

Public Hearing

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before

SENATE HEALTH AND HUMAN SERVICES COMMITTEE

"The Prevention and Treatment of
Lead Poisoning in Children"

LOCATION: Committee Room 7
Legislative Office Building
Trenton, New Jersey

DATE: April 29, 1992
10:00 a.m.

MEMBER OF COMMITTEE PRESENT:

Senator C. Louis Bassano, Chairman

ALSO PRESENT:

Eleanor H. Seel
Office of Legislative Services
Aide, Senate Health and Human
Services Committee



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New Jersey State Legislature

SENATE HEALTH AND
HUMAN SERVICES COMMITTEE
LEGISLATIVE OFFICE BUILDING, CN-068
TRENTON, NEW JERSEY 08625-0068
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NOTICE OF PUBLIC HEARING

The Senate Health and Human Services Committee will hold a public hearing on the following issue:

The Prevention and Treatment of Lead Poisoning in Children

The hearing will be held on Wednesday, April 29, 1992, beginning at 10:00 A.M. in Room 7 of the Legislative Office Building, 135 W. Hanover St. Trenton.

The public may address comments and questions to Eleanor Seel, Committee Aide and persons wishing to testify should contact Sophia Love, secretary, at (609) 292-1646. Those persons presenting written testimony should provide 10 copies to the committee on the day of the hearing.

The chairman may find it necessary to limit the number of witnesses and the time available to each witness at the hearing.

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TABLE OF CONTENTS

Page

David H. Ben-Asher
Assistant Commissioner
New Jersey Department of
the Public Advocate

6

Susan R. Silver
Assistant Deputy Public Advocate
Division of Public Interest Advocacy
New Jersey Department of
the Public Advocate

14

Philip J. Landrigan, M.D., M.Sc.
Professor of Pediatrics
Mount Sinai Medical School, and
Professor and Chairman
Department of Community Medicine
Mount Sinai Medical School

16

Anita S. Curran, M.D.
Assistant Dean for Clinical Affairs
Robert Wood Johnson Medical School
University of Medicine and Dentistry
of New Jersey

23

Donald Ryan
Executive Director
Alliance to End Childhood
Lead Poisoning

30

Edmond A. Provder, M.Ed.
Occupational Assessment Services

37

Antonia Ty, M.D.
Director
Lead Poisoning Program
Department of Pediatrics
New Jersey Medical School
University of Medicine and Dentistry
of New Jersey

44

Leah Z. Ziskin, M.D.
Acting Deputy Commissioner
New Jersey Department of Health

51

TABLE OF CONTENTS (continued)

Page

Anna Haratounian, M.D. Medical Director Lead Poisoning Program Children's Hospital of New Jersey United Hospital Medical Center, and Assistant Professor of Clinical Pediatrics University of Medicine and Dentistry of New Jersey	54
Anthony Pizzatillo Church & Dwight Co., Inc.	61
M. Stephen Lajoie Director Research and Development Church & Dwight Co., Inc.	62
Susan Adubato, Ph.D. Department of Psychiatry New Jersey Medical School University of Medicine and Dentistry of New Jersey, Director Project B.A.B.I.E.S., University Hospital, and Children's Hospital of New Jersey	67
Vincent M. Coluccio, Dr.P.H. Vice President ATC Environmental Inc., Director Identification and Abatement of Lead-Based Paint Hazards, President National Lead Abatement Council, and New York City Mayors' Advisory Committee on Lead Paint Poisoning	71
Stephen R. Sides, CIH Director Health, Safety & Environmental Affairs National Paint & Coatings Association	78

TABLE OF CONTENTS (continued)

	<u>Page</u>
Madeline Brown, R.N. Coordinator Jersey City Lead Poisoning Prevention Program	84
Cecilia Zalkind Assistant Director Association for Children of New Jersey	88
Reginald S. Dorsey Policy Analyst Association for Children of New Jersey	89
Patricia Griffiths, R.N. Parent of Lead Poisoned Children	93
Richard P. Wedeen, M.D. Professor of Medicine, Professor of Preventive Medicine and Community Health, and Director Division of Occupational and Environmental Medicine New Jersey Medical School University of Medicine and Dentistry of New Jersey	97
Christopher Placitella, Esq. Newark, New Jersey	100
Mia Andersen, Esq. Councilwoman Summit, New Jersey	102
Glenna Gundell Director New Jersey Coalition for Prevention of Developmental Disabilities, and Member Interagency Task Force on Lead Poisoning Prevention	102

