Criminality Resulting from Brain Damage from Lead Exposure in Philadelphia and Implications for Management of Deviance in a Fluid Culture

by

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Abstract

This thesis explores how the legal system of the United States has applied the anthropological principles of popular justice, or justice in concert with the norms of the people, to prohibit capital punishment of certain classes of offenders, and whether these principles can be extended to prohibit capital punishment of offenders afflicted with the neurological deficits caused by lead poisoning. To effectively determine whether the cultural norms of the country are adverse to the execution of this class of offender, the legal system must acknowledge compelling scientific research documenting that children exposed to lead develop brain damage accompanied by functional deficits that lead to deviant behavior. This paper summarizes the scientific research concerning the effects of lead poisoning on developing children, supplemented with field work in Philadelphia, which can form the basis for future legislative trends concerning the prohibition of the death penalty for brain injured offenders deviants. These indicators of the society's "standards of decency"[1] give testament to the culture's understanding that deviant acts caused by individuals with brain damage from lead poisoning are primarily the product of a disease, not of evil or free will. When the legal system acknowledges the possibility, through the influence of popular justice, that crime can ensue from brain damage caused by lead poisoning, the law can be formally amended to handle this form of deviance more fairly and justly in accordance with cultural norms.

[1] *Trop v. Dulles*, 356 U.S. 86, 101 (1958)

Acknowledgments

Before I knew the topic of this thesis, I knew I had the support and guidance of several people with whom I worked during the particularly busy summer before my senior year at Bryn Mawr College. I worked simultaneously at two non-profit groups, the California Appellate Project (CAP) and Clean Water Action (CWA), located a block away from each other in San Francisco, CA, and became completely immersed in both criminal justice and public health issues. At CAP, a legal resource center for indigent California death row inmates challenging their convictions and sentences on direct appeal and through habeas corpus proceedings, I collected records and performed investigative tasks in the early mornings and in the evenings. In the middle of my days, I worked at CWA, researching San Francisco's new water treatment, which substituted chlorine with chloramines, and identified the sources, effects, and remediation of environmental toxins brought to our attention by customers of California's water systems. My approach to this thesis depended entirely upon the experience and education I gained from the tireless and refreshingly positivist people working for these groups. In particular, I received constant advice, criticism, and motivation from Patricia Kern, the deputy director of CAP, as well as her colleagues who contributed articles, updates, and political fodder for my project. For helping me exchange naive idealism with optimistic realism in environmental political matters and for teaching me about the precautionary principle, to which I firmly adhere in my opinions about public health, I would like to thank Jennifer Clary and Lena Brook at CWA, who always had time to educate and elucidate.

For their invaluable assistance during the research and writing stages of this project, I would like to thank Robert Dunham and his colleagues at the Capital Habeas

Unit of the Federal Public Defender's Office in Philadelphia, who provided me with the vital links between death row inmates from Philadelphia and childhood development in high lead exposure areas. For her expertise in the field of pediatrics and her willingness to show me exactly what must be done when the children of a city are exposed to a debilitating environmental hazard, I am indebted to Dr. Carla Campbell of the Children's Hospital of Philadelphia. I would like to thank Clean Water Action of Philadelphia and the representatives at the EPA of Pennsylvania for sharing the information they collect on lead in Philadelphia. I am beholden to my father, Lawrence Rosania, for his support, his editing skills and his constant vigil for any and all information regarding issues in politics and Constitutional history. For keeping morale high and their willingness to listen to my trailing thought processes, I am grateful to my friends and fellow Mawrters Laurel Jackson, Yuna Park, and Annie Savage, and my sister Kara Rosania. For their advice, suggestions and instruction, I would like to thank my advisor Dr. Richard Davis of Bryn Mawr's Anthropology department, and Dr. David Prescott of the Biology department, who will be the decisive assessors of my level of success in attaining my goals for this project.

Preface

Lead poisoning has been an epidemic in the city of Philadelphia for decades. Once used as an additive for house paint and plumbing alloys, lead was banned from use in homes and public institutions by the Environmental Protection Agency (EPA) in 1978, after human exposure to lead was connected to a host of physiological and neurological disorders. As I researched the well-established harmful effects of this pervasive toxin on those exposed to it, I was surprised to find that human exposure to lead continues to be a crisis of public health, criminal justice, and environmental racism. Few people have been able to create enough public and federal support for its complete elimination in schools and housing, perhaps due to the expense of remedial measures and the fact that those who suffer most are poor minorities in the inner city with little political organization and influence.

As part of this study I apply anthropological principles of popular justice to the United States legal system to explore the potential for legislative and judicial reform with respect to the criminal punishment of individuals suffering from the consequences of lead poisoning. In an effort to assist the environmentalists, clinics, educators, and inhabitants of Philadelphia who seek public and government support for the elimination of lead poisoning and the remediation of its harmful effects, this thesis also provides a comprehensive collection of information about lead, the means of exposure to lead, its effects, and it social implications. In an effort to assist the public defenders who contend with the defense of criminals in Philadelphia who have been the victims of lead poisoning, this thesis documents my study of crime as a particular social implication of lead poisoning. This study also allowed me to deal with the anti-death penalty cause in a

pragmatic way by exploring the roots of violent crime in society. When some of the underlying causes of crime, such as lead poisoning, can be obliterated from society, perhaps the purpose and need for capital punishment in our society may eventually be negated as well.

I. Introduction

> We shall look on crime as a disease, and its physicians shall displace the judges, its hospitals displace the galleys. Liberty and health shall be alike. We shall pour balm and oil where we formerly applied iron and fire; evil will be treated in charity, instead of in anger. This change will be simple and sublime.
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> —Victor Hugo[2]

This thesis explores whether the functional behavioral effects of the brain damage caused by exposure to environmental toxins, such as lead, may be considered by the American culture, and therefore by the American legal system, as mitigation of the culpability of criminal defendants who suffer from such exposure sufficient to prohibit the imposition of the death penalty in capital cases as cruel and unusual punishment.

The neurological deficits of individuals who exhibit criminal behavior that will be discussed are those caused by the lead poisoning of children. Lead poisoning has been discovered to cause a range of social problems for exposed children due to the damage lead inflicts on developing brains. These social problems can include behavioral problems, learning disabilities, lack of impulse control, and mental retardation, all of which can lead to delinquency and are predictors of crime.

Field research for this thesis includes interviews and correspondence with members of the Capital Habeas Unit of the Pennsylvania Capital Representation Project of the Philadelphia Federal Defender, a non-profit appellate firm in Philadelphia that is interested in information about the effects of lead poisoning and the nexus of these effects with criminal behavior. They provided information about their clients on death row who

[2] Hugo, Victor. 1964. "The Last Days of a Condemned," in Edward G. McGehee & William H. Hildebrand eds. The Death Penalty: A Literary and Historical Approach. Boston: Heath.

were exposed to lead as children, as well as the process and controversies that surround mitigation of criminal culpability in general. The California Appellate Project (CAP) in San Francisco, CA, a non-profit law firm that acts as a resource and training center for attorneys who are appointed by the California Supreme Court to represent death row inmates in their appeals and habeas corpus post conviction proceedings, was a useful professional resource, both for current information regarding the movement for presenting brain damage as a mitigation in capital cases and for their legal expertise in this field.

Field research was also conducted at the Pediatric Lead Clinic of the Children's Hospital of Philadelphia with Dr. Carla Campbell. She shared her perspective of the lead problem in Philadelphia, as well as the experience of meeting lead-exposed children and their parents while sitting in to observe their check-ups. As a consultant for the Philadelphia Department of Health as well as a medical practitioner, her expertise is wide-ranging, integrating the macroscopic view of a public health professional with the personal view of the individual children exposed to lead and the impact on their families.

The plight of criminal defendants with brain damage caused by exposure to environmental toxins will be shown to be analogous to those defendants who are either mentally retarded or minors and who the United States Supreme Court recently found could not be subject to the death penalty. The Court found that the death penalty could not be applied to these defendants because they were deficient in the areas of planning, reasoning, and maturity compared to functional adults. The cases of the mentally retarded and minors were decided in consideration of objective factors that were reflections of the standards of a majority of the national community. These objective factors include

Federal and State laws, jury decisions, and reports from experts, all of which are expressions of the norms of the majority of the people in our culture. Usage of objective factors indicates that the law reflects the culture of society, and that the law is designed to be dynamic and flexible to mimic the fluidity of the culture. Therefore, the United States legal system may be characterized as a form of popular justice, or justice for and of the people, in which the values, morals, and ideologies of the people are manifested.

Efforts to widely publicize scientific and scholarly studies of lead poisoning and its effects on brain development and functional behavior, and to lobby state legislatures for a prohibition of the imposition of the death penalty on defendants with brain damage, could eventually result in an acknowledgement of enough objective factors to cause the United States Supreme Court to find that there is a national consensus that executing brain damaged offenders is against the "society's evolving standards of decency."[3] These efforts are based on the concept that brain damage, like that caused by lead, is a disease, and the crimes committed by individuals who are brain damaged from lead poisoning are suffering from an illness that the culture must acknowledge when passing judgment on their deviant acts.[4]

Researching the possibility of the inclusion of exposure to environmental hazards as mitigation defenses on par with mental retardation and juvenility could result in more just sentencing in criminal trials and a deeper understanding of factors that may contribute to violent crime other than free will. We can also begin to shift our views of justice as an institution for punishment to an institution for rehabilitation, and crime in

[3] *Trop v. Dulles*, 356 U.S. 86, 101 (1958)
[4] The notion of crime being viewed as a disease is elaborated upon in: Kirchmeier, Jeffrey L. "A Tear in the Eye of the Law: Mitigating Factors and the Progression toward a Disease Theory of Criminal Justice." Oregon Law Review. Vol. 631.

general from a manifestation of evil to a disease. Only when we begin to understand that free will is not the only basis for human behavior, that behavior can be caused by factors that cannot be controlled or ameliorated by individuals, and that the root of deviance is not always evil, can we rightfully and appropriately carry out justice when deviance from our society's laws occurs.

II. Lead Poisoning

> All people are products of two things, and two things only—their heredity and their environment. And they act in exact accord with the heredity which they took from all the past, and for which they are in no wise responsible, and the environment, which reaches out to the farthest limit of all life that can influence them. We all act from the same way.
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> —Clarence Darrow[5]

For decades, lead has been known to be a hazardous toxicant particularly detrimental for children (USDHS 1988). It is estimated that 2.2 percent of all children under age 5 in the U.S., totaling approximately 434,000 children, have elevated lead levels sufficient to interfere with their neurological development, and 2 million kids under age 5 in the U.S. live in homes with deteriorated lead paint (CDC 2003). Studies about lead exposure in Philadelphia show that 5 percent or 5,000 of all Philadelphia children between the ages of six months and five years have lead levels in their blood capable of causing learning and central nervous disorders (CDC 2003). These numbers are a vast improvement over the estimates that 15 percent of all preschoolers in the U.S., totaling approximately 3,000,000 children, had elevated lead levels sufficient to interfere

[5] Darrow, Clarence. 1989. "Is Capital Punishment a Wise Policy?: Debate with Judge Talley," in Attorney for the Damned, Weinberg, A. ed. pp. 89, 98.

with their neurological development in the early 1990's (CDC 1991). Likewise, the statistics for Philadelphia children under 5 years old with lead levels in their blood capable of causing learning and central nervous disorders dropped from 62 percent in 1990 (Environmental Defense Fund 1990). The children who are usually exposed to lead tend to live in older homes, come from poorer families, and in Philadelphia are African-American or of other minority status, who cannot afford to replace the two most common sources of lead to children in their homes, lead paint and lead plumbing (CDC 1991). Although lead can affect several areas of the body, the neurological damage is often quite severe for individuals exposed to even slight amounts of lead during brain development. This damage often results in behavioral problems, reasoning and attention deficits, and low intelligence and mental retardation; conditions that occasionally lead to deviant behavior. The National Mental Health Information Center of the U.S. Department of Health and Human Services states: "Many environmental factors…put young people at risk for developing mental health disorders… [including] exposure to environmental toxins, such as high levels of lead…"[6] In neighborhoods where lead exposure is so common and unavoidable due to the impoverished state of the inhabitants, the lead exposure of the children that develop neurological deficits and subsequently exhibit deviant behavior must be considered when determining their degree of culpability for their deviance. If the physical state and composition of the brain determine the behavior of an individual, a brain damaged by lead poisoning can be the primary source of socially abnormal behavior.

[6] U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services (SAMHSA), National Mental Health Information Center: http://www.mentalhealth.org/publications/allpubs/CA-0004/default.asp, under heading, "The Causes are Complicated."

Common Sources of Lead Exposure

The most common sources of exposure to lead in the household are chips or dust from lead paint, commonly used between the years 1900 and 1977 until the federal government banned lead as an additive to all paint used for housing in 1978 (CDC 1991). It has been estimated that 38 million homes in which children are raised have deteriorating lead surfaces, and in about 24 million homes, or 25% of the nation's housing, the lead paint is extremely hazardous (HUD). This state of the nation's housing stock underscores that although lead paint has been banned from use since 1978, the problem still exists for occupants of homes built before then, particularly urban, low-income occupants. In addition to lead paint being a source of exposure, lead may also leach into water that travels through antiquated lead pipes, particularly if the water flowing through the pipes is heated, acidic, or treated with chloramines, an alternative to chlorine as an anti-bacterial additive which is corrosive to plumbing. Other common sources of exposure outside the home are remnants of used leaded fuel or other lead products in soil, older painted toys, furniture, or jewelry, food and liquids stored in lead crystal or lead-glazed pottery or porcelain, lead particles released into the air from lead smelters and cosmetics or folk remedies that contain lead, such as *greta* and *azarcon* used to treat upset stomachs (USEPA).

Lead and its Effects on the Human Body

Lead is referred to as xenobiotic, meaning it is a foreign substance with no useful role in human physiology, toxic even in minute quantities. Rather than breaking down to be eliminated as a waste product, lead accumulates in the body's bones and tissues

because the body recognizes it as if it were calcium. It may be absorbed from the gastrointestinal tract or through the respiratory system. Lead exposure can result in low sperm counts in men and can increase the risk of miscarriage or stillbirth among women. It damages the kidneys and gastrointestinal tract, and it can lead to a host of neurological problems including decreased cognitive abilities (Thacker, *et al.* 1992) and increased behavioral problems in children (Konopka 2003). For a concise description of lead and its effects, see Table 1, below.

Before the effects of lead were studied at length, particularly in the 1940s and 1950s, it was assumed that lead toxicity occurred only when clear symptoms such as headaches, clumsiness, constipation, or vomiting could be recognized. Since then, lead in even trace amounts has been shown to cause damage that may not be immediately apparent (Needleman 1992). The trigger level for lead in children, or the level at which it is deemed harmful, has been lowered over the decades as new studies show that even low levels of lead in the body can be toxic. In the 1960s, the trigger level was defined as 60 micrograms per deciliter (µg/dL), which was initially lowered in 1972 to 40µg/dL by the U.S. Department of Health, Education, and Welfare (DHEW), and subsequently in 1978 to 30µg/dL by the Center for Disease Control (CDC) (Needleman 1992). The toxicity level currently stands at 10µg/dL, determined in 1991 by the CDC, although recent studies suggest that adverse health effects exist in children at blood lead levels less than 10 µg/dL (Canfield, *et al.* 2003). The Philadelphia Department of Public Health (PDPH) currently views the blood lead level deemed safe as 25µg/dL and lower.

