

**GETTING THE LEAD OUT: USING MACRO SOLUTIONS TO LOWER CRIME AND INCREASE
EDUCATIONAL TEST SCORES IN BALTIMORE MARYLAND**

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"We more frequently fail to face the right problem than fail to solve the problem we face."

--- author Unknown

I. INTRODUCTION

If one hundred people living in Baltimore were asked the question, "What do you think are the five biggest problems facing the city?", no doubt the following problems would appear on at least half of their lists:

1. crime
2. education
3. drugs
4. housing

Policy makers rely on these issues for making a case for budget increases since they strongly resonate with voters and provide tangible objectives that appear to "solve" the problems. "More police presence", "drug stings", "more teachers in the classroom", are catchphrases that propel politicians into office, but often fail at obtaining the desired results touted in the campaign. For example, in Baltimore during 2007, despite calls by politicians for "safer streets", "more police officers" and "better policing" 291 homicides were committed---the highest since 1999, when 305 people were killed. Policy makers often fail to propose *macro* solutions to problems because they aren't "sexy" enough to appeal to an electorate relishing quick

solutions to difficult problems. They require patience on the part of a public that often sees *immediate* problems needing *immediate* solutions.

II. SOLVING MACRO PROBLEMS

Numerous historical examples exist of how spin-offs result from solving macro problems:

- “Germ theory” in the late 18th and early 19th century led to more sanitary health care facilities, pasteurization of milk and safer surgical procedures
- The Eisenhower Interstate System that led to the explosion of automobiles and suburbs in the United States
- Warning labels on tobacco products leading to a decline in lung cancer deaths

According to Rick Nevin¹ reducing lead in gasoline has been directly linked with the 1970s decline of violent crime in the United States. Nevin’s arguments are compelling since he shows a concomitant rise in crime rates in nine countries when leaded gasoline was widely used in motor vehicles. (See Figure 1).

The challenge to public officials is to educate their constituents to understand that in seemingly intractable problems such as crime, low test scores, birth defects and drug behavior are related rather than separate issues in large urban populations.

¹ “Research Links Lead Exposure, Criminal Activity” retrieved on January 7, 2008 at: <http://www.washingtonpost.com/wp-dyn/content/article/2007/07/07/AR2007070701073.html>

III. ENVIRONMENTAL LEAD EXPOSURE AND BALTIMORE CITY

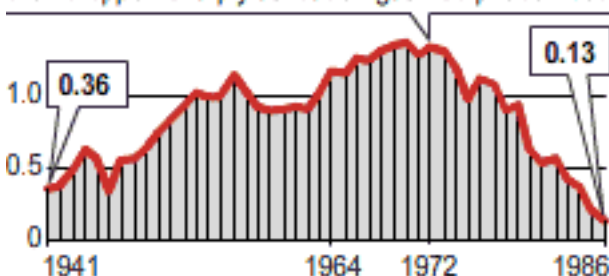
FIGURE I: CRIME RATES RISE, FALL WITH LEAD LEVELS

In 1994, economist Rick Nevin began probing the link between lead and crime, comparing lead levels in both paint and gasoline with violent-crime rates. What he found was startling: As lead levels rose and fell, so did crime — but with a 23-year lag as children exposed to lead as babies came of age.

Gasoline lead

(in tons per capita)

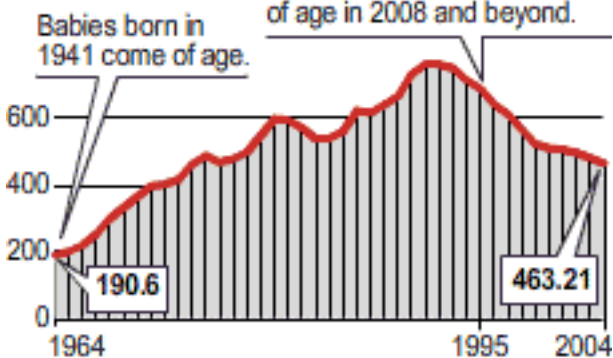
Per-capita use of lead in gas rose from 1941 to 1972, then dropped sharply as leaded gas was phased out.



Violent crimes

(per 100,000 people)

Babies born in 1972 come of age in 1995. Nevin's findings suggest that violent-crime rates will drop even more as children born after 1985 come of age in 2008 and beyond.



Note: Data not available beyond 2004.

Source: Environmental Research

By Karl Gelles, USA TODAY

Figure I illustrates the relationship between crime and lead in the environment.

History is replete with examples of health hazards that were either ignored or not connected to the presence of disease. For centuries, bubonic plague in Europe,

malaria-bearing mosquitoes in the tropics and polio in the United States and elsewhere killed millions of people, yet were not thought to be related to illness among large populations. In the case of environmental lead contamination, the Environmental Protection Agency (EPA) has known the health hazards of lead for years. Note the following question from a parent/physician to a physician on a health website:

“QUESTION: My wife and I just found there is lead on the back of a paint chip from a window sill. The dust from the floor tests negative. Should we be concerned about living here during a pregnancy and afterwards with a newborn? How do we go about finding out how much lead there is in the apartment? How much lead is safe?