TABLE OF CONTENTS (continued)

APPENDIX:

	<u>Page</u>
Press release plus attachments submitted by Senator C. Louis Bassano	1x
Testimony submitted by Assistant Commissioner David Ben-Asher	39x
Testimony plus attachments submitted by Philip J. Landrigan, M.D., M.Sc.	50x
"Table 1. Interpretation of blood lead test results and follow-up activities: Class of child based on blood lead concentration" submitted by Anita S. Curran, M.D., M.P.H.	65x
Testimony submitted by Donald Ryan	66x
"Labor Force Participation" submitted by Edmond A. Provder, M.Ed.	76x
Testimony submitted by Acting Deputy Commissioner Leah Z. Ziskin, M.D., M.S.	77x
"Bennington, VT Revisits Its Sodium Bicarbonate Water Treatment Method" submitted by M. Stephen Lajoie	79x
Statement submitted by Vincent M. Coluccio, Dr.P.H.	83x
Testimony submitted by Stephen R. Sides, CIH	88x
Statement plus attachment submitted by Cecilia Zalkind	100x
Testimony submitted by Patricia Griffiths, R.N.	110x

TABLE OF CONTENTS (continued)

APPENDIX (continued):

Page

Statement submitted by
Richard P. Wedeen, M.D.

118x

Testimony submitted by
William Lewis
Associate Director
Government Relations
New Jersey Education Association

124x

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SENATOR C. LOUIS BASSANO (Chairman): If I may ask everyone to please take a seat, we can get started.

Good morning. I am State Senator Louis Bassano, Chairman of the Senate Health and Human Services Committee. We are here today to begin a process that I hope will result in a meaningful legislative resolution to one of the most ignored and least understood health care problems in the State of New Jersey and in our nation, lead poisoning. In the many years that I have been associated with this Committee in the Legislature, the problem of how to prevent and treat lead poisoning, and to save our children from its devastating effects, is the most shocking and difficult health care problem I have ever encountered.

In spite of the existence of numerous State and Federal laws, and health care studies that date back to the turn of the century, lead poisoning has been routinely taken for granted and, in many cases, just simply ignored. After conducting extensive research on the issue and meeting with some of the physicians, lawyers, and public health officials with expert knowledge of lead poisoning, I became painfully aware of just how great a menace we are facing. One hundred years of neglect and failed public policy have allowed a threat that is entirely preventable and containable to attack our greatest resource, our children.

As the vital resources of our future, literally hundreds of thousands of New Jersey children face potential neurological or physical damage and the dim prospect of living brain-damaged lives, all because of overexposure to lead. Their ability to lead healthy, happy, productive lives or simply to subsist economically may often be permanently compromised.

I have deliberately chosen to use dynamic language to describe the depths of the problem, because I know that hundreds of thousands of young lives have been, and will be,

ruined because of the past failures of State and Federal governmental authorities to react effectively in doing something to protect children from this menace. That failure jeopardizes our future as a State and as a nation.

Approximately 57 million dwellings in the United States are estimated to have lead-based paint, according to a Federal Department of Housing and Urban Development study released in December of 1990. Lead poisoning and lead contamination are hard to avoid in today's environmentally troubled world. Lead contamination has been documented in ice layers in Greenland, and pathologists report that modern, human skeletons contain 200 times more lead than those of our preindustrial ancestors.

But perhaps the problem hits closer to home when we hear about how lead poisoning has tragically taken or ruined the lives of tens of thousands of young children, many of whom contacted the problem in the very place they should feel safest, at home or in school. Lead poisoning causes irreversible, permanent damage that may result in any number of physical or mental symptoms, which not only rob a child of his or her health, but of any kind of productive future. A leading cause of mental retardation, lead poisoning can cause irreversible intellectual and behavioral impairment, kidney disease, brain damage, circulatory problems, convulsions, coma, and even death. Yet the effects of lead exposure can also result in less apparent, more subtle damage that may handicap a child's learning ability and health for the rest of his or her life. Decreased intelligence, auditory and language problems, attention disorders, learning disabilities, and behavioral abnormalities can all owe their own source to lead poisoning.