Although lead can cause harm to children and adults alike, children still developing mentally and physically experience the most seriously deleterious effects of

lead poisoning. Children are more likely to be exposed to lead because their exposure to certain toxins increases as they play outdoors. They are shorter than adults and are more likely to breathe dust and soil close to the ground. Especially at early ages, children are very oral, putting toys, paper, things found on the ground, their hands or fingers, and just about anything else they find into their mouths. Lead tastes sweet, so when children eat paint chips, they are motivated to eat more and will seek out more lead in the house to ingest. Children's bodies are smaller than adults, therefore childhood exposure results in higher doses of chemicals per body weight (CDC 1991). They are more likely to be irrevocably damaged by lead poisoning because lead causes damage to the nerve cells of the brain while the brain is still developing. Once ingested, lead inhibits a child's ability to absorb iron and calcium, necessary for brain, nerve and bone development (Rodier 1994). Lead encephalopathy, or brain damage, occurs when the dendrites of nerve cells in developing brains are cut short by lead, thereby reducing the connections between axons among adjacent neurons. The damage inflicted by lead primarily occurs in the prefrontal lobes of the brain, which are important for the regulation of social behavior (Needleman 2002). Dendrites are most plentiful during the early years of childhood, especially between the ages of 1 and 5, and thin naturally with age. Thus it is crucial for healthy development to establish as many connections between neurons in the brain as possible through education and stimulation between the ages of 1 and 5. When children are exposed to lead which limits the connections being made during this important developmental period, the brain is irreversibly disadvantaged, resulting in decreased amounts of gray matter (Hrdina, *et al.* 1980; Nathanson 1977). Chelation therapy, which involves reducing the lead concentrations in the bloodstream by orally administering

succimer, or injecting ethylenediaminetetraacetic acid (EDTA), a ligand that binds to metals to form a benign metal complex, has been shown to be ineffective at increasing already damaged neurons and restoring diminished Intelligence Quotient (IQ) (Rogan, *et al.* 2001). Therefore, even when individuals undergo treatment during childhood, the damaged areas cannot be recovered.

Table 1: Lead at a Glance	
Common sources of exposure	Lead paint, lead plumbing
Official levels of toxicity	10 µg/dL by the CDC, 25µg/dL by PDPH
Health effects on adults	low sperm counts in men, miscarriage or stillbirth for women, hormonal changes, kidney damage, gout, inhibited immune system, inhibited calcium absorption, hypertension, myocarditis, Lou Gehrig's Disease, liver problems
Health effects on children	Low birth weight (*in utero* exposure), asthma, colic, hearing problems, encephalopathy, demyelination of motor nerves, anemia, inhibited cell maturation and skeletal growth, Sudden Infant Death Syndrome (SIDS), delayed puberty, ADD/ADHD, behavioral problems, cognitive impairment, decreased coordination, decreased IQ, mental retardation, seizures*
Treatment	Chelation therapy with ethylenediaminetetraacetic acid (EDTA)
Children over 10µg/dL in U.S. (as of 2003)	~ 434,000 children ages 6mth-5yrs or 2.2%
Children over 10µg/dL in Philadelphia (as of 2003)	~ 5,000 children ages 6mth-5yrs or 5%
Remediation methods	Replacing lead surfaces, over-painting lead surfaces, and Superclean
Currently responsible for remediation in Philadelphia	Philadelphia Department of Health with HUD grants

Lead Paint, the Most Common Source of Exposure in Philadelphia

Lead was the most common additive to pigments used in paint for housing between the years 1900 and 1977. It made the colors brighter and the paint more opaque (www.oldhouseweb.com). Soon after its widespread use, homeowners began to complain of headaches, stomachaches and dizziness. In 1928, lead paint companies began to collect

* A complete list of the health effects of lead as well as 200 other diseases caused by environmental toxins can be found at the Collaborative on Health and the Environment website sponsored by the CDC: http://www.protectingourhealth.org/corethemes/links/2004-0203spreadsheet.htm

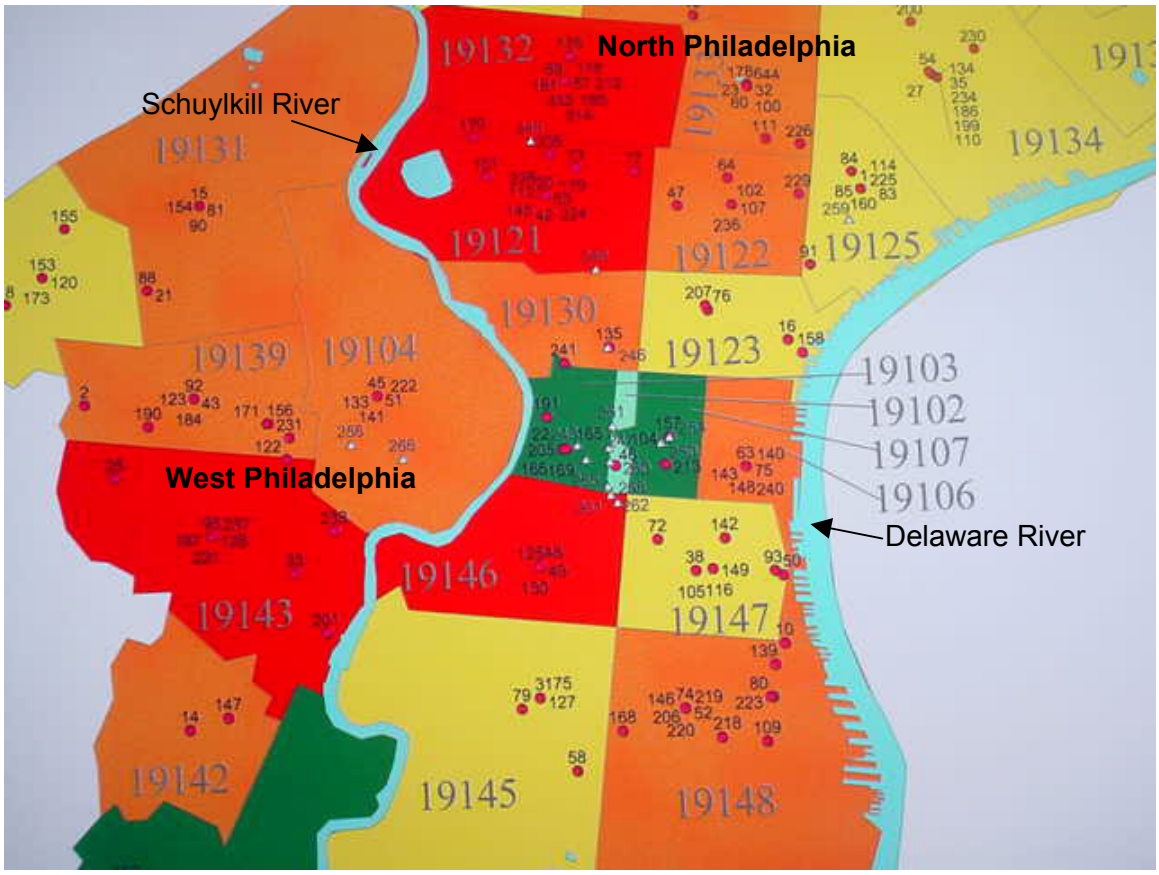
information and fund studies about the effects of lead exposure in order to discredit claims that lead is hazardous and can cause these ailments. Although these reports concluded that lead was indeed harmful to humans, most manufacturers of lead paint continued to misrepresent the safety of lead paint to consumers as well as to legislative bodies considering the regulation or banning of lead paint.

Only in the 1940s and 1950s did the paint manufacturers admit to being "aware of the hazards of lead paint to young children...."[7] Philadelphia officially made lead poisoning a reportable disease in 1950, and throughout the 1950s and 1960s, the city funded programs and studies to determine the extent to which lead paint caused lead poisoning in children. In 1966, Philadelphia enacted an ordinance that banned the use of lead paint on residential walls, required all paint containing over 1% lead additive to be clearly labeled,[8] and required that property owners remove lead paint from buildings where children would be exposed.[9] The city funded inspections and occasional abatement of lead paint hazards in public and some private buildings in accordance with this ordinance.

The complete removal of lead is expensive however, and families that could not afford to renovate their houses or relocate could only stay in the older houses. In Philadelphia there are many neighborhoods where houses are passed down through the generations or only sold to close friends or relatives in order to keep family ties strong, an important element to small neighborhood culture in Philadelphia. This keeps the market

[7] *City of Philadelphia v. Lead Industries Ass'n, Inc.,* 994 F.2d 112 C.A.3 (Pa.) (Amended Complaint 73, App.: 290-91.) (1993)
[8] Philadelphia Dep't of Public Health, Regulations Relating to Labeling, Application and Removal of Lead Paint § 6- 403(1)(d) (June 27, 1966)
[9] *Ibid.*, Philadelphia Department of Public Health

price of housing in certain areas low, and tends to reinforce the high density of certain races or nationalities in neighborhood pockets throughout the city. When these houses with lead paint owned by families too poor to renovate the houses are passed to future generations or friends who also cannot afford to live elsewhere or renovate the houses, the predominant result is neighborhoods in Philadelphia inhabited by low-income families of a specific race. In inner-city Philadelphia, which is predominantly African American in demographics, this means there are a few regions of Philadelphia almost exclusively inhabited by African American families, where the lead in housing has not been addressed by home-owners due to lack of funds. This result is apparent when the blood lead levels of children are tested and mapped to show the regions of Philadelphia with the highest lead exposures (Figure 1). As the map shows, the areas of North and West Philadelphia, where there are older homes generally inhabited by African Americans, are the most toxic areas.



The City of Philadelphia

Figure 1: Percent of Children Tested with Lead Levels Higher than 10µg/dL by Zip Code (MSPGP 2004)

0-10 %
10-20 %
20-30 %
30-40 %
40-50 %

This map shows the percentages of lead exposed children in Philadelphia and includes the numbers of the schools located in the areas. Notice the areas with the highest lead levels are West Philadelphia and North Philadelphia, areas that have high African American populations and older non-renovated housing. The lowest lead area in Philadelphia is Center City, where the residences are more expensive and are renovated or re-built more frequently.

In 1977, Philadelphia signed a consent that reaffirmed to federal authorities that it would remediate lead hazards in public housing.[10] Because in the 1966 ordinance Philadelphia had defined lead paint as paint containing more than 1% lead additive, this ordinance conflicted with the Lead-Based Paint Poisoning Prevention Act passed by

[10] *City-Wide Coalition Against Childhood Lead Paint Poisoning v. Philadelphia Housing Auth.,* 356 F. Supp. 123 (E.D.Pa.1977).

Congress in 1976, which defined lead paint as paint containing more than 0.06% lead,[11] the current legal definition today.[12]

Remediation of Lead in Philadelphia

There are generally three ways of abating lead in residential homes. First, and most expensive, is to completely replace the insides of houses, including new doors, new floorboards, new walls, etc. to completely rid lead from the house. Second, which is a common method used by the Philadelphia Health Department, is to scrape away peeling paint to a smooth surface and repaint the surface with non-lead-based paint. The third method, which is used when lead dust is the main problem in the house, is to have the house "Supercleaned" with a powerful HepaVac vacuum to pick up lead dust. These methods are all termed secondary prevention, because they are performed after exposure has already occurred in order to prevent further exposure. Because the damage that lead inflicts on the brain is irreversible, the only thing that can be done to finally ameliorate lead poisoning in children is primary prevention of lead poisoning by remediating the paths of exposure (CDC 1991).

Although the solution to this public health crisis appears to be immediate renovation of public schools and old homes, beginning with the public housing projects built by the U.S. Department of Housing and Urban Development (HUD) before 1978, this is quite an expensive endeavor. The Philadelphia Department of Health established a Childhood Lead Poisoning Program (CLPPP) in 1971 to identify the children exposed to lead and prevent their further exposure by working with the children's pediatricians. In

[11] Philadelphia Department of Health, Pub. L. No. 94-317, § 204 (c)(1), 90 Stat. 706 (1976)
[12] Philadelphia Department of Health, Lead-Based Paint Poisoning Prevention Act U.S.C. § 4841(3)(B)(ii) (1988 & Supp. II)

1988, Congress amended the Lead-Based Paint Poisoning Prevention Act which resulted in requiring that the city of Philadelphia as well as the Philadelphia Housing Authority (PHA) notify all tenants of HUD housing built prior to 1978 about the risks and sources of lead exposure and what they could do to protect themselves. Philadelphia and the PHA were also mandated to cover or remove lead-based paint from all HUD housing built before 1978;[13] however HUD was not required to fund this renovation. To effectively eliminate the lead problem in Philadelphia, the City and the PHA were required to pay for inspecting HUD and privately owned housing, removing lead paint from public and private residential properties built or painted prior to 1950, testing individuals to detect elevated lead blood levels, treating city residents for exposure to lead paint, educating the public about the hazards of lead paint, and recovering liability imposed on plaintiffs in their capacity as property owners for personal injury arising from the ingestion of lead paint.[14]

Because the city was suddenly required to sponsor this expensive project, which would cost approximately $100,000,000, without any help from federal funding, they brought a lawsuit against lead paint manufactures in 1993, particularly the Lead Industries Association (LIA) including NL Industries, Inc., Atlantic Richfield Company, The Sherwin-Williams Company, The Glidden Company and Fuller-O'Brien Corporation, all of which are lead pigment manufacturers. However, the liability of the LIA could not be established. The City of Philadelphia, but not the PHA, was ordered responsible for remediating lead hazards in Philadelphia public housing.[15]

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[13] *Ibid.* The Lead-Based Paint Poisoning Prevention Act
[14] *City of Philadelphia v. Lead Industries Ass'n, Inc.,* 994 F.2d 112 C.A.3 (Pa.) (Amended Complaint 23, App.: 271-72.) (1993)
[15] *City of Philadelphia and the Philadelphia Housing Authority v. Lead Industries Association, Inc.,* 994 F.2d 112 (1993)

In 1997, the administration of President Bill Clinton established The President's Task Force on Environmental Health Risks and Safety Risks to Children, Executive Order 13045, in 1997 in cooperation with the USDHS and the EPA. This program included proposals to remediate the lead problems in affected areas nationwide by targeting grants for low income housing, improving early intervention through the expansion of blood screening, funding research to improve prevention and reduce the cost of controlling lead hazards, and periodically monitoring affected areas. Congress appropriated $6.5 million to HUD in 2002 to assist in implementing these goals, although under the Task Force Executive Order and its sub-project Operation Lead Elimination Action Program (LEAP), HUD was required to give $67 million in grants to 25 cities for educational programs about lead, remediation of lead in low-income housing, and research.[16] Philadelphia was granted a large portion of this money because of the dire lead situation as well as the increased efforts among various community and medical groups in the city to enforce lead abatement and screening as well as education of the public. This money is currently what the PDPH uses to remove the lead in affected homes. The federal government also provides funding for ChildLink for children ages 0-3 and Elwyn for children ages 3-5, which are Philadelphia-based therapeutic services for developmentally delayed children.[17] Parents can refer their children to these services if they notice delays in speech, coordination, learning skills, and adaptive skills. Figure 2, below, gives a concise history of all the events concerning lead in Philadelphia in relation to one another.

[16] Exec. Order No. 13045: The President's Task Force On Environmental Health Risks And Safety Risks To Children Activities And Accomplishments, April 14, 2003

[17] ChildLink and Elwyn programs on the Philadelphia Health Management Corporation website: http://www.phmc.org/early/early.html

1900 – Lead paint begins to be used commonly in residences
1928 – Lead paint manufacturers begin to research effects of lead exposure
1940-1950 – Lead paint manufacturers admit they are aware of the hazards to children
1950 – Philadelphia officially names lead poisoning a reportable disease
1950-1960 – Philadelphia investigates the extent to which lead paint causes lead poisoning in children
1960 – Trigger level for lead exposure defined as 60µg/dL by DHEW
1966 – Ordinance banning lead paint containing more than 1% lead enacted
1971 – Childhood Lead Poisoning Program (CLPPP) established by the PDPH
1972 – Trigger level for lead exposure lowered to 40µg/dL by DHEW
1976 – Congress passes Lead-Based Paint Poisoning Prevention Act (LBPPPA) defining lead paint as 0.06% lead
1977 – Philadelphia reaffirms ordinance of 1966 (defining lead paint as 1% lead) and promises to remediate lead
1978 – Trigger level for lead exposure lowered to 30µg/dL by CDC
1978 – EPA bans use of lead paint in residences
1988 – Congress Amends the LBPPPA requiring the PHA notify tenants of HUD of lead risk
1991 – Trigger level for lead exposure lowered to 10µg/dL by CDC
1993 – Philadelphia sues LIA lead paint manufacturers
1997 – Executive Order 13045 enacted
2002 – HUD announces project LEAP in which they will fund locally run remediation efforts

Figure 2: A Timeline of Lead in Philadelphia This timeline incorporates all the events concerning lead in the U.S. and Philadelphia, tracking the increase in knowledge about lead and the policies that went into abating its presence in residences to decrease the risk of exposure for children.