Thanks.

Larry Buxbaum, M.D.

Hospital of the University of Pennsylvania

ANSWER: *In that tiny paint chip, the past and the future intersect. A generation ago in that same space, a couple stood in a freshly painted apartment, perhaps with a young child. Now that child is grown and gone. You stand with your wife, holding a chip of the past, and prepare for the future. You, however, see with eyes a generation wiser, aware that danger lurks in lead paint.”*

Deaths from lead poisoning are now rare, but it is not unusual for a child's blood to contain enough lead to cause intellectual and developmental delay, neurologic problems, kidney disease, and anemia. Children absorb 40-50% of the lead that

gets into their mouths and adults only 10%. Even small amounts of lead can produce high concentrations in the blood of young children because their bodies are small. Since children's brains are still developing, the effect of lead poisoning can be especially damaging. It is clear that the correlation between these seemingly unrelated problems is clear. For years, researchers have know that high quantities of lead in the body inhibit the ability of children to control their impulses. [Italics supplied]²

Notice the physician's well-documented concern that lead exposure in children can have disastrous consequences years later in terms of learning, intellectual development, impulse control and physical growth.

Baltimore City's long-history of environmental lead contamination is well-known and reflects some of the concerns expressed in the above quotation in terms of its long terms effects on its residents. Some facts:

- 10 micrograms (μg) per deciliter (dl) ($10\mu\text{g}/\text{dl}$) creates a decline in intelligence³
- In 2006, 846 children (4.6% of the 18,363 tested) from ages 0-6 had lead levels greater than $10\mu\text{g}/\text{dl}$ (this represents only 36% of the childhood

² Retrieved, February 5, 2008 from <http://www.drgreene.org/body.cfm?id=21&action=detail&ref=629>

³ Sherry G. Selevan, Ph.D., Deborah C. Rice, Ph.D., Karen A. Hogan, M.S., Susan Y. Euling, Ph.D., Andrea Pfahles-Hutchens, M.S., and James Bethel, Ph.D. Blood Lead Concentration and Delayed Puberty in Girls. *The New England Journal of Medicine*, Volume 348:1527-1536, April 17, 2003, Number 16.

population of Baltimore City, and it is estimated that as many as 2550 children in Baltimore City have lead levels greater than 10 μ g/dl⁴

- Lead poisoning damages a variety of organs and its effects are irreversible and permanent
- On February 7, 2005, former Mayor of Baltimore City and now Governor of Maryland, Martin O'Malley in a press conference acknowledged that "there is an established correlation between violent crime and lead poisoning."⁵

TABLE I: NUMBER AND PERCENTAGE OF CHILDREN AGED 0-72 MONTHS WHOSE BLOOD LEAD TEST RESULTS WERE EQUAL TO OR GREATER THAN 10MG/DL IN BALTIMORE CITY: 1998-2006

Year	>=10μg/dl	
	No. of Children	Percentage
1998	3949	22.2
1999	2902	16.7
2000	2189	12.1
2001	2027	9.5
2002	1558	9.4
2003	1166	6.4
2004	1183	6.2
2005	854	4.8
2006	843	4.6

Source: City of Baltimore Health Department, 2006

Baltimore City should start a community education campaign similar to that of Milwaukee, Wisconsin. In the early 1990s, Milwaukee began a program to replace all

⁴ Retrieved, February 6, 2008 at http://www.baltimorehealth.org/press/2007_06_20.leaddata.pdf

⁵ Martin O'Malley, quoted in *Baltimore CityPaper*, March 9, 2005 article, "Full of Lead".

windows in older buildings where lead dust is released when windows are raised and lowered. Paying each homeowner and landlords \$160 a window, residents eagerly embraced the program. In 1995, 39% of Milwaukee's children had elevated lead levels, by 2006 it had dramatically declined to 6.6%. The total cost of the program was \$53.5 million 2/3 of it derived from federal programs. The payoff for such programs is immense. Nevin and Jacobs⁶ estimate that a comprehensive program of lead abatement in the United States would cost \$22 billion, which is less than the federal government spends on education in one year. The benefits of such a program however, would save \$67 billion in the form of lower placement in special education programs, ADHD, crime and juvenile delinquency.

Baltimore's homicide rate, one of the highest in the nation, low graduation rates of African American males from high school and health care costs, would all be impacted by community education and implementation of a comprehensive lead abatement program in the city. The task will not be easy since it will take mass communication efforts on the part of elected officials. It will also change the public discourse so that Baltimoreans become educated on long-term solutions to immediate challenge. This will take strong leadership on the part of policy makers and change the political climate of a city that has been told to "Believe", "Read" These slogans have been far more beneficial to politicians' careers than the lives of its citizens. Fortunately, the results of providing citizens with macro solutions, especially as they relate to environmental lead contamination, will have lasting impact on the quality of life in the city, education and health care for the residents of Baltimore.

⁶ Jacobs, D. and Nevin, R. (2006) Validation of a 20-year forecast of US childhood lead poisoning: Updated prospects for 2010. *Environmental Research*, Volume 102, Issue 3, November 2006, Pages 352-364.