A pregnant mother stricken with lead poisoning, who may not even know she has it, risks congenital abnormalities, premature delivery, low birth weight, and the child she carries may be born with minor malformations and impaired development.

One of the most compelling studies of the educational impact of lead poisoning reveals that infants exposed to unsafe levels of lead in the womb, lost four to six points on development tests measuring memory, learning, and basic motor skills.

The devastation and the tragedy of what lead poisoning can do to a fetus or a young child are things that most of us would not like to think about, but no matter where you live today, and no matter how safe you may consider the environment you live in, it is a problem that no one can ignore. One of the major fallacies about lead poisoning is that it is an urban problem, confined only to urban neighborhoods and low-income housing projects. In fact, it is a problem that cuts across all economic classes, all walks of society, and all different cultures and neighborhoods, because its primary cause is lead-based paint.

Regions of the country with large numbers of old housing or homes built before 1980 tend to have a great number of buildings that pose a threat of lead contamination. Seventy-five percent of all homes constructed before 1980, or roughly 57 million nationwide, are estimated to contain environmentally hazardous levels of lead. New Jersey has a particularly high incidence of this kind of housing. Typically, suburban homes contain levels of lead as dangerous, or more dangerous than urban dwellings, due to the high grades of lead-based paint that was used to paint some of the older structures.

Recent estimates by the Federal Environmental Authority report that as many as 177,000 New Jersey children may be at risk for lead poisoning, though that number can easily be doubled, depending upon what threshold level one accepts as triggering our concerns about the possible mental or physical damage that can be done.

Contrary to popular belief, cases of lead poisoning traced to such homes are usually not the result of children

ingesting loose paint chips or particles. Usually the source of unsafe levels of exposure is caused by the exposure of children to unsafe levels of lead particles contained within or outside of the family home. Sixty to 65 percent of all cases of exposure are estimated to have been contacted mainly from indoor exposure, though 30 percent are believed to have been contacted outside the home from airborne dust. Lead-based paint is only one of numerous sources of contamination. Soil and dust containing lead paint, lead gasoline, or lead particles from factories or industrial plants are another major cause of lead contamination, particularly in densely populated urban areas.

Drinking water from contaminated fountains or from water systems with lead service lines, or pipes with lead soldered joints, is one of the most common ways that children may be contaminated. As innocent as it seems, eating or drinking from certain kinds of ceramic ware, lead crystals, lead soldered cans, and poorly glazed pottery can all result in unsafe levels of contamination. Even the use of artists' paints, primitive cosmetics, furniture refinishing products, or the burning of lead painted wood can all result in substantial exposure to lead. Soil and dust act as pathways to children for lead deposited from paint, gasoline, and industrial sources. Children who play in the dust or in a yard contaminated with leaded particles may easily be exposed by inhaling or ingesting soil or dust that gets on their hands or their faces.

The threat is so serious that it is not exaggerating or inaccurate to suggest that in many cases it is no longer safe for a child to play outside his or her own home. This is particularly true here in Trenton, where a study conducted by the Environmental Defense Fund, released in March of 1990, found that 59.2 percent of the city's children aged between six months and five years, have at least 10 micrograms of lead per

deciliter of blood. Levels in the 10 to 14 microgram range are harmful, and even lower levels may be considered potentially dangerous. Nearly one-fourth of Trenton's youngsters tested, or 24.5 percent of the city's preschool children, were measured at levels at 15 micrograms or higher, a level defined as lead poisoning by the EPA.

As the Director for the Center for Environmental Health and Injury Control at the National Centers for Disease Control, put it: "If there is a threshold for the adverse effects of lead on the young, it may be near zero."

The need for legislative attention to this problem, and to put an end to decades of ignorance and neglect about lead poisoning is evidenced by citing a few hard-to-believe, but painfully true observations:

Doctors in New Jersey are not required to test children for lead, even though it is the single, most common pediatric environmental illness in the United States.

Workers who remove lead in New Jersey are not required to receive training or obtain a license, as are workers who specialize in asbestos removal.