Lead and its Connection with Delinquency

The neurological damage resulting from exposure to lead can result in abnormal behavior, exhibited through increased irritability and violence, learning disabilities, mental retardation, and other functional difficulties. The social effects of these abnormal behaviors through disciplinary actions, peer isolation, falling behind in school, drug abuse, domestic abuse, and a lack of understanding about the basis of an individual's impairments may also compound the neurological damage, resulting in psychological trauma, which studies show can cause other types of brain damage (Rosen, Mushak 2001). Additionally, lead exposure is known to cause attention problems for children (Minder, *et al.* 1994) making academic success and effectively adapting to society difficult. All these conditions have been known to result in an individual's decreased

ability to function in society or possess adaptive skills. Inability to function in society often results in deviancy, and at times the deviancy that is a symptom of an individual's neurological damage is so seriously a breach of the mores of social structure that it is viewed by our legal system as criminal. Therefore lead poisoning is not simply an individual's disease, but is a disease that affects the society as a whole.

Lead and PSSA scores

The Pennsylvania System of School Assessment (PSSA) standardized test is the nationally accepted gauge of the amount of curriculum students of Pennsylvania learn in schools, and is the basis for federal subsidizing through the "No Child Left Behind" Initiative begun by the President George W. Bush administration. It is therefore a reasonably acceptable measure of the education students are able to absorb in schools, as well as an indication of the quality of the schools themselves. Joseph Merlino is the project director for the Mathematics and Science Partnership of Greater Philadelphia based at La Salle University in Philadelphia, PA. When he saw the map of lead levels in Philadelphia shown above in Figure 1, he thought it was a map of PSSA scores by region using his knowledge of the areas of schools that tended to score in ranges higher or lower than other areas (Simmons 2005). He realized the areas on the map that showed high lead levels were the same areas where the schools that had low PSSA scores were located. He investigated this connection by correlating the amount of lead exposure in children in certain areas based on information from the CDC and Pennsylvania EPA, with the PSSA scores from the schools in those same areas. His work shows that there is a very strong connection between the percentage of lead children are exposed to and their scores on the

PSSA test (Figure 3) (MSPGP 2004). The correlation between lead levels and scores on standardized tests is a compelling argument for the effects that lead has on intelligence as well as with behavior problems like ADD or ADHD which also prohibits children from being able to achieve in school.

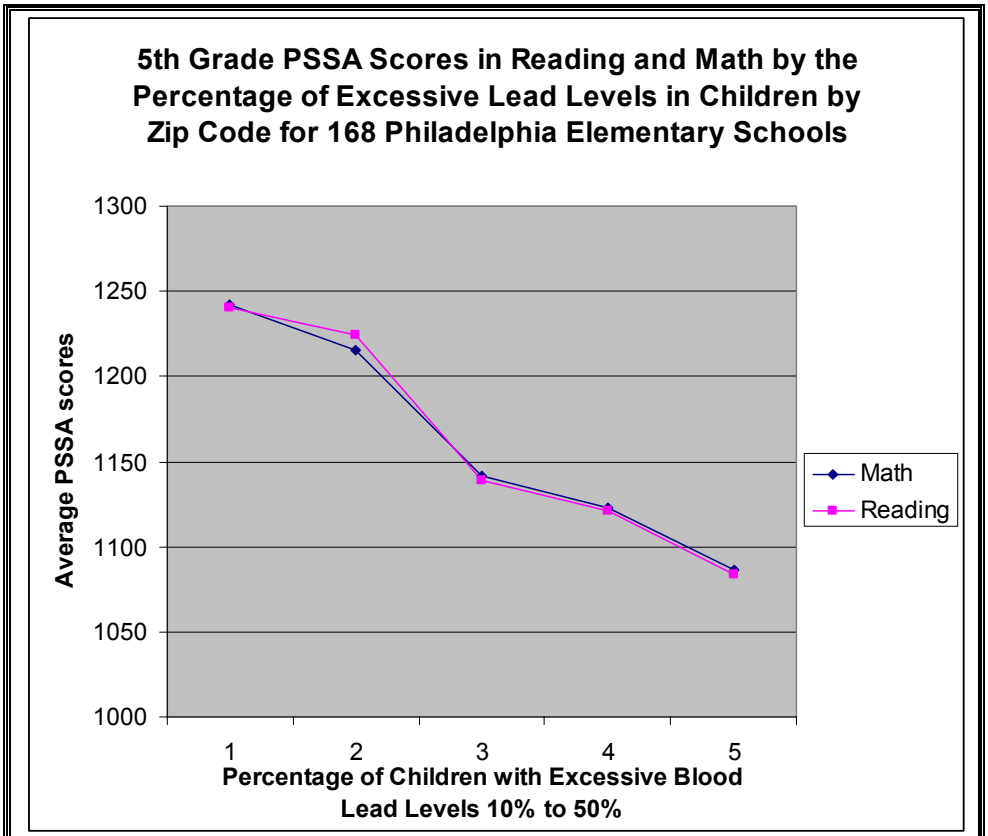

Figure 3: PSSA scores correlated with school-children's lead levels (MSPGP 2004) The scores for both math and reading on the PSSA decrease as the percentages of children with lead levels higher than the level deemed safe by the CDC increase, showing the negative correlation between lead exposure and academic achievement.

The Biosocial Study

Between 1952 and 1962, the Pennsylvania Hospital in Philadelphia began a study of 987 subjects and their families in one of the country's largest studies of biological, sociological, and environmental predictors of crime, contributing to the

"Biosocial Study" which stemmed from the Perinatal Project.[18] The Biosocial study was a project funded by the U.S. Department of Justice to study factors in childhood development related to crime in the U.S. (Denno 1988). The study examined factors in the development of the babies born between these years that were selected according to existing theories about predictors of crime. These included early central nervous system development, intelligence and laterality, physical growth and development, neurological status, the presence of attention deficit disorder and hyperactivity, and general physical health (Shaw, McKay 1972; Reiss, Roth 1993; Patterson 1991; Lemann 1991). The subjects were assessed by examining their public school records, the Perinatal Project's data set of the subjects' early biological and environmental factors, and official police records for juvenile and adult offenders. The study concluded that the most significant predictor of crime in Philadelphia among these subjects was lead poisoning. Although the study also upheld previous findings that social and financial factors consistent with life in urban areas were also predictors of crime among the subjects (White, *et al.* 1990), the Biosocial study found that the environmental factors, and most particularly exposure to lead paint, were the most compelling predictors of crime above all others. Figure 4, below, documents the five common predictors found in the study for adult crime, juvenile crime, and disciplinary problems at school, and in each category, lead poisoning is one of the most common factors.

[18] The Perinatal Project was a study conducted by the National Institute of Neurological Diseases and Stroke in 1957 to study the biological and environmental influences on pregnancy, infant and childhood mortality, and physical, neurological, and psychological child development. The study followed the children in the study until age 7. The Philadelphia hospitals of the 15 medical centers participating in this nation-wide study were the Pennsylvania Hospital in Philadelphia and later the Children's Hospital of Philadelphia, which studied the children born between 1956 and 1966 (Niswander, Gordon 1972). The data from this study was later integrated into the Biosocial study.

Factors in Predicting Adult Crime

1) Number and seriousness of juvenile offenses
2) Father's low educational level
3) Mother's low educational level
4) **Lead poisoning**
5) Number of gaps in the father's employment history

Factors in Predicting Juvenile Crime

1) Number of disciplinary problems at school
2) Amount of time the father was unemployed
3) **Lead Poisoning**
4) Abnormal Speech
5) Low language achievement

Factors in Predicting Disciplinary Problems in School

1) **Lead Poisoning**
2) Anemia
3) Left-handedness
4) Foster parent status
5) Frequent household moves

Figure 4: Predictors of Juvenile and Adult Crime (Denno 1990) In the Philadelphia branch of the Biosocial study, the five most common variables associated with the development and personal histories of offenders was documented, showing that lead poisoning was common to all three deviant groups.

Lead Poisoning was the only factor to affect each of the three variables of criminality in the study, clearly showing that the effects of lead are the most common, pervasive, and enduring factors leading to crime. What is interesting about the fact that lead poisoning is most commonly the main predictor of disciplinary problems in school more so than juvenile crime and adult crime is that the effects of lead poisoning in childhood creates a snowball effect of delinquency. Disciplinary problems at an early age can escalate to more serious exhibitions of deviancy as children get older (Denno 1988), and academic failure resulting from constant disciplinary actions taken against children or the children being singled out as "bad" or "misbehaved" can lead to leaving school and

becoming involved in gangs, drugs, petty crime, etc. If the initial acts of delinquency in the school setting seem to be attributed most commonly to lead, then lead poisoning in childhood, combined with the social escalators in deviancy for children already experiencing the behavioral effects of lead, can lead to criminality in the juvenile years, and subsequently, the adult years (Wolfgang, *et al.* 1972). Also contributing to the snowball effect and further showing that childhood affects subsequent deviancy, is that the most common predictor of juvenile crime is the exhibition of disciplinary problems in school, and the most common cause of adult crime is the number of juvenile offenses. Therefore, it is logical to draw the path of deviant behavior through an offender's lifetime from lead poisoning, to disciplinary problems in school, to juvenile crime, and then to serious adult crime.

Additionally, some of the effects of lead poisoning, including behavior disorders such as Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD) have been linked with learning handicaps and behavioral disorders, which in turn can cause academic failure, a predictor of crime and anti-social behavior in and of itself (Wolfgang, *et al.* 1972; Denno 1988). Studies conducted in Boston (Bellinger, *et al.* 1987, 1992; Cowan, Leviton 1980; Needleman 1987; White, *et al.* 1993), New York (Mendelsohn, *et al.* 1998), Chicago (Binns, *et al.* 1994), Pittsburgh (Needleman 1990), Cincinnati (Dietrich *et al.* 1987, 1992, 2004), and other regions of the U.S. have produced the same results where lead exposure was a factor in childhood development. In addition, studies connecting lead exposure and the neurological and behavioral effects on children have been conducted in other countries besides the U.S., including England (Yule, *et al.* 1984; Smith 1989), Scotland (Fulton, *et al.* 1987), Denmark (Hansen, *et al.* 1989), Greece

(Hatzakis, *et al.* 1989), Australia (Baghurst, *et al.* 1992), China (Shen, *et al.* 2001), Croatia (Prpic-Majic, *et al.* 2000), and the Slovak Republic (ŠOVČÍKOVÁ 1995).[19]

The Needleman Studies on Lead Exposure in Philadelphia

Dr. Herbert Needleman of the Psychiatry Department at University of Pittsburgh has conducted several studies in the past decades dealing with children's exposure to lead, sources of lead exposure, and social, behavioral, and neurological consequences of lead exposure. One study he conducted with Philadelphia school children measured lead amounts in the tibias of a group of 11-year olds ranging in their risks for deviant behavior. The amount of lead in their bones was correlated with reports from teachers and parents, structured and standardized data forms including the Child Behavior Checklist (CBCL), the Self-Reported Antisocial Behavior Scale (SRA) and the Self-Reported Delinquency Scale (SRD), all of which are regularly administered at different ages by the children's teachers and parents. The study concluded that lead exposure is associated with an increased risk of delinquency, and that the degree of delinquency worsens with increased exposure as children age (Needleman 1996). In addition, Needleman concluded in several other studies that the amounts of lead exposure varied among neighborhoods in Philadelphia, and that the areas with highest levels of lead exposure tended to be largely inhabited by African Americans (Needleman 1974). This disparity coincides with the fact that the neighborhoods that have older homes, public housing, or public schools that have not been renovated since lead paint was banned in 1978 are largely inhabited by African Americans in Philadelphia.

[19] For a list of more studies concerning lead exposure and childhood development in the U.S. and abroad, see the website at Wayne State University's Center For Urban Studies in Detroit, Michigan: http://detroitleaddata.cus.wayne.edu/resources-annotated_bibliography.asp

Low intelligence, another effect of exposure to lead, is also often a predictor of criminal activity and anti-social behavior (Denno 1988). Children's intellectual and academic abilities, measured by various intelligence tests like the Wechsler Intelligence Scale for Children-Revised (WISC-R), the Stanford-Binet, the McCarthy Scale, the British Ability Scale, and the Kaufman Test of Educational Achievement (K-TEA), have been proven to drop during the course of childhood development with even trace amounts of lead well under the 10μg/dL trigger level set by the CDC (Bellinger, *et al.* 1992; Baghurst, *et al.* 1992; Needleman 1990).

Studies have recently connected lead poisoning with aggressive behavior and violent tendencies as well. One study, conducted in 2003 by the UMDNJ-New Jersey Medical School in Newark, NJ, tested lead dosage and aggressive behavior by giving a sample of cats differing amounts of lead in their food, and stimulating the part of their brain that controls behavior with electrical impulses at varying currents. They concluded that increased amounts of lead can cause more aggression in social behavior and increased predatory attack behavior (Li, *et al.* 2003). Although there may be complications applying this study directly to humans, the researchers in this project maintain it shows the direct relationship between lead and anti-social behavior, and that an experiment like this attests to the possibility that behavior and actions can be influenced by environmental sources, not simply by free will. This is one example of a study which reinforces assertions made by Needleman about the possibility that lead poisoning can directly cause anti-social behavior, a point which would come under attack when it was first introduced by Needleman in his 1974 study.

The Controversies Surrounding Needleman's Studies

These studies connecting lead with anti-social behavior are not without their critics. Terrie E. Moffitt, Ph.D., from the Department of Psychology at University of Wisconsin responded to the 1996 study by Needleman with some skepticism about the validity of measuring delinquent behavior using the reports described in the study. She further questioned whether these reports represented delinquency when they are written by the children, parents, and teachers, who may be biased or inconsistent in their responses. However, she did not say this necessarily means the overall findings of the study are inaccurate. She agrees that the measures of childhood antisocial behavior used in the study are "reasonably accurate and moderately predictive of adult violent crime." She goes on to say that the links found between lead exposure and anti-social behavior should be heeded (Moffit 1996: 404).

A medical doctor, Edgar J. Schoen at the Kaiser Permanente Medical Center in Oakland, CA, strongly disagrees with Needleman's findings beginning with his first study in 1974. Schoen stated in an accusatory article against Needleman and his colleagues that the nation's declaration of lead being the leading environmental hazard to children is based on faulty evidence, primarily introduced by Needleman. He says that Western Europe, though they are aware of the health risks of lead, have not lowered the trigger level of lead from 25µg/dL to 10µg/dL and are not funding money on remediating lead from communities. He believes the only reason the CDC has been funding studies and remediation efforts is because Needleman was a consultant to the CDC when constructing their policies for universal lead screening in 1991. He cites studies that he believes contradict Needleman's work, and criticizes Needleman, as well as other

researchers who have found the same connections between lead and delinquency, for drawing conclusions on insignificant results. Schoen also mentions the formal reviews criticizing Needleman's work, including one in 1994 with the ORI (Office of Research Integrity) (USPHS 1994), in which the accusations "fell short of the rigid current ORI definition of scientific misconduct" (Schoen 1999: 261-268).

The work Schoen cites to discredit Needleman's studies is that of Henrietta Sachs and Stuart Pocock. Sachs researched lead exposure in Chicago in the 1960's and encountered children with extremely high lead levels (Sachs, *et al.* 1970). She said in a letter describing her return to her site 20 years later that there seemed to be no difference in social functioning between those exposed to lead and those that weren't, although this conclusion was not based in the scientific methods of a study (Sachs, *et al.* 1993). Pocock, a professor at the London School of Hygiene and Tropical Medicine, maintains that, "It is very difficult to prove a causal link between low-level lead exposure and behavioural problems."[20] Pocock did not wholly accept that lead was the one cause of delinquency among the children tested, and that the children in the study could have come from backgrounds that lead to delinquency.[21] In light of a study like the Biosocial study, however, it is clear that even if other factors compound a child's tendency toward delinquency, lead is a major source of the early behavioral problems that lead to more serious deviance later in life.

