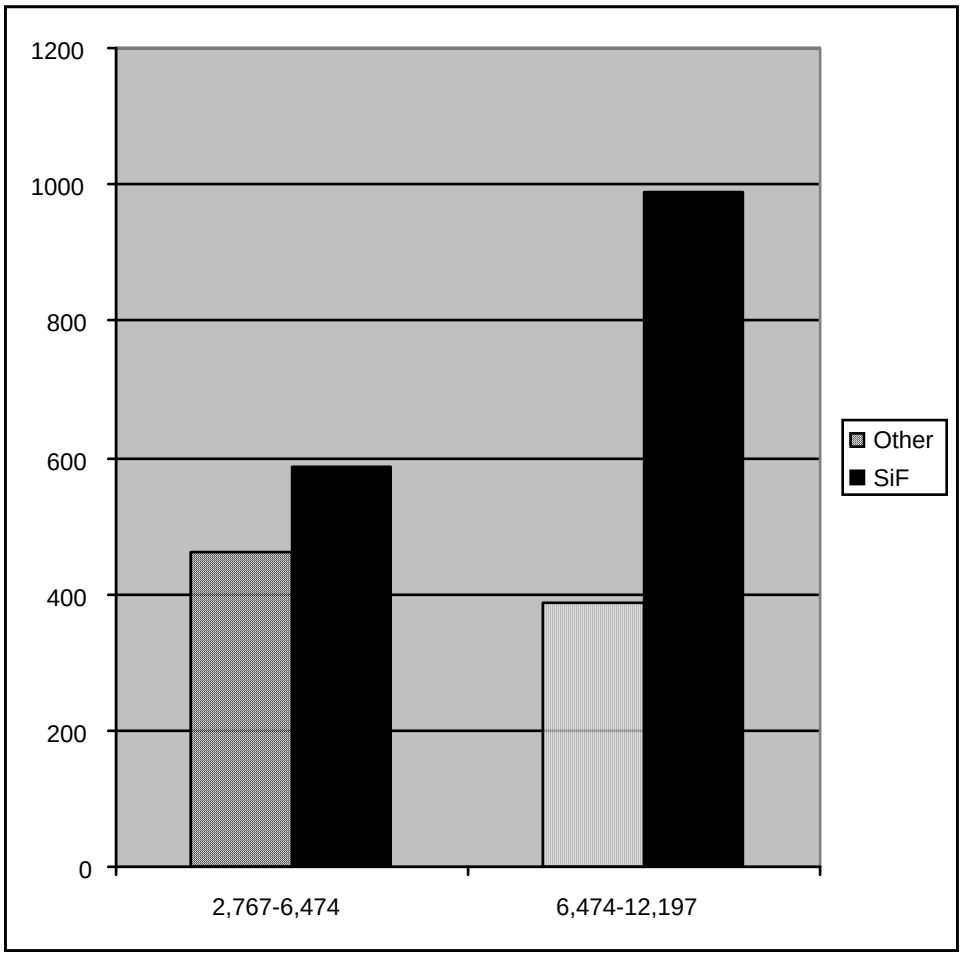
Significance:

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 violentcrimes per 1000.