New Jersey landlords are not required to remove lead paint from a dwelling or structure until after a child has been poisoned.

Under current New Jersey law, children are treated as if they are disposable commodities or human lead detectors, whose exposure and contamination only trigger action after the damage has already been done.

The average cost to treat a child once lead poisoning is discovered is a staggering \$350,000.

The time has come to stop letting any more of our children be treated like guinea pigs, allowed to suffer with all different degrees of mental and physical illness, or even die, all because of a public policy that has concentrated on reactive, rather than proactive approaches to the problem. I

believe that we cannot afford to allow this to happen. I say this not only because of the economic cost involved, of the millions spent treating a disease after the damage has already been done, or providing rehabilitative therapy or special education instructions for children whose mental capacity has been diminished or drastically altered due to lead exposure. I am talking about the greater human cost that is at stake here of lost lives and lost talents; of young children born with infinite potential to contribute meaningfully to their society, who may be at risk. If we lose them or take away their chance to live a full and productive life, we not only lose our future, but in a real sense, we lose ourselves.

With that, I would like to start today's hearing. Hopefully, some of the testimony we are going to be hearing today can, and will, result in meaningful legislation for this Legislature to try to address this problem.

Eleanor, if you would start with the first speaker--

MS. SEEL (Committee Aide): David Ben-Asher, Assistant Commissioner, Department of the Public Advocate, representing Commissioner Wilfredo Caraballo.

A S S T. C O M M. D A V I D H. B E N - A S H E R:
Thank you for giving us the opportunity to testify today. I want to compliment you on your initiative in addressing this important issue.

We at the Public Advocate have made lead poisoning a priority issue for our Department. We have spent a good amount of time recently familiarizing ourselves with the various State and Federal studies on the subject, and consulting with national experts, including a number of people in this room. It has been a fascinating and frightening experience for us as individuals. One's reaction upon learning the true state of environmental concerns might be to sell our older homes and move to a hut in the desert, but that is not realistic, and the productive and necessary way to address the problem is in the

manner that this Committee is about to undertake, by examining creative solutions and debating them and determining an adequate solution.

The reason for our concern, and for that of everyone in the room, of course, is easy to understand; that is, lead is the most prevalent environmental health problem facing children in New Jersey today. When we first ask how extensive the problem is in our State, we look at the information from the Federal Centers for Disease Control, to the effect that virtually all children are at risk for lead poisoning. The State Department of Health estimates that over 177,000 children -- preschool children -- in New Jersey are particularly at high risk of lead poisoning. Unfortunately, of the State's 600,000 preschool children, only 11 percent are currently screened for lead levels.

In 1990, 67,000 preschool children were screened in county and municipal programs. Of those, 2.6 percent were found to have lead poisoning. In certain areas of New Jersey, the numbers are much bleaker. For example, in Irvington, 17 percent of the children screened in 1990 were found to have lead poisoning. In Newark, 8 percent of the children screened in 1990 had lead poisoning.

We should bear in mind that all of these numbers were based on a now outdated definition of lead poisoning which underestimated the toxic effects of lead. Under the Centers for Disease Control's current definition of lead poisoning, a full 55 percent of the children screened in Newark over the past three years have had blood levels high enough to cause mental and other health problems.

Who are these children? As you indicated, they come from all socioeconomic and ethnic backgrounds. Lead poisoning is not a disease facing poor children alone. A child can become severely lead poisoned by eating just one lead chip the size of a postage stamp. A child can become ill merely by

regularly touching a windowsill with lead-laden dust and then sucking his thumb. If a home is undergoing renovation, even a well-maintained and expensive home can have toxic levels of lead dust. Anyone is at risk of lead poisoning if they live in an older home, many of which exist, obviously, in New Jersey.

According to Dr. John Rosen, Chairman of the CDC Advisory Committee on Childhood Lead Poisoning Prevention, it is generally assumed that all housing built before 1959 has some lead paint in it. In fact, the New York City Health Code provides that buildings built before 1960 presumptively contain lead paint. Up through the 1950s, lead paint was in widespread use, and lead paint was still available for home use in this country as late as 1978.