Another skeptic of Needleman's work, Claire Ernhart, a psychologist and researcher on lead in studies similar to Needleman's from Case Western Reserve University, disagrees strongly with his work. Ernhart, who receives funding for her

[20] "Lead link to youth crime," BBC News Online, January 7, 2003: http://newswww.bbc.net.uk/2/hi/health/2632261.stm
[21] *Ibid.*, BBC News Online

research from the lead industry-funded International Lead Zinc Research Organization, came to opposite conclusions to Needleman, stating that there is no viable connection between lead poisoning and anti-social behavior. She also criticized Needleman's interpretations of his results, questioning his data collection methods (Ernhart, *et al.*1981, 1995). Ernhart is the foremost expert trial witness against the behavioral effects of lead, despite her questionable source of funding (Rampton, Stauber 2000). Incidentally, she was also accused of misrepresenting the conclusions in her own studies in 1982 (USEPA 1982).

Upon an investigation by the EPA of Ernhart's accusations of flawed results, the EPA found there were inconsequential statistical errors typical for a study of uncontrolled data (USEPA 1982). A public relations firm hired by the International Lead Zinc Research Organization interpreted the EPA's response as a rejection of Needleman's findings and sent a statement of this to journalists. Even when the EPA then reversed its previous statement and adopted Needleman's results, the firm continued to circulate its statement that the EPA rejected the studies, and Ernhart took it upon herself to formally charge Needleman of scientific misconduct in 1991 (Palca 1991). Needleman confronted his accusers in 1992, where Ernhart claimed Needleman had produced biased results.[22] Even without the biased variables, Needleman's overall findings were supported by other studies taken from sample cohorts by other researchers from around the world (Rampton, Stauber 2000) and the accusations were dismissed. After the ORI hearing in 1994, which Schoen mentions above, a former member of the Scientific Advisory Board (SAB) remarked, "There was controversy about the Needleman data because industry-sponsored

[22] Confidential Needleman Hearing Board Final Report. Pittsburgh (PA): University of Pittsburgh; 1992., (cited from Powell 1997)

scientists charged that Needleman falsified the analysis. But there were ample international data that supported Needleman's conclusions. His statistics may not have been ideal, but you can't fault the conclusions that he drew" (Powell 1997: 10).

The aspect of the Needleman studies both Pocock and Ernhart focus on in their criticisms is the lack of consistency in Needleman's findings. David Bellinger, who worked with Needleman on his later studies, offers that the inconsistencies to which they refer could be due to differences among subjects in the dosage and timing of lead exposures, differences in the places and ways the subjects were exposed, or differences in the distribution of genetic characteristics that affect lead metabolism, all of which are common problems when dealing with *in situ* exposure not controlled in a lab setting. These problems may also be why it has been difficult for anyone to conclusively find that lead will always affect children in the same ways, or express a "behavioral signature." (Bellinger 1995)

Whatever the motives of the dissenters of Needleman's work, they collectively conclude that lead has no significant effects on behavior, and that funding for more research and for cleaning up the lead that still exists in homes is not necessary. They recommend that remediation should cease despite the fact that people can still experience severe adverse health effects and even death, and despite the mantra of public health, the precautionary principle, that even if there is a slight indication that the public may be exposed to hazards, it is imperative that the public be warned.

Needleman recommended to the CDC in 1991 that the federal government fund the remediation of all lead from all housing containing lead in the U.S. regardless of the levels or the risk of exposure. His solution, besides being incredibly expensive, would

also create a risk of increased exposure for children while their homes would be renovated. When contractors remove lead paint from homes, whether by replacing surfaces, painting over lead surfaces, or Supercleaning, dust from the exposed lead is stirred up and gets into the air, creating higher concentrations of lead in the environment than were there previously. Although children are required by the Philadelphia Health Department to be removed while their home is being cleaned of lead, when they return to the home they frequently experience higher blood lead levels than before remediation (Lanphear 1998). Therefore, the solution is that remediation of lead in homes must be funded, but only for homes where there is such a serious risk of exposure to the children living in these homes, that their blood lead levels may cause them developmental problems.

Dr. Needleman's fervor for obliterating lead from all housing in the country is not to be dismissed as an optimistic fantasy. He continues to be an important voice in the anti-lead movement despite, or perhaps because of his extreme ideas. For this reason, his studies, particularly his most recent ones, continue to be an important driving force behind government and public support for lead remediation. Despite the controversy surrounding his first studies, Dr. Needleman's links between lead and anti-social behavior became even more compelling than those reported in his previous studies in 2002 when he examined 194 youths convicted in the Juvenile Court of Allegheny County, PA, and 146 non-delinquent controls from high schools in Pittsburgh, PA (also in Allegheny County). Lead levels measured from the tibias of the subjects using K X-ray fluorescence spectroscopy revealed substantially higher lead levels in the bones of the delinquent youths at an average of 11 parts per million (ppm) compared to 1.5 ppm in the

non-delinquent group (Needleman 2002). Dr. Needleman described this study, which was the first to show lead exposure is higher in convicted delinquents than in non-delinquents, as a positive step towards connecting lead poisoning with delinquency, stating "This study provides further evidence that delinquent behavior can be caused, in part, by childhood exposure to lead. For years parents have been telling their pediatricians that their children's behavior changed after they were lead poisoned, and the children became irritable, overactive and aggressive."[23]

Lead-Poisoned Children in Philadelphia: Case Studies of Individual Patients at the Children's Hospital of Philadelphia (CHOP)

The studies of groups of children, or "cohorts" as they are termed in the scientific studies mentioned in this section, are useful for showing general trends in particular urban areas, which is in turn useful as the basis for legislation or community action aimed at abating lead efficiently. However, studying the children who are exposed to lead in subject groups offers only the macroscopic view of the lead problem in Philadelphia. To see the problem from the individual's perspective, it is necessary to study some of the individual cases of lead exposure in children living in Philadelphia. By studying the individual, one may understand the attitudes families adopt toward the health problems of the children, as well as how the legislative bureaucracy is practically applied to the people who benefit from it. The following are case studies of children and their parents who came to the Lead Clinic at the Children's Hospital of Philadelphia (CHOP) for check-ups and blood-work to track the fluctuations of their blood lead levels. The case studies are based on observations while sitting in the examining room with the doctor, the

[23] *Ibid.*, BBC News Online

child, and the child's parent, as well as casual questions arising in conversation with the parents when the doctor left the room. The check-up involved a series of questions asked by pediatrician Carla Campbell, M.D., concerning the living situation, nutrition, behavior, speech, and other indicators of child development of the children. Dr. Campbell says of the revealing yet non-intrusive nature of these questions: "Because lead exposure involves so many aspects of the lives of the patients, it is one of the most sociological and anthropological health problems."

Patient 1

Patient 1 is a 2 year-old African American boy who was brought into the Lead Clinic at CHOP by his mother. When he first turned 2, his blood lead level was 26μg/dL. Because this is over the level deemed safe by the PDPH, the lead in the house was over-painted and inspected again at a later date by representatives of the PDPH. He was brought in to the clinic because less than 2 weeks after the lead was painted over in the house, he had gone to the emergency room for stomach troubles and constipation. His blood lead levels taken in the emergency room were 33μg/dL, well over his previous levels despite the newly remediated house. To find out what could have caused the exposure, Dr. Campbell asked questions about whether or not the child went to day care or to a friend or relative's house, if his father or any other family member is a mechanic, construction worker, or factory worker, or if any of their neighbors were removing lead from their homes, to all of which she answered no. His mother cleans the house twice a day with a wet rag to remove lead dust, and the family only drinks spring water.

However, Patient 1 has a habit of putting his fingers, paper, dirt, and anything else he finds in his mouth, and has recently started to bite his nails.

When asked about his nutrition, his mother replied that he doesn't like cheese or yogurt but drinks 4-5 eight-ounce bottles of whole milk every day, which makes him too full for other foods. His intake of iron is negligible, and his readings for iron taken at the emergency room show extremely low levels. Dr. Campbell explained that the more calcium and iron he eats, the more will be absorbed to counteract the depletions in calcium and iron caused by lead ingestion. In addition, the more a child eats in general, the less lead the stomach will absorb. These are secondary prevention measures, however, because the child is already exposed to high levels of lead. These steps are necessary while the lead levels are too low (under 40-45μg/dL) for the child to receive chelation therapy.

Patient 1 had the benefit of two therapists sent from ChildLink after his high lead levels were recognized. One worked on occupational therapy activities with the patient, using building blocks and playing games, while the other worked on the patient's speech. His mother says he is learning new words, and even as she answered questions, he pointed out the pictures of dogs, cats and "Nemos," or fish, on the wallpaper, saying the name of each animal and then the sounds they make. His behavior hasn't changed and he shows no signs of autism or ADD. However, he frequently hit his mother with closed fists while she spoke, hurting her at times so she called him "mean", and twice during the interview without any warning he burst into angry crying fits during which he was inconsolable. His mother attributed his overly aggressive behavior to his older brother's example, and said that when interacting with other kids the patient was "sometimes a

bully." This could either be a manifestation of the effects of his lead poisoning, merely a symptom of his home life, or both combined; however, it was enough to cause his mother some concern and embarrassment when he behaved in this way in front of his anthropologist observer and the doctor.

Patient 2

Patient 2 is a 28-month-old African American boy with a mild case of asthma and an affinity for sucking on his fingers, books and toys. The landlord of his mother's house hired contractors to rid the house of lead after he and his older brother, Patient 3, showed consistently high levels of lead. After a few months and a passed inspection of the house by the PDPH, the patient's lead levels have decreased from 22µg/dL to 14µg/dL. The brothers spend the weekends at his father's house in Atlantic City, NJ, and the mother does not know if he also brings them to his house in North Philadelphia or if either of his houses was inspected for lead. The patient's mother also has a brother who comes to visit the children and spends time with them. He is a mechanic, and does not usually change his clothes or shower before he visits the boys, and so may be exposing them to the lead on his clothes. The patient has a good appetite and a well balanced diet, and is of normal weight and growth. He is also able to form three- or four-word sentences, and can communicate on the level of other children his age. He is attentive and responsive, and pointed at things in his children's book, commenting to himself throughout the check-up.

Patient 3

Patient 3, the older brother of Patient 2, is 3 years old, has current lead levels of 13µg/dL, and grew up in the same environment as his younger brother. Patient 3, however, isn't nearly as talkative or responsive as his brother. Both brothers received ChildLink sponsored speech therapy when their lead levels were first detected, but as of this check-up, they had stopped their sessions. Patient 3 has become less oral than he was when he was younger, but he still puts toys in his mouth. His mother said the boys don't go outside very much, so it is doubtful his past high lead levels are due to eating or breathing lead from soil. While Dr. Campbell asked him questions such as "How old are you?" or "Do you go to school?" the patient responded with a minimal headshake if at all, and only after several repeats of the questions. Dr. Campbell asked his mother if he is shy, but concluded after the check-up was over that the patient would probably benefit from further sessions with the ChildLink speech therapist, since children of his age should be able to speak in full sentences and should be much more responsive and expressive. His mother had to help him dress back into his clothes while his younger brother managed to put on all his clothes except his shoes without help.

Patient 4

Three-year old Patient 4 is an African American girl who has lived since her birth with her mother and grandmother in a house that had its lead paint over-painted by the PDPH in the summer of 2004. Since then, there has been no new chipping or peeling of the paint that covers the lead paint in the house. Her lead levels dropped from 33µg/dL in January 2005 to 21µg/dL at the time of the check-up. The patient attends daycare, which

is free of any lead paint, and has become less shy compared to her last check-up. The patient never had any sessions from ChildLink, but the functions of therapy are provided by daycare and interacting with other children. She looked at a book, asked for the juice on the windowsill she was unable to reach, and played peek-a-boo to pass the time while her mother spoke with Dr. Campbell. Her mother cleans the house with a wet rag twice a week and the patient hasn't shown any other signs of lead toxicity, such as vomiting, constipation, or other stomach problems. Her diet and appetite are good, and she seems to be getting enough calcium and iron to counteract her stomach's absorption of lead, which may account for no other exhibition of her still high lead level around the time of this check-up. She never stayed still or quiet throughout the check-up, but this is maybe due to her age and the hour she had already passed in the clinic before and during the check-up.

Patient 5

Patient 5 was admitted to the emergency room of CHOP for chelation during field observations at the clinic. The 2-year old received intravenous EDTA chelation to cleanse her body of her 80µg/dL lead level. The hospital generally administers chelation in the emergency room when blood lead levels are 40-45µg/dL or higher. Dr. Campbell was consulted about her case between her scheduled appointments. She explained that this patient has been admitted to the emergency room twice before with levels of 44µg/dL and 45µg/dL, respectively. The patient was frequently seen nail biting and sucking on her fingers, and twice was seen to lick the floor. The home her family occupies is rented, and their landlord has not yet taken any steps toward cleaning the lead from the home.

Landlords by law could have their licenses revoked for failing to address high lead levels on their premises. Renters are not obligated to pay rent for the period of time between discovery of the lead in the house and the completion of the remediation of the lead. Nevertheless, renters are not always aware of their rights, and some landlords are never forced to rid their property of lead, even when tenants show high blood lead levels. Dr. Campbell recommended alerting the PDPH of the situation so that the home might at least be Supercleaned while the patient completes her five-day chelation process in the hospital.

Patient 6

Patient 6 is a 21-month-old African American foster child who came to the clinic with his foster mother. He had been removed from his biological parents' home where he lived for the first 3-4 months after his birth because it was deemed unsuitable for children, presumably due to the amount of lead in the house, although this was never clearly stated. The lead in his foster mother's home was in the process of being over-painted at the time of the check-up. His lead levels since early December of 2004 have steadily declined from 31µg/dL to his current level of 25.2µg/dL. His foster mother explains he doesn't put his hands in his mouth as much as he used to. He also doesn't lick the floor or eat paper as he used to, but he still puts his toys in his mouth. He hasn't had any stomach problems or shown any changes in behavior, but he should be starting therapy with ChildLink as soon as the paperwork is finished. The formalities for arranging ChildLink services for foster care children is more complicated because his records have to be sent to the Department of Human Services (DHS) before an

appointment with ChildLink can be arranged. His foster mother estimates people can understand half of what the patient says, which shows average development for his age. The patient was asleep for most of the check-up, so it was difficult to assess his behavior or speech; when he was awoken by Dr. Campbell's cold stethoscope however, he was very responsive, irritated about being disturbed. His calcium intake is healthy due to his partiality to cheese, and he takes polyvitamins to keep his iron intake levels normal.

Patient 7

Patient 7 is a 2-year old African American girl with asthma and a current lead level of 29µg/dL. She has been chelated twice, and came to the lead clinic so Dr. Campbell could check her recovery and see if her lead level is decreasing. The first time she was found to have high lead exposure, the lead in her house, which was owned by her grandmother and where she lived most of the time, was over-painted by the PDPH while the patient was moved to live with her aunt in Delaware. The PDPH inspected the house once the remediation was complete, however it did not pass the inspection, and the patient was chelated again while the house went through another over-painting.

The patient also lives with her father, who brought her in to the check-up, but because he moves around, living with several family members at different times, the lead status of the places he brings the child is unknown. The father was quite distraught during the check-up, angry with himself for forgetting to bring a bottle of milk for his hungry daughter with him when they rushed out of the house that morning. He was also preoccupied over a letter from a DHS social worker stating he would no longer be able to see his daughter if he didn't meet with her at the time she had specified. He was also

getting impatient with his daughter, who had freed herself from her stroller by unbuckling the strap across her waist and was busy exploring the little examining room, climbing under the examining table, peeking into the hazardous waste bins and attempting to climb up the pant leg of the observer, who suddenly wasn't quite objectively removed from the situation being studied.