Figure 11

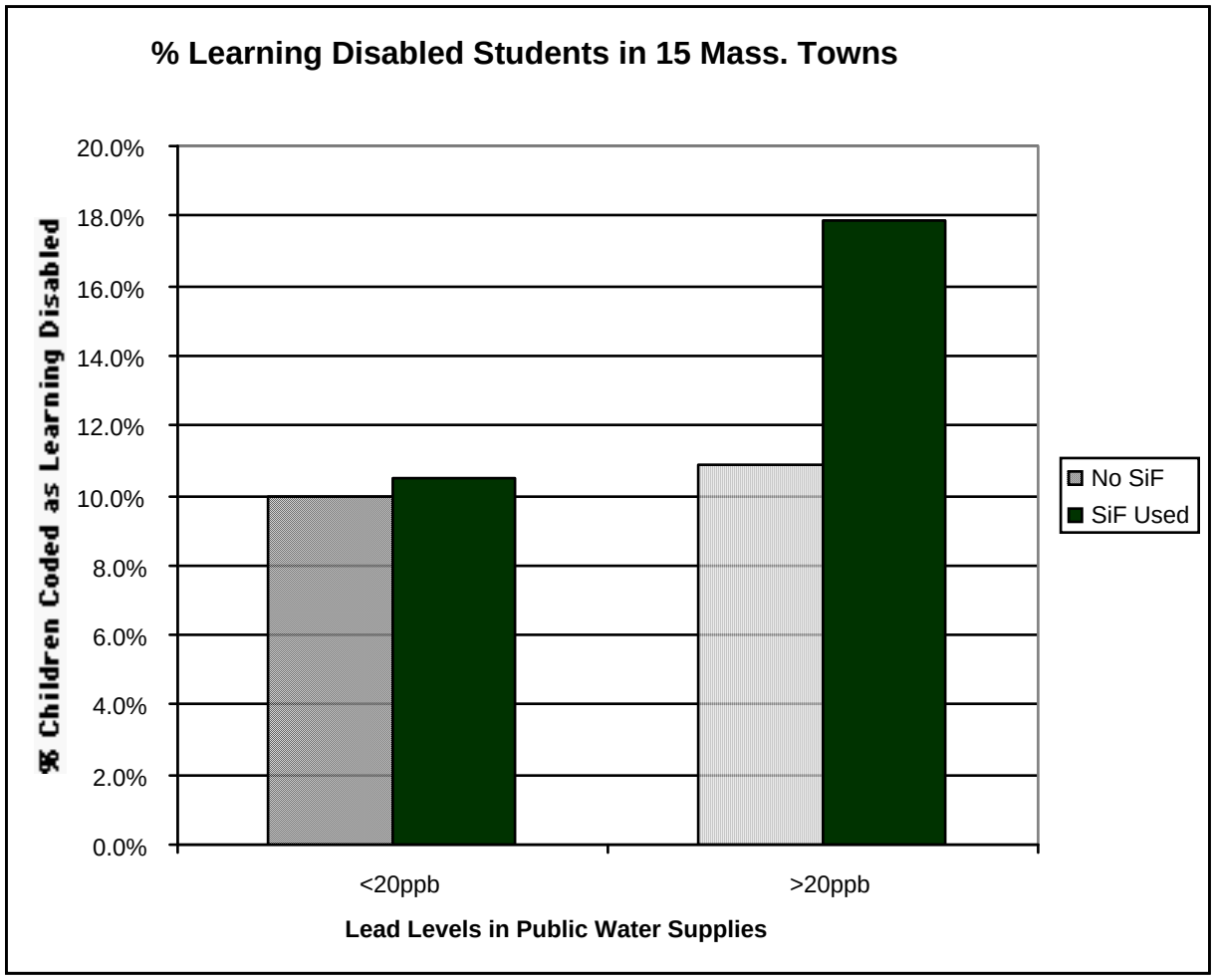
Violent Crime Rate 1998 & 1999 Combined
New Jersey Communities –
population 2,767-12,197