Lead paint is the most significant and frequent source of lead exposure for children. The oldest housing has the highest lead concentration in its paint. In Jersey City alone, 72.6 percent of all children between the ages of six months and five years live in pre-1950 housing. This is the highest percentage of children living in old housing in the nation. More than half of the preschool children in Newark, Paterson, Clifton, Passaic, and Trenton live in pre-1950 housing. In fact, the New Jersey Department of Health estimates that 65 percent of New Jersey's housing stock contains lead-based paint. This amounts to 1.7 million homes in New Jersey with lead. However, under the current statutory scheme, only 174 homes were abated of lead in 1990. We need to do better than this. Our children are being poisoned by the very walls that should protect them.

The Department of Health has identified 69 municipalities in New Jersey as Priority I municipalities which present the highest risk of lead poisoning. There are 155,000 children under the age of five who live in these communities. Over 400 New Jersey municipalities are listed as Priority II

municipalities. Priority II means the municipality is at moderate risk for lead poisoning.

Lead-contaminated soil and dust is the second major source of lead. Lead-laden soil and dust may contribute as much as 30 percent of exposures leading to elevated blood lead levels in children. This lead comes from flaking paint near buildings and from automobile and industrial emissions. A Department of Health study of lead in New Jersey soil showed the highest quantity of lead-contaminated soil to be in Newark, followed by Jersey City and Secaucus. In a DEPE study of 80 New Jersey soil samples, all 80 samples contained lead, and 33 percent of the samples had lead levels greater than the risk value set by the Department of Health.

Lead may be present in our drinking water, as well. Unfortunately, all children in our State may be exposed to some level of lead in drinking water. The major source of lead in water is the plumbing inside the home.

In January 1987, New Jersey banned the use of lead-based solder in drinking water systems. However, most homes built before 1987 probably still contain lead solder, and some plumbers may still be impermissibly using it. Both the Federal EPA and the State DEPE estimate that 20 percent of the population is exposed to lead levels in drinking water that contribute to elevated blood lead levels. Other sources include lead in ceramics, food cans, and lead crystal, and lead in the ambient air. As the Federal Agency for Toxic Substances and Disease Registry concluded, "Lead is potentially toxic wherever it is found, and it is found everywhere."

What are the effects of this lead poisoning? You have alluded to it. Let me contribute to that analysis. It is a poison that affects virtually every system in the body. Fetuses and young children are at the highest risk of injury to the developing brain and nervous system. Very severe lead poisoning can cause convulsions, coma, and even death. Lower

levels of lead exposure can cause decreased intelligence, short-term memory loss, learning disabilities, mental retardation, poor classroom behavior, lack of coordination, slower reaction time, vomiting, abdominal pain, and kidney damage.

The blood lead level considered to indicate lead poisoning has fallen steadily since the 1970s as our understanding of the effects of lead poisoning has grown.

The Federal Centers for Disease Control now recognize that even a blood lead level as low as 10 micrograms per deciliter of whole blood causes lower IQ levels, reduced concentration and attentiveness, decreased stature or growth, decreased hearing ability, and poor posture.

A 1990 study that examined lead in teeth that first and second graders shed showed that dentine lead levels above 20 parts per million were present and were correlated with a sevenfold risk of not graduating from high school; a sixfold risk of having a reading disability, deficits in vocabulary, problems with attention and fine motor coordination, greater absenteeism, and lower class ranking. These problems persist and rob too many children of their ability to learn and succeed in life.

Then the ultimate question, of course, is, what can be done? We should find hope in the fact that lead poisoning is a public health problem that is completely preventable. Sadly, once a child is lead poisoned, there is no cure. Although high levels of lead in the blood can be removed through an often painful process called chelation, the devastating effects of lead poisoning must be prevented before the harm is done.

Our current statutory scheme only requires a home inspection or lead abatement after a lead poisoned child is identified. By then, it is too late to prevent the irreversible harm that child has suffered, and will continue to suffer the rest of his or her life. To prevent lead poisoning,

lead hazards must be identified and removed before they poison our children. To accomplish this goal, we must adopt comprehensive legislation that addresses the multifaceted aspects of the lead problem.