Her father told Dr. Campbell she still likes to put things in her mouth, including her toys, coins, and her fingers. As he said this, she stuck her whole hand in her mouth, as if to prove it. The father said that when he is with her he watches every move she makes, but he is often too tired to follow her around, especially because she apparently is quite exploratory at home as well. He will hold her in his lap while watching TV to keep her from finding things to put in her mouth. The patient takes albuterol for her asthma, vitamins for her iron deficiency, and Chemet, the brand of succimer CHOP prescribes, mixed in applesauce to hide the disagreeable rotten-eggs odor, for her continued chelation therapy. A therapist from ChildLink recently contacted the father, whom he said would be coming to work with the patient every two months. Despite the high levels of lead the patient has experienced previously, as well as her currently high level of 29μg/dL, the patient is talkative and inquisitive, pleasantly smiling even when she bumped her head on the counter supporting the doctor's computer. Her inability to stay still, however, was quite obvious.

Comparing the Case Studies

All the patients I observed had some characteristics that are fairly typical for most lead-exposed children. The patients where all either 2 or 3 years old, which is when they

are just beginning to be mobile and curious about their environments. They are also most oral at these ages, putting just about anything they find in their mouths to learn what it is by taste and using things like their fingers and toys to suck on for comfort. All the children I observed were African American and lived in older homes in West or North Philadelphia, areas with the highest lead content according to the map of lead in Philadelphia, Figure 1 (see page 20). Although the Health Department requires that the children be relocated while their houses are remediated of lead, the children I observed all showed high lead levels for a period longer than the 30 days lead remains in the blood, although these levels were generally not as high as before the renovations, with the exception of Patient 1. Contractors who remove the lead from houses are supposed to be specially trained to contain the lead dust in the air as well as possible, and to prevent lead from being exposed in any area of the house when they are finished. However, when lead is stirred around, it becomes airborne and does not completely leave the vicinity for a month or longer. There are other sources of lead besides lead paint, although lead paint is the most common, and the doctor makes sure to check each possible source when assessing the children. The children I observed all came from houses that previously had lead paint, though the children that were obviously still being exposed usually had another possible source, such as the uncle of Patients 2 and 3 who was a mechanic, or Patient 1 who may have been exposed while visiting his aunt or playing with other children. These sources seem so omnipresent that it is often necessary for the parents to watch their children at all times and keep a constant vigil over what goes into their mouths.

The attitudes of the parents during the check-ups were generally calm, as if lead poisoning is something to be taken in stride. They asked few if any questions of the doctor, and didn't seem curious or concerned about the nature of the questions asked of them or of the signs for adverse effects they should be looking for in their children. Their lack of curiosity does not seem to be a symptom of neglect, and all the parents seem to have had genuine affection for their children and concern for them otherwise. Their behavior may be more a symptom of being accustomed to lead poisoning in their children and their neighbors, and bringing them to the lead clinic is not done in a spirit of alarm or anxiety, but rather as just another parenting routine. Lead is so pervasive in the neighborhoods in which these patients reside, and lead poisoning is such a common disease in the children from these areas, that to become anxious each time a child has high levels of lead in their systems would be exhausting and probably would not alleviate the situation anyway. The attitude that lead poisoning in children is something to be taken in stride not only an indication of the extent of lead exposure in Philadelphia neighborhoods, but also of the lack of education and awareness about lead poisoning and the permanent effects it can have on their children. The somewhat ambivalent feelings arising from this lack of awareness is a frustrating obstruction to the progression of movements among the inhabitants of the city to come together to get rid of lead for good. In order for there to be a unified interest group consisting of the people at risk for exposure demanding remediation of the lead in their houses before another generation is exposed, there must be a sense among the people that this issue is urgent and that the consequences of lead exposure are more far-reaching than delays in speech or frequent mood swings.

The questions asked by Dr. Campbell were standardized and asked of each patient's parent. Some of the questions dealt exclusively with the child's behavior, speech, and cognition to understand the development of the child despite the lead poisoning. The questions concerning development, IQ and social behavior are basic, standard information that needs to be assessed for every child exposed to lead. This underscores that most physicians do believe that lead can affect development and cause damage to the brain as well as the rest of the body. When asked about this, Dr. Campbell confirmed that the connection between lead and development is hardly even a question anymore among physicians who work with children exposed to lead, and that as far as she is aware, most physicians who examine children exposed to lead are very vigilant about their behavior and cognition. Although the reader should not assume that these observations were made by an expert in discerning behavioral problems or anyone in a position to diagnose any of the children observed, most of Dr. Campbell's patients seemed to be abnormally hyperactive, particularly Patients 1, 4, and 7. It is interesting that none of the children exhibited the same symptoms of lead poisoning in comparably high levels, though they were all of the same age, general body weight, race, and exposed from the same source, lead paint. Patient 3, who obviously exhibited some cognitive defects from his lead exposure, had a current lead level of 13μg/dL, whereas Patient 7, who had been chelated twice and had a current lead level of 29μg/dL, did not seem to suffer from cognitive effects as much as from hyperactivity. These discrepancies lend a more sagacious perspective of the studies done by Dr. Needleman and others, who were able to show that there were some trends in the effects of lead poisoning, despite some instances of somewhat disputed variables and results.

Although it would seem the problem of lead in the U.S. in general as well as in Philadelphia to some extent is being ameliorated and that the numbers of children being exposed is decreasing according to the CDC's data of children exposed over the last decade, the children who were affected by the high levels of lead far more common and rampant in the last century are now adults, trying to function in society with the effects of their exposure. In addition, those children who are currently being exposed to lead would benefit from a society that is able to better understand the implications of this environmental toxin for delinquency and execute justice more fairly when they become adults. Dr. Needleman's groundbreaking work in the area of lead exposure and behavior warrants further investigation into the area of responsibility for behavior when an affected individual commits crime. According to all the studies by Needleman and others, lead poisoning is a disease of poverty and is in no way the fault of the person afflicted. Therefore, lead poisoning, which causes increased aggressive behavior, low intelligence, learning disabilities, and anti-social behavior, all of which are known predictors of crime, should mitigate the culpability of the offenders afflicted with lead poisoning. Work begun by Needleman showing that convicted juvenile offenders often have lead poisoning can be extended to adult offenders, and in particular, criminals who receive the ultimate punishment who were raised in homes containing lead.

Specific Case Studies of Lead Exposure and Delinquency: Death Row Inmates from Philadelphia with Histories of Lead Poisoning

It is little wonder Philadelphia is dubbed the "Death Capital of the United States." One hundred out of the 135 inmates on Pennsylvania's death row are from Philadelphia, which means Philadelphia contributes more inmates to its State's death row than any

other one city in the U.S. (Dunham 2001). In addition, Philadelphia's death row is composed of 83.6% African Americans and has at least 25 more African American death row inmates than any other county of any state in the U.S., regardless of size (Dunham 2001). Considering most of the populations who live in areas affected by high lead levels in Philadelphia are African American, the lead problem in Philadelphia is a serious example of environmental racism, not only because the people exposed to lead will incur the early and immediate health detriments associated with lead, but because they may also incur the anti-social behavior, low intelligence, learning disabilities, and aggressive behavior sociopathies that are predictors of criminal activity, for which they will be punished by the State. Some examples of people who were exposed to lead as children and are now on Pennsylvania's death row are presented below, and are living examples of how lead exposure in these individuals are factors in their subsequent criminality.

Inmate 1

Inmate 1 was convicted in 1993 in Philadelphia County. The inmate has a history of severe childhood abuse, neglect, deprivation and family dysfunction. His mother drank during her pregnancy with him and he was beaten and humiliated by his mother and older brother as a child. He comes from an extended family with several members who have either severe substance abuse or alcohol problems, as well as criminal records. He suffered a severe adult head trauma, which precipitated a dramatic decline in his subsequent welfare. A subsequent series of traumas exacerbated his post-traumatic stress disorder, which itself arose from his history of severe childhood trauma. Affidavits and institutional records suggest that the inmate ingested paint chips as a child and also

ingested lead as a result of the old water pipes in the substandard housing in which his family lived. A neuropsychologist testified for his habeas corpus hearing that he believes lead exposure was one of the potential factors contributing to his brain damage.

Inmate 2

Inmate 2 was exposed to lead in his home as a child. The apartment in which the inmate grew up was so laden with lead paint that the city intervened and conducted an environmental remediation action to remove the paint and soil from the premises. The inmate was observed numerous times by his mother ingesting paint chips and was treated for lead poisoning at a hospital in Philadelphia. He was diagnosed as having limited mental capacity and was frequently subjected to disciplinary action in school.

Inmate 3

Inmate 3 grew up in Philadelphia and has documented exposure to lead through the ingestion of paint chips. He was diagnosed with mild mental retardation by two psychiatrists, organic brain damage, and schizoid personality disorder, and was a witness and victim of abuse, neglect, and drug and alcohol abuse as a child that they said substantially hindered the inmate's mental, emotional, and cognitive capacities. Among the numerous indicators of brain damage that led to his diagnosis were that his mother drank heavily while she was pregnant with him and at the age of six the inmate was in a car accident in which he was thrown forward and his head collided with the car's radio causing a head injury. His aunt testified that the inmate, his brother, and his cousin ate lead paint chips as children and all three became very ill. At the age of 10, the inmate was

treated at another hospital for a scalp laceration that resulted when he was hit in the head by a brick. As a young teenager, the inmate acted like a child and required his mother's assistance in getting dressed. Relatives who visited the home sometimes found Inmate 3 sitting at home undressed, dirty, and unkempt. One of his mother's boyfriends beat him throughout his teenage years. When the inmate grew older, he attempted to assist his mother by working but was unable to find and maintain employment.

Inmate 4

Counsel for Inmate 4 used lead poisoning as a component of his defense during his criminal appeal to supplement his claim of ineffective counsel during his capital trial in which he received a death sentence. When Inmate 4 was three-years old, he was brought to the hospital and chelated for severe lead poisoning. At age 8, the inmate and his family were seen by the Philadelphia Child Guidance Clinic because his "behavior at home and in the classroom has changed; he is behaving uncontrollably. Small problems get blown out of proportion and his temper goes wild so that at one time he wound up kicking a window in the school office and breaking it." [24] The Clinic diagnosed the inmate as suffering from an "Adjustment Disorder with Mixed Disturbance of Emotions and Conduct." The "essential feature of an Adjustment Disorder is the development of clinically significant emotional or behavioral symptoms in response to an identifiable psychological stressor or stressors." [25] An adjustment disorder with a "mixed disturbance of emotions and conduct" is diagnosed when the child violates the rights of others or

[24] Philadelphia Child Guidance Clinic, Report for Inmate 4 from 9/24/79
[25] Diagnostic and Statistical Manual of Mental Disorders, fourth edition: 623

violates age appropriate rules.[26] The inmate's school records show he was enrolled in special education and was barely passing with several unexcused absences and exhibitions of misbehavior. His school records also indicate he had a speech problem and went to therapy to correct it. Inmate 4 was evaluated by two forensic mental health professionals, each of whom concluded that the inmate suffers from organic brain impairment, which impacts his functioning and behavior.

Comparing the Inmates

Each inmate mentioned suffered from acute lead poisoning as a child, and exhibited symptoms of brain damage, low intelligence, problems in school, or problems in social interaction since childhood. In addition, several of the inmates also experienced other traumas that may have exacerbated the deleterious effects of lead to their brains. These other circumstances complicate the clear behavioral signature one would hope to find in persons who were exposed to lead as children and who later commit crime. However, when the early lives of the inmates become clear through school records or anecdotal testimony that the inmates as children had behavioral problems or was considered slow, as in the case of Inmates 2, 3, and 4, or when a neuropsychologist examining the inmate says the brain damage of the inmate is consistent with childhood lead poisoning, the case for attributing the brain damage to lead poisoning appears more compelling. Aside from the importance of making this connection between brain damage and lead, it is also apparent that the other factors that contribute to brain damage, for instance, in the relentless series of traumas, violence, accidents, and substance abuses of Inmates 1 and 3, each factor alone can cause brain damage, and each, arguably aside from

[26] *Ibid.*, Diagnostic and Statistical Manual of Mental Disorders, fourth edition: 624

substance abuse, was not caused by any fault of the inmates themselves. Therefore, the effects of the conditions of brain damage suffered by the inmates as well as the fact that they were not responsible for the causes of these environmental conditions, result in their lessened personal, willful culpability for the criminal actions they committed under the plight of the effects of their brain damage.

III. Applied Anthropology of Law

> ...We must not say that an action shocks the *conscience collective* because it is criminal, but rather that it is criminal because it shocks the *conscience collective*. We do not condemn it because it is a crime, but it is a crime because we condemn it.
>
> —Emile Durkheim[27]

An Overview of Legal Anthropology

Anthropology of Law is the study of culture observed through the lens of the structures that organize, govern, and maintain communities (Lowie 1927). Cultures are often defined by the morals and values held by the majority of a society, and these are often translated into laws by which members of that society must adhere. Laws, which are rules that determine the conduct of a community and the proper methods of administering justice and order, are present in some form in most organized societies and function to ensure the structure and sustainability of those societies. Laws reflect the moral attitudes and accepted customs and ideas of social organizations. They bind the society and make individuals unitary due to the law's application to all members of the society (Durkheim 1933). The legal systems they constitute often allow for their own

[27] Giddens, Anthony. 1972. Emile Durkheim: Selected Writings. London: Cambridge University Press.

creation, modification, or abolition as culture in the form of attitudes, customs, and ideas change over time. Culture is fluid and dynamic; it changes with outside influences and pressures, internal reforms, and environmental modifications either caused by the presence of that society or by natural geological processes (Sahlins and Service 1960). Therefore, laws are a reflection of and are shaped by culture. Having stated this, it is important to recognize that law is always a few steps behind culture. In order to modify a law, there must usually be a general consensus within the society (determined either in an egalitarian or democratic sense, or by members ruling or representing the society) about what has changed within the culture to make modifying that law necessary and appropriate for that cultural group. Law takes on the fluid nature of culture, and is a process, evolving with the culture yet maintaining the principles that define a society in the most basic sense (Comaroff and Comaroff 1999).[28]

Western Law and its Historical Influences

In the Western world, these basic principles are grounded in the principles of the Judeo-Christian tradition of the Ten Commandments as well as the other laws recorded in the Old Testament, which were said to be given by God to Moses so that he would be able to govern the Israelites once they reached the Promised Land (Kuntz 2004). Although this set of basic laws can be further traced to the most basic of human instincts

[28] The idea that culture and law is fluid is a contested idea, not universally accepted by anthropologists or theorists on law, especially in the case of global human rights. Some believe culture must be seen as hybrid rather than as relativist because the importance of laws and penalties on a global scale vary among cultures, whereas some believe there must be some standards shared by all cultures to deal with situations such as the Holocaust where the treatment of citizens was no longer the concern of one particular state (Cerna, Wallace 1945). While there should be some standards for international law at present, these should remain general enough that they adhere to basic notions of what constitutes human rights and should always be open for debate to permit even these standards to evolve. For another example of arguments against the fluidity of culture and law, see the section on Justice Antonin Scalia, pg. 75, *infra.*

about right and wrong as many American anthropologists believe (Radin 1927; Hoebel 1949), they are a tangible and permanent record of early, almost primitive laws concerning morality and social functioning. The influence that the Ten Commandments have over our society is made apparent by the placards engraved with these basic laws placed on the faces of many schools and courtrooms in the United States, signifying that the commandments are the roots of law in Western culture, and instilling in schoolchildren a respect for organized law comparable to their presumed respect for religion. Although the commandments are considered some of the most basic rules governing communities, also seen in other forms in societies not founded on Judeo-Christian traditions, the "rules" themselves may be interpreted by individual societies to fit their distinct values and ideas (Kuntz 2004). For instance, adultery is prohibited in the Old Testament, yet the laws in many countries allow for divorce and do not inflict penalties on people who commit adultery. People of the United States and other non-theocratic countries are not required to attend church, respect God, or refrain from worshipping gods other than the Judeo-Christian God. Killing is prohibited, but there are still systems of justice that execute people who have broken laws, including the justice system of the United States. Although the commandments may form the basis for law in Western civilization, 3450 years after Moses was said to have received the Commandments (Kuntz 2004), societies live by laws that reflect the values and ideas of cultures as they have developed since then (Radin 1927). Thus, moral standards within culture evolve, sometimes straying from the fundamental law but maintaining the intentions of the law.