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

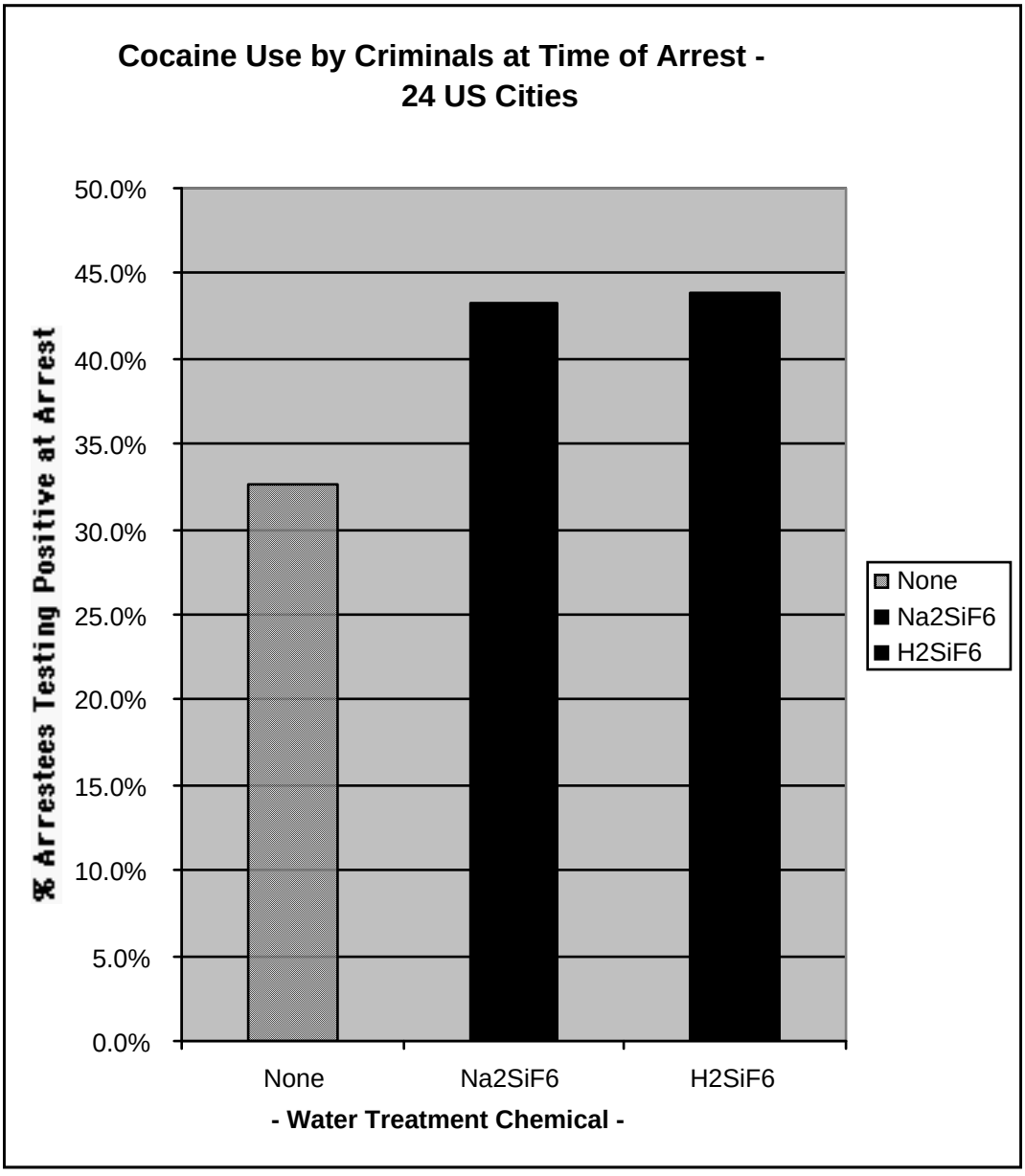
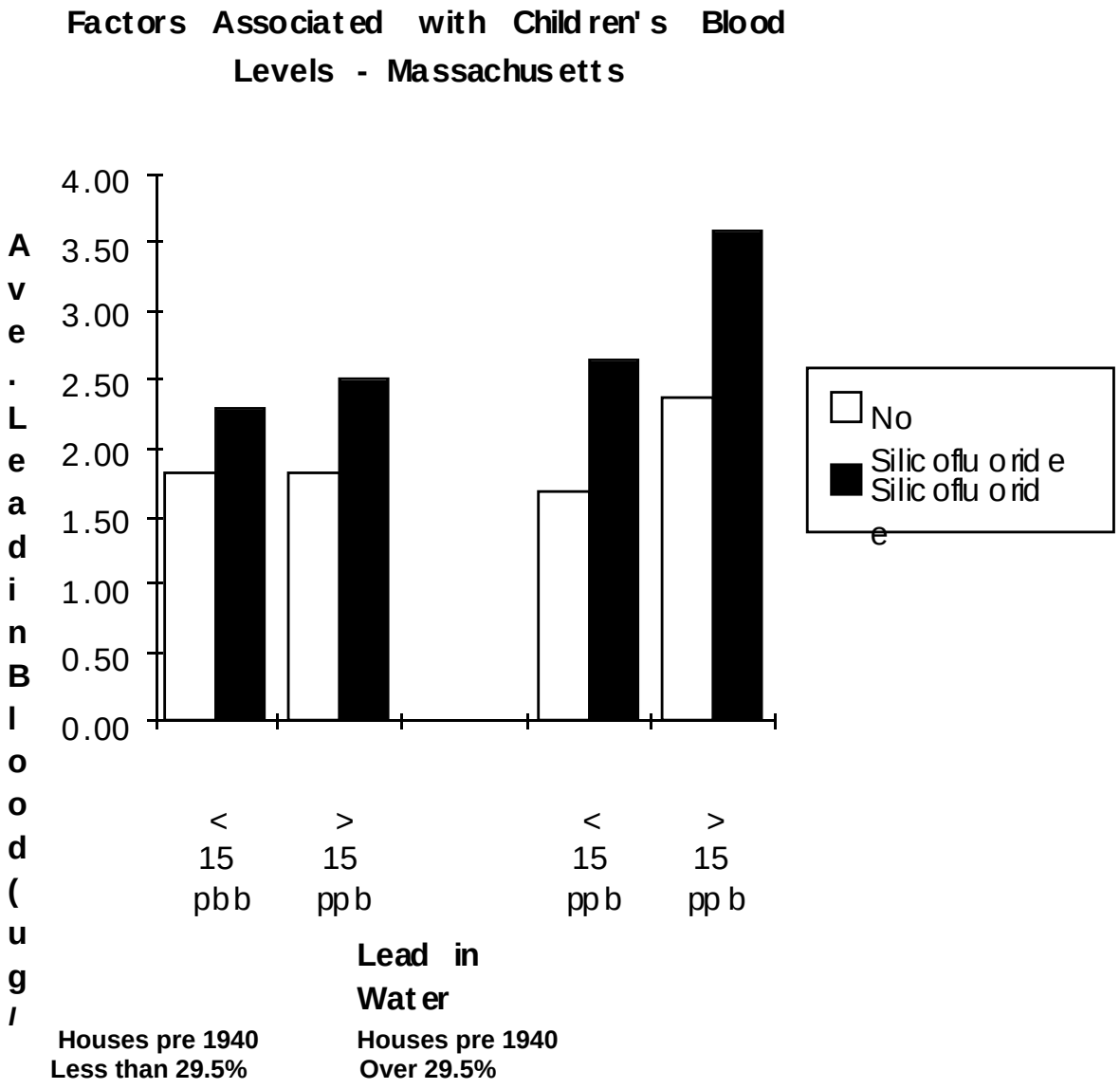

Cocaine Use by Criminals at Time of Arrest -
24 US Cities
% Arrestees Testing Positive at Arrest
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
None
Na2SiF6
H2SiF6
- Water Treatment Chemical -
None
Na2SiF6
H2SiF6

Figure 14



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

Table 1:

MULTIPLE REGRESSiON: 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$^{\forall}$	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$^{\forall}$	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%$^{\Phi}$	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	NS	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
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.

*"TRI" = EPA's "Toxic Release Inventory" of industrial pollution in each county (n = 3141) present or absent

$^{\forall}$"Trich SiF": silicofluoride treated water delivered to < 10% of population, 11% to 79% of population, or >80% of population

$^{\Phi}$ "% Black ": percent of county population dichotomized at national mean (8.57%).

NOTE: 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.

Table 2:
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:

V010.09

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: 14D0648479 • MEDICARE PROVIDER NO: 149453

Table 3.

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*.

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)