The Significance of the Constitution in the American Legal System

The foundation of all laws in the United States is the Constitution. This document, created in 1787 when the United States declared itself an independent country, forms the basic structure of the American legal system, and can be viewed as a secularized version of the Ten Commandments in that it is intended to maintain social order. As amended by the original Bill of Rights and supplemented by additional changes to the Constitution in the 19th and 20th centuries, the Constitution covers the rights of citizens under the law, the administration of justice, and the locations and limits of power (U.S. Constitution Art. I, II, III, IV). The authors of the Constitution recognized that laws should be modified in a dynamic political process when the prevailing culture changes, in order to adapt to the inevitable changes in values and ideas the country would undergo. In this manner, they constructed the Constitution and its amendments to be permanent and universal to its citizenry, regardless of passing time or changing norms.

From this basic structure, legislators, judges, and to some extent the people, have formed laws that serve to complement or clarify interpretations of the intentions of the Constitution and its amendments. The Federal judiciary was fundamentally established as the interpreter and upholder of the Constitution in the *Marbury v. Madison*[29] decision of 1803, when the Supreme Court struck down an act of Congress because it was deemed "repugnant to the Constitution."[30] Decisions in all Constitutional cases heard in the Supreme Court result in laws that embody the contemporary interpretation of the Constitution. These interpretations change over time with newly appointed justices, the presentation of new objective evidence, and the acknowledgement of the sentiment of the

[29] *Marbury v. Madison*, 5 U.S. 137 (1803)
[30] *Ibid.*, *Marbury*, 138

majority of American citizens. All laws in the entire country must be consistent with the Constitution whether in the form of the federal law of the United States, State law in each of the fifty States, and in local jurisdictions of counties, districts, and townships. Laws vary among communities and States except in the case of federal laws, which apply to all citizens of the country. This system ensures that the laws which most affect citizens, that is local laws, are congruous with the way they live, their financial situations, their backgrounds, their political or moral beliefs; in short, the culture in this country of hundreds of cultures, which most closely pertains to them.

Research and Definitions in Legal Anthropology

One area of law studied by legal anthropologists deals with local legal systems existing in tight-knit communities, and is called popular justice. Genuine popular justice in preceding anthropological contexts is locally controlled and informal. The decisions and resolutions arising from popular justice reflect the norms and values of the community (Harrington, Merry 1988). It is a reflection of the ideology of the people of the community, and the emphasis of the resolution of conflict is the successful process of reaching agreement. Anthropologists have contrasted popular justice with the formal, structured process-oriented legal systems that are controlled by legal professionals who reach resolutions primarily through adversarial or negotiated processes (Merry 1992).

Legal anthropologists study the way people in small communities resolve conflict among their members for situations ranging from civil disputes to criminal activity. For example, the Zapotec legal system, as studied by Laura Nader, is a classic popular justice system as per the traditional definition. The Zapotec community is small and the

members know each other. Since the community is relatively isolated from the influences of outside cultures, they have a somewhat unified ideology and value system. Parties involved in a conflict meet in front of an impartial person elected by the community who only holds the position for one year without salary. He listens to the testimonies of each party and determines what is a fair resolution based on the standards of justice among the Zapotecs, where regardless of the outcome of the dispute, neither party is punished disproportionately to the injury that was caused. The decisions are generally agreed to be fair among the entire community, although this feeling arises more from the sentiment of the community rather than the determinant administration of formal laws. Social order is maintained by a communal sense of justice and fairness applied equally to all members of the community (Nader 1969).

The informal negotiations in Zapotec society have similarities to the American small claims courts legal processes according to Nader. A professional judge hears the complaints of parties involved in conflict in a judicial setting and determines how to execute justice in their cases. However, the rigidity and formality of American laws and the lack of familiarity between the judge and both parties, and sometimes between the defendant and plaintiff, results in a bureaucratic decision based on adherence to formal law. In contrast to the Zapotecs, most citizens are generally unfamiliar with legal processes unless they themselves are obliged to participate in the court system, usually with legal professional representation as support. Therefore, Nader argued that the formal bureaucratic standard in aspects of the American justice system, such as in the small claims court process, represents the opposite of popular justice because of the built-in

formality and lack of emphasis on the process of conflict resolution in an arbiter setting (Nader 1988).

Expanding the Limited Definition of Popular Justice

Popular justice, in its strictest sense, is locally controlled, informal, and nonprofessional, which provides a stark contrast to the far-reaching, highly structured and extremely professional United States systems of justice (Harrington, Merry 1988). However, popular justice must also be a manifestation of the norms of society (Merry, Milner 1992), and in this respect, laws and decisions arising from Supreme Court decisions are eventually in accord with societal norms. Eventually in accord, because it is always difficult to challenge the status quo regardless of the present mores of a society without a series of objective factors which must be presented to the Court as evidence of evolving moral standards.[31] These factors include state legislation, sentencing decisions of juries composed of citizen "peers", and the research and views of outside parties with relevant expertise, such as scientists or scholars. All these factors are mechanisms of democracy. They are the voices of the community, proving that the society can in fact influence the outcome of judicial decisions and the laws that arise from those decisions accurately and fairly.

Popular justice simply means justice of the people, and should hold no other connotations of specific community or justice system structure. Formal law and what is traditionally defined as popular justice may be compatible, and need not be entirely separate entities. Sally Engle Merry, a legal anthropologist studying the United States legal system, states that popular justice is best viewed as the legal institution on the

[31] *Coker v. Georgia,* 433 U.S. 584, 592 (1977)

boundary of formal law and indigenous law. Merry argues that state law is culturally the opposite of popular justice, but in practice its procedures are the same. Discussions in anthropology about popular justice tend to portray the concept as more distinct from state law than it really is. Popular justice ultimately tends to reflect the laws of the state rather than the community, even when it is applied locally, and even in community judicial settings, the standards of a table, a book of rules, and a judge mimic the formality of state law (1992). Whether local or national, societies have legal standards that have been formed by the notions of justice of those societies, and formal laws arise from these standards (Wolf 1982).

Peter Fitzpatrick also questions the standard distinctions between popular justice and formal law and argues that popular justice does not only exist in socialist or egalitarian societies. He says that popular justice can exist even in societies where there is formal legality as long as the laws come from the needs and desires of the community (1992). The laws that govern the people are either directly or indirectly created by or because of the people in our republican form of government. People elect the representatives who make laws that apply to them, and if those representatives value re-election, they presumably make laws reflecting what is best for their constituents. Justice that reflects the ideology of the people can exist wherever the interests of the people are being protected by the structures that govern it. Fitzpatrick calls attention to the need to redefine the concept of popular justice as an anthropological tool by recognizing that in Western societies popular justice exists, though in a form that contradicts the traditional definition (1992).

The rigidity of the definition of popular justice is challenged by the very strong connection between the law and the people that manifests when laws are created, changed, or abolished as the Constitution is reinterpreted over time. Popular justice is any system, formal or informal, which is created to govern and organize the people of a society, is responsive to the culture of the society, and is designed to be as dynamic as the society it serves. Popular justice is therefore important to keep in mind when forming a mitigation defense based on brain damage from lead exposure. Through the process of assessing the opinions of the national community, the Judiciary may decide there is evidence that the society has evolved to believe capital punishment is inappropriate for application to brain damaged offenders.

The Application of Popular Justice in the United States

There are a number of ways in which the community's needs and ideas take shape in the policies that affect them. First of all, communities elect the officials that represent them on Federal, State, and local levels. The terms of duty of these officials are never very long, regardless of the office they occupy. However, because most of these officials want to be re-elected, or at least want members of their political parties endorsed by incumbents to take the officials' place, elected politicians will often try to serve and please the members of their constituencies through their policies.

Anthropologists who define popular justice as local and non-bureaucratic argue this responsiveness to the people can only occur on the most local levels of government, and that genuine popular justice cannot exist on the Federal level because the policies are too general and remote to truly reflect the needs of such a diverse population (Abel 1982;

Santos 1982). Nevertheless, the Federal government is compelled to serve the people most effectively by the combination of political competition among parties for Federal government offices and control of the branches of government, and is more widely effective than local government in terms of power, funds, and influence. The Federal Government can handle broader issues such as the protection of universal rights of all citizens, control of the dynamism of the economy, and conflict resolution for incidents that require defense and aide for the people. Because it is general and broad, and because its policies affect the lives of all citizens of the national community, the Federal government is the most crucial form of popular justice in the United States.

It is difficult to apply popular justice to formal law when it is difficult to determine the national consensus about societal norms. The Supreme Court's usage of objective factors such as legislation, precedents in jury decisions, and unbiased expert information, to determine national consensus is a fairly accurate assessment of the cultural norms of the society, but other factors can reveal the norms of the national community as well. Demographic information about religious beliefs, political leanings, economic status, age, and racial or ethnic status, all of which are often influential in people's formation of their political ideologies, can be useful. Public opinion polls, covering a range of issues that affect the people, quantify the attitudes of the majority. In addition, the media, through television, radio, newspapers, and the internet cater to the news to which the majority wants to further expose themselves in order to maintain high ratings, so the political tone of the media can often reflect the views of the people. The rights of all citizens to freedom of speech and assembly, guaranteed by the First Amendment, allow activists who want to gain the attention of the public and policy-

makers about their stance on specific issues to demonstrate in public areas. Although demonstrations do not confirm a national consensus about an issue, enough demonstrations by enough people will, in principle, eventually cause the public as well as policy-makers to re-examine the status quo, and question the validity of existing laws in an effort to please a greater part of the population. Although these measures of national consensus are not as trusted and well-accepted by the judiciary as the three kinds of established objective factors currently allowed (state legislation, jury decisions in previous cases, and unbiased expert information), they may serve to supplement objective factors as well as to derive true assessments of public opinion and sentiment.

Popular Justice and Interpretations of the Constitution

To a certain degree, the Constitution was intentionally designed to be flexible and interpretable over time by accommodating political change on a solid platform of republican principles so that the laws generating from it would remain applicable, relevant, and acceptable by all citizens. A good example is why people can legitimately question the Second Amendment, permitting the right to bear arms, ratified at a time when a significant proportion of the citizenry relied on weapons for food and physical security in their daily lives, and enacted immediately following the Revolutionary War which made the United States extant in the first place (Levinson 1989). In more recent times, increasing violence and accessibility to firearms is taking precedence for the culture over the need to protect our country against British troops trying to reclaim the country over 200 years later. Likewise, although there is no provision for political parties in the Constitution, they have evolved into an integral part of how contemporary

government is constructed and operates in the development and interpretation of law. Amendments, though they are codified as permanent, can be altered with informal amendments (U.S. Constitution Art. V). In this way, the basic principle behind the codified amendment is stated explicitly, but it is made more applicable and appropriate for a changing society in a flexible manner through judicial interpretations of case law. For example, when the country was first founded and voting rights were to be decided by the States, most States only allowed white male landowners to vote. Subsequently, these laws were changed to allow all white male citizens age 21 and over to vote, regardless of property holdings (U.S. Constitution Amend. XIV). Later the laws were changed again so that all citizens regardless of race, gender, and economic status could vote, and then all citizens age 18 and over were subsequently enfranchised (U.S. Constitution Amend. XV, XIX, XXVI). The modification of voting laws over the development of the culture reveals the necessary fluidity of amplifying principles of law in a changing society without losing the fundamental principles underlying the law, in this case, the right to vote guaranteed by the Constitution.

The United States Supreme Court has been the decisive voice of the sentiments of the American citizens in several important interpretations within the broad confines of the Constitution. In the historically significant case *Dred Scott v. Sandford*[32] in 1857, a slave sued for his emancipation from his master because he was taken into territory that prohibited slavery under the Missouri Compromise of 1820. The Supreme Court ruled the Missouri Compromise unconstitutional because it violated the Fifth Amendment right not to be deprived of property without due process of the law. Because Scott was a slave, he was regarded legally as property, not as a person, and had no legal standing to sue in a

[32] *Dred Scott v. Sandford*, 60 U.S. 393 (1856)

court of law because he was not a citizen.[33] The legal principle that slaves were viewed as property rather than as citizens, even when they were born in the United States, was very much a reflection of the cultural ideology of the time, and is reflected in the original language of the Constitution. Slavery was still acceptable in the eyes of the Supreme Court in 1857, but it was short lived. Within the next decade, one of the political outcomes of the American Civil War established that the United States was legally, morally and ideologically against slavery. The thirteenth, fourteenth and fifteenth amendments to the Constitution codified and established the rights of all citizens, regardless of race or previous status as property rather than person, as integral to the original Constitution of 1787 (U.S. Constitution Amend. XIII, XIV, XV).

Applying the Constitution to a Dynamic Culture

By the decisions of the Supreme Court, Constitutional amendments and their intent are clarified and codified. The applicability of the amendments to various cases provides legal precedent for subsequent case law that can either be adhered to or challenged further in the legislative, executive, and judicial processes. Thus, although the judiciary does not change the amendments, the judicial interpretations of the amendments may change and new laws can arise from these interpretations that can be modified or abolished later if they become inappropriate or unpopular to the culture. For instance, before the Privacy Cases, it was acceptable under the Constitution that laws could forbid interracial marriage,[34] contraception,[35] or abortion,[36] but now that the prevailing culture

[33] *Ibid.*, *Scott*
[34] *Loving v. Virginia,* 388 U.S. 1 (1967)
[35] *Griswold v. Connecticut*, 381 U.S. 479 (1965), *Eisenstadt v. Baird,* 405 U.S. 438 (1972), *Carey v. Population Planning,* 431 U.S. 678 (1977)

finds these things to be acceptable and necessary to society, they were ruled to be allowed and to become protected rights under the law. In this way, subsequent laws and decisions modified the manner in which the original Bill of Rights has been implemented to permanently clarify their intent in a contemporary manner.

New amendments to the Constitution generally occur principally in the wake of significant cultural change (Vile 1993). To illustrate this point, below are amendments that most compellingly reveal the culture of the times at which they were created:

- Amendment XIII (1865): Slavery was abolished at the end of the American Civil War after the North, which collectively heralded the liberation of slaves, defeated the South which was largely dependant on slaves for their agricultural economy.
- Amendment XVIII (1919): All alcoholic beverages were prohibited from being made or sold in the United States after this amendment was ratified. There was an anti-immigrant sentiment that pervaded the U.S. in the early part of the 20th century due to the sudden increase in immigration into the U.S. after World War I. Social Darwinism, which argued that Northern European industrialized nations were superior because of their technological advancements over other nations, was very popular between the time of the Civil War and the 1920s, and justified racism against non-Anglo-Saxons. Because alcohol was more integral to the foreign cultures of non-Anglo-Saxon European and Catholic immigrants (mostly from Ireland, Italy, and Poland), and because the dominant Protestant Anglo-Saxon culture Post World War I desired higher standards of morality to

[36] *U.S. v. Vuitch*, 402 U.S. 62 (1971), *Roe v. Wade*, 410 U.S. 113 (1973)

offset the social problems in urban areas, alcohol was banned (Thornton 1991).

- Amendment XIX (1920): Women sought reform of the paternalistic, socially conservative attitudes society held about women before their right to vote was amended to the Constitution by holding public demonstrations across the country. By appealing to the public in this way, they challenged the society's existing notions about fundamental voting rights. By granting suffrage to all citizens regardless of sex, the nineteenth Amendment to the Constitution formally recognized the growing freedom women were gaining from their traditional social roles.
- Amendment XXIV (1964): The abolition of poll taxes signified the recognition of the poverty issues plaguing poor whites and racial minorities and the discrimination inflicted upon them which deprived them of their basic right to vote as citizens. The poll tax was one of several Jim Crow laws upheld by certain States that were designed to deny African Americans their civil rights. In the wake of increased public awareness of the Civil Rights movement of the 1960s and the shifting from acceptance of prejudicial portrayal in the culture of African Americans and low-income individuals to their being taboo and offensive in mainstream society, these laws were eventually abolished. This amendment provided that no U.S. citizen could be denied their civil rights as citizens, regardless of their social status or race.

- Amendment XXVI (1971): This amendment was ratified at the height of the Vietnam War in which citizens 18 and older were being drafted to serve, although they were too young to vote. Young people across the country demanded that the voting age should be lowered to 18 because it seemed only fair and just that citizens who could be sent to die for their country should at least be able to exercise the right to vote for their elected representatives. Besides this amendment being a reflection of the tumultuous times during the Vietnam War, it is also proof that the culture was becoming more focused on the youth of the country, and that those in power and older than the age group affected by this amendment began to listen to younger citizens and became more concerned about their contributions to the society. Also, this recognized a reflection of the lowering of the age of common responsibility and adulthood, and acknowledged the age classes of the society were defined to include age groups they did not before.

Even today in the United States, the George W. Bush presidential administration is pushing for an amendment to the Constitution defining legal marriage as between a man and a woman, and banning the marriage or civil unions of homosexual couples (www.whitehouse.gov). Although there have long been many individuals in this country against the marriage of same-sex couples who foster strong anti-gay sentiments, the rise of evangelical Christianity in the country and the growing popularity of the conservative values and morality of the Bush administration's policies, sometimes at the expense of

civil rights, has created an environment of support for an amendment that actually limits the rights of a minority population.

The amendment process requires passage in Congress and the ratification of legislatures in three-quarters of the fifty states, and so is very uncommon, as it was designed to be by the founding fathers of the Constitution (U.S. Constitution Art. V). The sensitivity of formal law to culture is especially exemplified when the amendments are applied to specific cases and the judiciary interprets the Constitution in order to provide a ruling basis in these cases. By the rulings of the Supreme Court, the principles of the Constitution are applied to the society it organizes, governs, and maintains in a dynamic, contemporaneous way.

IV. Using Objective Factors to Re-examine Traditional Notions of Culpability

> [T]he critical question may be not so much whether crime is indeed a disorder, but whether less than 200 years from now a more advanced society will look back aghast at our current conceptualization of criminal behavior, with its concomitant incarceration and execution of prisoners, with the same incredulity with which today we look back at earlier treatment of mental patients.
>
> —Adrian Raine[37]

The Influence of Popular Justice on the Interpretation of the Eighth Amendment

The Eighth Amendment of the Constitution states "Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted" (U.S. Constitution Amend. VIII). This particular amendment to the Constitution is brought into review nearly every time a death sentence is brought to the Supreme Court to be appealed.

[37] Raine, Adrian. 1993. The Psychopathy of Crime: Criminal Behavior as a Clinical Disorder. San Diego: Academic Press, pp. 243-244

Although State-sponsored execution is legal in many States, there is a faction of the population that avers that the death penalty itself is cruel and unusual punishment. This argument is one common reason that twelve States of the fifty do not implement the death penalty as a criminal punishment (DPIC). However, in public opinion polls, the collective culture, as represented by 72% of the population, supports the death penalty (DPIC), and so the existence of this institution demonstrates popular justice.

Regardless of the opinions of the collective culture whether or not the death penalty should continue to be implemented in the United States, individual cases and frequent complications in crime and punishment have caused the culture as well as the Supreme Court to question the implementation of the death penalty on everyone who commits a capital crime heinous enough to fit the criteria. Complications in the cases usually present themselves as circumstances in the cases of individuals that mitigate their culpability for crimes. These circumstances, when used as a criminal defense, are called factors in mitigation, and can theoretically include physical or mental trauma, abuse or neglect, mental illness or insanity, learning disabilities, behavioral problems, lack of impulse control, juvenility, and mental retardation (Stetler 1999). Because these situations often result in a degenerated grasp of morality and social norms resulting in social deviance, the culpability of a criminal in one of these psychological states is diminished, and it would be improper for the society to inflict the highest penalty of death upon people whose deviant actions are not completely a result of personal moral deviance or free will.

The Impact of Popular Justice on the *Atkins v. Virginia* Decision

Two important cases that were brought to the Supreme Court have defined and applied the concept that the actions of a person are not necessarily indicative of the moral culpability of that person. In 2002, the Supreme Court ruled in *Atkins v. Virginia*[38] that mentally retarded individuals could not be sentenced to death. This decision was based on objective factors that were presented to the Court as evidence of why the mental retardation of the defendant in this specific case, Daryl Renard Atkins, should exempt him from receiving a death sentence. The defense cited the definition of mental retardation from the American Psychiatric Association, which states,

> The essential feature of Mental Retardation is significantly subaverage general intellectual functioning (Criterion A) that is accompanied by significant limitations in adaptive functioning in at least two of the following skill areas: communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health, and safety (Criterion B). The onset must occur before age 18 years (Criterion C). Mental Retardation has many different etiologies and may be seen as a final common pathway of various pathological processes that affect the functioning of the central nervous system.[39]

The objective, scientific definition of mental retardation brought to the Court's attention that mentally retarded individuals do not have the capacity to perform many adaptive skills which most functioning adults have, including social skills, self-direction, and impulse control. That they cannot function in basic areas which functional adults take for granted is, in and of itself, deviant because it is outside the norms of the culture. Therefore, even before a mentally retarded individual commits a crime, he or she is not

[38] *Atkins v. Virginia*, 536 U.S. 304 (2002)
[39] *Ibid.*, Diagnostic and Statistical Manual of Mental Disorders, fourth edition: 41

socially functional and certainly not attuned to the mores of the society, and so cannot be held to the same standards of propriety in their actions.[40] The defense explained this concept in *Atkins*, and elucidated to the Court why the functional abnormalities associated with mental retardation mitigates the culpability when an affected person commits crime:

> Clinical definitions of mental retardation require not only subaverage intellectual functioning, but also significant limitations in adaptive skills. Mentally retarded persons frequently know the difference between right and wrong and are competent to stand trial, but, by definition, they have diminished capacities to understand and process information, to communicate, to abstract from mistakes and learn from experience, to engage in logical reasoning, to control impulses, and to understand others' reactions. Their deficiencies do not warrant an exemption from criminal sanctions, but diminish their personal culpability.[41]

In addition, the defense cited other previous cases in which juries excused the defendants from crimes because they were legally mentally retarded, as well as individual state legislation already banning mentally retarded people from being sentenced to death. In the previous case brought to the Court in 1989 by a mentally retarded defendant,[42] there were only two states that prohibited the execution of mentally retarded individuals. Even when these two were added to the 14 States that rejected the death penalty completely, the Court decided this was not enough evidence of a national consensus about the evolving standards of decency.[43] However, by the time the *Atkins* case was presented to the Court, a significant number of States had established statutes prohibiting

[40] *Ibid.*, *Atkins*
[41] *Ibid.*, *Atkins*
[42] *Penry v. Lynaugh,* 492 U.S. 302 (1989)
[43] *Ibid.*, *Atkins*

the execution of the mentally retarded. However, what the defense argued was most compelling about the growing number of States changing their policies was:

> …not so much the number of these States that is significant, but the consistency of the direction of change. Given that anticrime legislation is far more popular than legislation protecting violent criminals, the large number of States prohibiting the execution of mentally retarded persons (and the complete absence of legislation reinstating such executions) provides powerful evidence that today society views mentally retarded offenders as categorically less culpable than the average criminal. The evidence carries even greater force when it is noted that the legislatures addressing the issue have voted overwhelmingly in favor of the prohibition.[44]

Because the Court recognized that the States have shown a trend toward prohibition of capital punishment for the mentally retarded since the *Penry* case over a decade before, they agreed with the defense that this was evidence that the American public was increasingly reaching a consensus about the issue, and that the Court should emulate it.

The main social purposes of the death penalty are the deterrence of criminals from committing further crimes, and retribution for the crime committed.[45] Unless sentencing a mentally retarded person to death "measurably contributes to one or both of these goals, it 'is nothing more than the purposeless and needless imposition of pain and suffering,' and hence an unconstitutional punishment."[46] The Court agreed that considering the objective factors presented to it, the Eighth Amendment had to "draw its meaning from the evolving standards of decency that mark the progress of a maturing society."[47] That is,

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[44] *Ibid.*, *Atkins*
[45] *Gregg v. Georgia*, 428 U.S. 153 (1976)
[46] *Enmund v. Florida,* 458 U.S. 782 (1982)
[47] *Trop v. Dulles*, 356 U.S. 86, 101 (1958)

the laws instituted by the Court must reflect the changes the culture of society undergoes with respect to moral ideology.[48]

An interesting dissent to the theory that law is congruous with popular justice, and that law reflects the fluidity and changeability of culture, is found in the opinions and rulings of Justice Antonin Scalia of the U.S. Supreme Court. He holds to the theory that when law is created, its original intents and purposes must be upheld in a fundamental way, and interpretation of law for application to culture and society as it exists in a completely different time must remain the same interpretation as would have applied to society at the time the law was created. Therefore, he regards the Constitution as it was intended in 1787 as not just the basis for law in the United States, but law that cannot deviate from the cultural ideas and attitudes of those who created the Constitution. Scalia will always uphold the death penalty as it is practiced in the United States, because it was an acceptable practice in 1787 and considered then to be an appropriate punishment for adults, children, and the mentally retarded alike. Scalia's notion that law remains static and is not influenced by the changing standards of culture influences his strict construction of the Constitution in reaching his decisions. This reasoning is the basis for his dissents in *Atkins* and *Simmons*, and will likely be the reason for his dissent in any other case arguing for mitigation of culpability in capital offenses (Ring 2004).

[48] The notion of "evolving standards of decency" quoted from *Trop* and used frequently in this paper to illustrate the influence of culture in law harkens to the theories of one of the earliest pioneers in anthropology, Lewis Henry Morgan (1818-1881). He argued that culture is progressive and a constant accumulation of knowledge and technology which serves to improve societies. That the Supreme Court uses this quoted phrase as a basis for the malleability of law is an important example of culture's direct influence upon law as acknowledged by the Supreme Court.

The Impact of Popular Justice on the *Roper V. Simmons* Decision

The second time the Federal Judiciary recognized that culpability for crimes committed could be mitigated in special circumstances was in March of 2005, when the execution of juveniles was ruled unconstitutional under the Eighth Amendment in the case *Roper v. Simmons*.[49] The defense presented scientific evidence that the human brain does not stop maturing until around the age of 20, so the actions of individuals under the age of 18 are not as morally reprehensible as the actions of legal adults. To supplement the studies concerning juvenile development, the defense included the conclusions made about juveniles from other court cases. The result was an explanation that juveniles are not as culpable as adults for their actions because of their lower maturity, higher susceptibility to peer pressure, and transience of personality characteristics:

> First, as any parent knows and as the scientific and sociological studies respondent and his *amici* cite tend to confirm, "[a] lack of maturity and an underdeveloped sense of responsibility are found in youth more often than in adults and are more understandable among the young. These qualities often result in impetuous and ill-considered actions and decisions."[50] …almost every State prohibits those under 18 years of age from voting, serving on juries, or marrying without parental consent….juveniles are more vulnerable or susceptible to negative influences and outside pressures, including peer pressure.[51] …the character of a juvenile is not as well formed as that of an adult.[52]

As in the *Atkins* case, the question of whether it is right for juveniles to be treated like adults and be eligible for the death penalty was considered in the earlier case, of *Stanford v. Kentucky*.[53] The Court again ruled against prohibiting juveniles from

[49] *Roper v. Simmons*, 125 S. Ct. 1183 (2005)
[50] *Johnson v. Texas*, 509 U.S. 350 (1993)
[51] *Eddings v. Oklahoma*, 455 U.S. 104 (1982)
[52] *Ibid., Simmons*
[53] *Stanford v. Kentucky,* 492 U.S. 361 (1989)

receiving the death sentence then because there were not enough States that prohibited its application to minors, so there was no evidence that there was national consensus about the direction of evolving standards of decency. When this case was reviewed on the same day *Penry* was decided in 1989, 22 of the 37 States that permitted the death penalty allowed that 16-year-olds could be subjected to capital punishment and 25 States permitted execution for 17-year-olds, hardly a consensus as represented by existing State legislation. However, when the issue was re-examined by the Supreme Court in March of 2005 during *Simmons*, 30 States, comprising 12 that reject the death penalty in general, and 18 that do not sentence individuals under the age of 18 to death, prohibited the death penalty to apply to all legal minors. This is by far the majority of States, and reveals a national consensus strong enough to argue that most of the people of the country do not believe juveniles should be put to death.

Considering the framework of *Simmons* was greatly owing to *Atkins*, and that the decisions only came within three years of each other, many of the arguments used in *Atkins* were relevant to *Simmons* and were used by the defense. Several phrases from *Atkin*s were applied in *Simmons* to reinforce the notion that American society was moving in the direction of prohibition of capital punishment for juveniles, and that the standards of decency of the society were evolving to exclude juveniles from being tried and sentenced as if they were morally and socially developed adults when objective evidence proves this is an incorrect assumption. For both these cases, which influenced the policies regarding capital punishment in the American justice system, The Eighth Amendment of the Constitution was interpreted to include the execution of the mentally retarded and juveniles as cruel and unusual punishment based on the objective factors

presented in these cases. In both these cases, the objective factors used by the defense were the manifestations of the ideology of the people, and when the facts about the excuses presented were understood, they were also an expression of the collective notions of morality and decency of the American population.

V. Forming Effects of Lead Poisoning into a Criminal Defense

> There ain't no sin and there ain't no virtue. There's just stuff people do. It's all part of the same thing. And some of the things folks do is nice, and some ain't nice, but that's as far as any man got a right to say.
>
> —John Steinbeck, *The Grapes of Wrath*[54]

Culture's Management of Crime Committed by Brain Damaged Individuals

As long as there are norms in cultures, there will be deviance from those norms (Durkheim 1933). Each culture must therefore manage deviance when it occurs in order to uphold the norms that form the foundation of the culture. Societies handle deviance in different ways according to the seriousness of the deviant act, whether there are victims of the deviant act, and in some societies, whether the person committing the deviant act is in some way less at fault for his or her actions. Brain damage from lead poisoning, which is a disease that cannot be caused or ameliorated by the person afflicted with it, is a factor that lessens the degree of fault in the actions of a social deviant. Societies must take this into account when managing deviance and assessing the degree of punishment to be applied for deviant acts committed under the "influence" of brain damage from lead poisoning (Figure 5).

[54] Steinbeck, John. 1939. The Grapes of Wrath. Penguin Books ed. 1999, pg. 23.

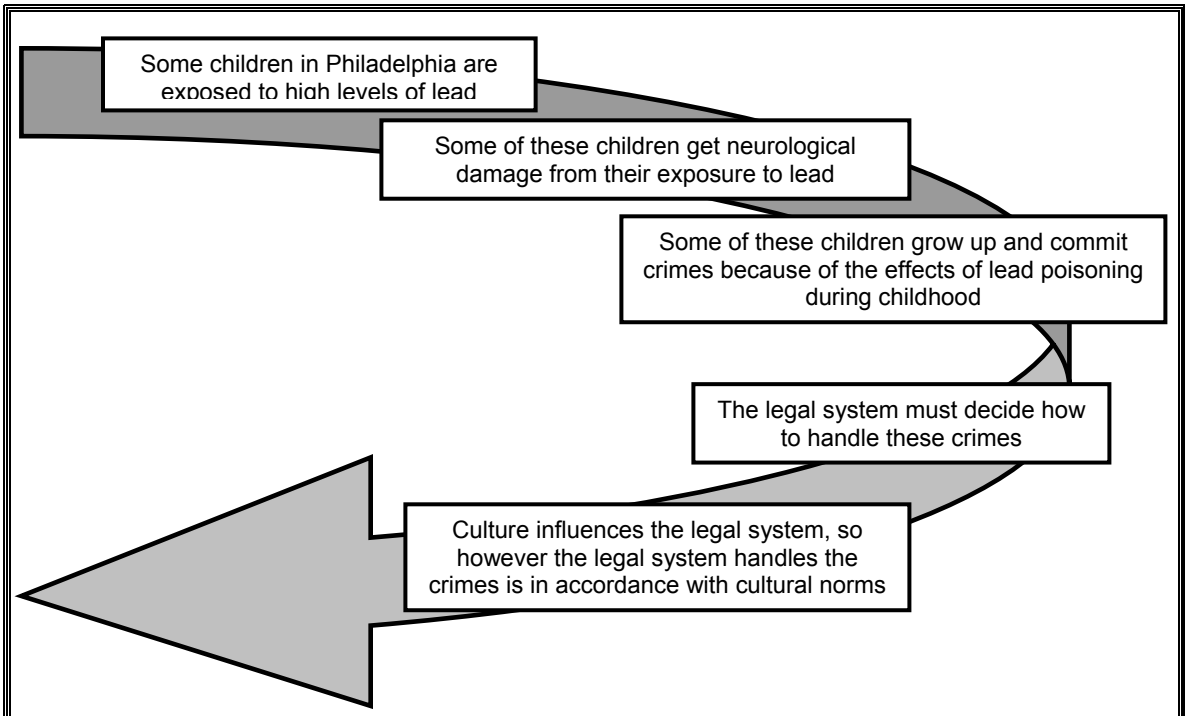

Figure 5: The Sequence of Causation and Management of Deviance When deviant acts can be traced back to symptoms of brain damage from lead poisoning, the legal system, influenced by an informed culture, must recognize this before sentencing criminal offenders for those deviant acts.

Medicalizing Deviance to Contextualize Crime Caused by Brain Damage within the Culture

Law is often culture's method for handling societal deviance, or deviation from culture's norms and mores. Deviance is defined differently in different cultures, and can be seen as the opposite of the cultural norms and behaviors. To truly understand a culture, and to know the limits and boundaries of culture, the existence of deviance is necessary. Likewise, deviance is intrinsic in the formation of law and the justice system, since many laws are contingent on the actual committing of crime. The commandment "Thou shall not kill" would be moot if murder had never occurred (Durkheim 1933).

Because culture is fluid, the ways cultures address deviance must also be fluid. The fluidity in culture allows for culture to reassess the typical use of penalties for

deviance and provide for more clement methods of managing crimes where appropriate. Crimes committed by people with brain damage from lead poisoning must be viewed separately from their crimes and from the motivations which jurors in a capital trial might assume drawing from their preconceived notions of behavior being equated with full culpability. The condition caused by exposure to lead should be medicalized, so that the culture can begin to view the kind of anti-social behavior associated with lead poisoning as a symptom of a disease, rather than as a symptom of malice (Conrad, Schneider 1980).

Atkins used this method of medicalizing mental retardation in order to prove the point that the behaviors associated with mental retardation that result in criminal activity are symptoms of the condition of mental retardation itself. By presenting unbiased information from the American Psychiatric Association and other reputable sources of information about the condition of mental retardation, the justice system has no choice but to acknowledge mental retardation, which is a kind of disease of the intellect, exhibits symptoms that may lead to crime, and therefore the culprit is the disease, not the person.

In the same way, according to numerous studies and well-regarded sources, brain damage from lead poisoning is a disease, which leads to the exhibition of symptoms that may lead to crime. Therefore, the culpability of offenders who commit crimes consistent with the type of deviance caused by lead poisoning is mitigated, because the responsibility for the crime lies in the disease, not the offender. In addition, lead poisoning is a disease of low-income minorities, and in Philadelphia in particular, African Americans; administering the same penalties for the afflicted as for normal offenders acting under their own free will would be a case of environmental racism compounding unjust sentencing of the diseased.

Extending Atkins and Simmons

The format and arguments used in the *Atkins* and *Simmons* defenses can be extended to cases involving defendants who suffer from brain impairments or permanent neurological damage such as those presented in the case study based in Philadelphia in this paper. Currently, criminal defense attorneys as well as death penalty abolitionists are constructing this potential extension of the *Atkins* and *Simmons* principles. There is a movement to lobby State legislatures to recognize that mental impairments and mental illness, like mental retardation and juvenility, make inflicted defendants less responsible for their actions and make those actions less reprehensible.

Most of the defense attorneys[*] with whom I have discussed this movement agree that the next step for the extension of *Atkins* is the inclusion of brain-damaged offenders. Leaders in the movement have proposed the necessary actions States would have to take to ensure the success of a defense like that in *Atkins* for people who have incurred brain damage, such as the brain damage that ingesting lead can cause.

First, there needs to be a significant number of States that do not execute people who are mentally disabled prior to their offense and who do not exhibit adaptive behaviors or normal intellectual functioning. Next, States should not execute offenders who at the time of the offense have severe mental impairments making it impossible for them to realize the consequences or wrongfulness of their actions, to exercise rational judgment, or to conform their actions to laws (This excludes intoxication from drugs or alcohol because this is self-inflicted). Finally, States should not execute offenders who

[*] The attorneys involved in the conversations and seminars from which I gleaned the information concerning the extension of *Atkins* described in this section will remain unidentified for the purposes of confidentiality.

are too mentally impaired to rationally make important decisions during the legal proceedings following their offenses. This includes voluntarily forfeiting post-conviction proceedings to challenge their convictions or sentences, to assist their attorneys and provide information in their own defense, and to understand the nature of the punishment and its consequences.

The reason defense attorneys working on the extension of *Atkins* believe brain damage is the next area to be addressed is because brain damage is more persuasively comparable to mental retardation than other types of mental impairment. Like mental retardation, brain damage caused by lead exposure has an early onset in afflicted individuals. Early onset indicates that the deviant actions of an offender are caused by the brain damage and are therefore more excusable. Many people believe extending *Atkins* to brain damage is problematic because there is no clear legal division between socially functional brain damaged offenders and chronically anti-social brain damaged offenders, and prohibiting the death sentence for all brain damaged offenders may be inappropriate.

For brain damage caused by lead exposure however, as well as for other similar types of brain damage, the severity of the brain damage can be measured by the total body burden of lead that clients were exposed to over the course of their lives in bone samples, because bones retain the metals the body takes in over a lifetime, even if exposure was only limited to childhood. Intelligence tests can measure low IQ that may be caused by lead exposure, and may compliment the evidence in school records showing learning disabilities and anecdotal evidence that a client was exposed to lead during his or her early development. Although in some cases the intelligence deficiencies caused by lead exposure may not be low enough to qualify as a medically diagnosed mental

retardation status, low IQ exacerbates adaptive skill deficits contributing to anti-social behavior and other problems of coping in society. Like the mentally retarded, brain damaged individuals often take much longer to learn to do things considered basic to non-brain damaged people, such as planning ahead, taking care of themselves, driving a car, etc. Should the brain damage caused by lead exposure be severe and cumulative enough that the IQ levels and anti-social behavior histories of offenders fall under the criteria for mental retardation as specified in *Atkins*, then it can be argued as a potential basis for application of the ruling, regardless of causation.

The main reason for questioning the mental state of an offender, whether the offender is mentally retarded, a juvenile, or brain damaged, is because the actions of the offenders are heavily influenced by these mental states; thus, the personal culpability offenders have for their crimes is diminished. These mental states negate societal standards for what constitutes "free will" because they characteristically create altered, anti-social behavior. Because they are not caused purposefully or willfully by those affected by these mental states, it is inappropriate to punish the person for the effects of their brain physiology. Although punishing people for their brain composition should be against society's standards of decency, it is also unjust that society should hold a person that is not able to function in society to the same standards of culpability as those that are socially functional.

Because the Supreme Court rules on objective factors as the standards for justice in the cases of questioning the extent of criminal culpability, the cases of defendants with brain damage from lead exposure can be supported with many conclusive scientific studies documenting the neurological effects of lead exposure consistent with lessened

culpability. Already juries have been more lenient towards defendants who could prove they had brain damage, learning disabilities, lack of adaptive skills and low intelligence. It is considered negligent legal practice if defense attorneys fail to present these mitigators during trial if they exist in the client because of their proven influence on juries' judgment of culpability. Should the number of States that do not execute offenders impaired in the capacities necessary for competency during trial increase, the Supreme Court would likely recognize that the execution of the mentally impaired would be against the evolving standards of decency of society according to the precedents of *Atkins* and *Simmons*. When this testament of national consensus is supplemented with the scientific definitions of mental impairments and brain damage, along with the evidence that juries accept brain damage and its affects as mitigators in other cases, the Supreme Court will be compelled to rule that the execution of the severely mentally impaired or brain damaged is unconstitutional according to the Eighth Amendment.

The Challenges of Brain Damage as a Defense

There are problems with the immediate application of this defense for criminal offenders. Lead poisoning does not exhibit a behavioral signature, that is, lead does not affect all people in the same ways. This variability diminishes the argument of causality of lead exposure for criminal deviance, and is further complicated when considering the other factors that may have contributed to the anti-social behavior of an offender, such as poverty, malnutrition, abuse, trauma, neglect, witnessing violence, etc, and the other factors of the "rotten social background" defense. Without knowledge of the exact effects

lead exposure has on humans, the question of the boundary between free will and lack of control is blurred.

Another question that arises when assessing degrees of criminal culpability is whether all crimes can be traced back to some mitigator that makes it inappropriate for the application of harsh penalties to an offender under the Eighth Amendment. A professor at the University of Illinois School of Law, Michael S. Moore, commented that such an argument leads to the "absurd conclusion that no one is responsible for anything" (Moore 1985: 1118-19). The question is particularly important as the knowledge about predictors of criminal activity increases, and includes more and more mitigating factors that wouldn't previously have been acceptable excuses for crime. In the case of lead poisoning, the statistics for the number of children exposed to lead before it was as relatively controlled as it is today means that now those children who may be committing crimes as adults will be a significant population of the criminals who are subjected to the justice system, and a substantial group of offenders may be collectively excused for their crimes due to the pervasiveness of lead poisoning.

Resolving the Complications the Brain Damage Mitigator Presents

Deborah Denno, a professor at the Fordham University School of Law and an analyst of the Biosocial study[55] mentioned above, believes these issues may be resolved by treating lead poisoning like the insanity defense. Because the insanity defense is not often compelling enough to jurors that they will excuse the crime, it is only accepted when the insanity is so obvious and severe that a jury would have no other choice but to recognize the offender's mitigation of responsibility, and therefore jurors would not feel

[55] See page 27, *supra*

that they are excusing every offender ever exposed to lead. Because only the most severe cases would be compelling, the justice system would remain balanced without any revolutions in the interpretation of culpability in the justice system necessary (Denno 1993).

Her suggestions are suitable for the capital trial stage where the verdict of "guilty" or "not guilty" is decided for an offender. However, for appeals when the verdict of "guilty" is already decided and the objective is to mitigate a death sentence, different tactics for interpreting the condition of lead poisoning as it effects criminal actions are necessary. *Atkins* and *Simmons* have set the precedent for the possibility of revolutions in the interpretations of culpability, and brain damage due to lead exposure does not have to be seen as a symptom of a rotten social background, but instead as a social and psychological disease on par with mental retardation and the immaturity associated with juvenility.

For mentally retarded offenders, the legal boundary used by the justice system as a firm delineation for the administration of capital punishment under *Atkins* is an IQ test and possible supplementation with school records or other evidence of mental retardation since childhood. For juveniles under *Simmons*, the boundary is that the offenders had to have been under age 18 at the time of the crime in order to avoid the death penalty. Brain damage due to lead poisoning can also be assessed similarly, using specific criteria to discern offenders with severe brain damage from those without. In order to acknowledge the problem of there being no behavioral signature associated with lead poisoning, the defense can provide evidence of brain damage similar to that required for mentally retarded offenders, which can be in the form of IQ tests to prove diminished intelligence

at a new standard level higher than mental retardation but not at average levels, or records from schools or psychiatric evaluations which can also prove diminished functionality. Medical records showing that the offender received chelation therapy as a child or was exposed to high lead levels that may have impaired development are also useful supplementary forms of evidence. In addition, adult inmates, who may no longer be exposed to lead so that the current levels of lead in their blood are significant, can receive tests of bone lead content, used by Dr. Needleman for his studies and recommended by Dr. Campbell as objective evidence of the total lead burden incurred over a lifetime. If these tests show lead levels over some harmful exposure threshold, there would be sufficient proof of causation, and these offenders could be prohibited by the Supreme Court from receiving a death sentence in the manner of *Atkins* and *Simmons*. Also, the prohibition of capital punishment would be reserved only for serious cases of brain damage due to lead poisoning, where lead is a real factor in the actions of the offender. Using objective measures and criteria in this way would serve to make the justice system more just, and would reflect more clearly the extent of free will and human behavior as we are able to understand them.

VI. Conclusion: Rehabilitation in Lieu of Punishment

> But there's just one question/ Before they kill me dead/
> I'm wondering just how much/ To you I really said/
> Concerning all the boys that come/ Down a road like me/
> Are they enemies or victims/ Of your society?
>
> —Bob Dylan[56]

[56] Bob Dylan, *The Ballad of Donald White*, *on* Broadside Ballad. Broadside Reunion, Vol. 6 (Folkways Records 1971).

The purpose of forming a defense for offenders with brain damage from lead poisoning is not to excuse criminal actions altogether by allowing offenders meeting the criteria of brain damage to be released back into a society in which they are not able to function normally, and in which they will likely continue to exhibit deviant behavior. Although their culpability for their actions can be argued to be mitigated by their disease, this merely means that severe penalties typically enforced upon normally functional offenders are not appropriate in these cases. The justice system has the means and authority to administer and enforce sentencing in the spirit of rehabilitation as well as punishment, particularly when crime can be proved to be a disease in need of a cure. This culture has the flexibility to accept that crime can be a symptom of disease rather than of the notion of inherent evil based on biblical and consequently cultural conceptions of free will and morality, and can evolve to discern the difference between the two sources in terms of managing deviance from culture. As in the cases of mental retardation and juvenility, there will still be penalties for crimes committed by brain-damaged offenders. Capital punishment cannot be an appropriate penalty for offenders who have demonstrably been brain damaged by lead exposure as this would be cruel and unusual punishment as well as inconsistent with the norms of a cognizant culture which marks an enlightened society.

APPENDIX

Questionnaire sent to representatives of:

USEPA
EPA of Pennsylvania
Children's Hospital of Philadelphia, Philadelphia, PA
St. Christopher's Hospital, Philadelphia, PA
Clean Water Action, Philadelphia Office, Philadelphia, PA

Mr. / Ms. _____,

My name is Jenna Rosania and I am writing my senior thesis at Bryn Mawr College for my degree in Anthropology. Part of my thesis concerns the lead problems in Philadelphia. I was wondering as a representative of _____ if you would answer a few questions I had regarding lead exposure for children in Philadelphia. Any information you could give me would be greatly appreciated. Thank you!

1) Why do you believe the sources of lead exposure for children in Philadelphia persists and why has it not been addressed as of yet?

2) What are the most common medical effects of exposure to lead, and at what ages is exposure most damaging? Does lead poisoning cause any harm to the brain after it is fully developed?

3) Which areas or neighborhoods of Philadelphia seems to have the worst trouble with lead in terms of controlling exposure or the rates of children showing effects of lead poisoning?

4) What is the current trigger level of toxicity for children? I understand the trigger level has been lowered several times over the years. Is the reason for this availability of new scientific information or are there other more political reasons?

5) Are there statistics available of the numbers of children exposed in this area or the numbers of individuals who receive chelation or other treatment for lead poisoning? If so, is the number of children who receive the treatment dropping, increasing, or staying the same over time? Is there documentation of any trends?

6) Do pediatric hospitals or the City of Philadelphia have programs to administer chelation without charge to the patients, or any other type of treatment facilities that make mitigating the lead poisoning affordable for residents of the area?

7) Are there community organizations or public health groups that work with the community in the area to mitigate the lead issues in Philly? Are these state funded or private organizations? Have there been any recent campaigns to raise awareness about lead and have they been effective?

8) Do schools or churches in the area provide information about lead exposure? Is this state directed (particularly for the schools) or individual initiatives of each institution?

If there are any other materials you would like to send me, anything you think might be pertinent to what I am looking for, I would appreciate it greatly. I will at that time include a mailing address if necessary. If you have any questions for me, I would be more than happy to answer them. Thank you so much!

Jenna Rosania

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