First, we need legislation that mandates a universal screening program to identify those children with elevated blood lead levels. The Centers for Disease Control, the American Academy of Pediatrics, and the Agency for Toxic Substances and Disease Registry all recommend universal lead screening. This is critical if we are to provide children with the necessary medical evaluation and treatment, remove children from dangerous sources of lead, and target the homes that need abatement work most.

Screening programs are particularly cost-effective. In Newark, the numbers of children requiring hospitalization for chelation therapy declined from 1972 until 1976, and then sharply increased through 1980 to a hospitalization rate nearly four times the rate in 1976. This rise in chelations coincided precisely with a cutoff in funds for the Newark lead screening program. The lesson is clear. If we do not identify children in the early stages of lead exposure, they can become so poisoned that they will require costly hospitalization.

Second, we need legislation to identify the homes and child care facilities that are poisoning our children. The Centers for Disease Control states that its most important theme in its recent statement on lead poisoning is the need to identify and remove sources of lead exposure before children are harmed. If we do not know the source of lead, we cannot take steps to remove our children from a lead exposure that can cause devastating harm.

We recommend legislation to require a home inspection whenever children have dangerous blood lead levels. Since we need to examine all parts of a child's environment, legislation should also require lead inspections of preschools, child-care

facilities, nursery and elementary schools, school yards and shelters serving young children, and other such facilities. Multiple dwellings should receive lead inspections to protect tenants from the dangers of lead exposure. Residential properties should be inspected for lead at the time of the sale, and homeowners should inspect for lead before undergoing the kind of extensive renovation that could pose a lead hazard.

Third, legislation should be adopted that will train and certify lead inspectors and lead abatement workers. Unfortunately, when an abatement job is done improperly, an entire house can be contaminated with lead. This is the reason that states such as Massachusetts and Rhode Island have certification programs in place. A certification and training program is essential to ensure that inspections and abatements are done safely and reliably and that children are not lead poisoned as a result of abatement work done in their homes.

Another important advantage to adopting certification legislation is that this will enable the State of New Jersey to qualify for Federal Housing and Urban Development funds. HUD has a \$47.7 million appropriation to be distributed to states with lead certification programs, and, as you know, HUD will be requesting applications for the grant money in the beginning of next month. Since the greatest obstacle to abating homes is the cost, we cannot afford to let this Federal money slip through our fingers.

Fourth, legislation should specify the circumstances under which homes must have lead hazards abated. There will be instances in which homes will have lead on the walls, but because the house is in good condition and the paint is not peeling or chalking or chipping, the lead does not pose an immediate hazard and need not be abated. However, abatements should be required where a lead inspection reveals a serious lead hazard in a dwelling occupied by a lead poisoned child or

a lead hazard in a child care facility, school, or shelter serving young children.

In appropriate circumstances, owners of multiple dwelling units should abate after an inspection reveals lead hazards. Buyers and sellers of residential property should be able to negotiate between themselves as to who will be responsible in those instances in which abatement is required for lead hazards discovered when a lead inspection is done. Unless we remove dangerous lead from the places where children live, our children will continue to be poisoned.

Fifth, and last, legislation should provide a variety of financial incentives and programs to enable owners to afford the costs of abating dangerous lead conditions present in their homes or other buildings. For example, we should consider legislation to provide owners with some form of tax credit for abatements done by certified workers. Legislation might also provide a low interest loan program to assist owners who lack the financial means to abate lead hazards in their properties.

In sum, lead poses an enormous danger to our children. It will take an equally enormous legislative will and dedication to address the lead problem in an effective manner. But steps can, and must be taken to avoid our children being permanently robbed of their full potential forever. We owe it to our children to give them a future.

I appreciate the interest of this Committee in pursuing that objective. Thank you for the opportunity to make our views known.

SENATOR BASSANO: Mr. Ben-Asher, I appreciate your being here today.

With regard to the screening of children, at what age and at what point in their lives would you suggest that screening take place? Should it be preschool? At what point would the Department feel that we would be accomplishing something positive?

ASSISTANT COMMISSIONER BEN-ASHER: An excellent question, Senator. In our testimony today, we have attempted to outline some conceptual boundaries to what we feel should be considered, and we are developing further specifics in consultation with a task force of State government agencies and other private groups, including some of the representatives here today, so we can consider their views in crafting our approach. So, we will have far more specifics coming with regard to all of the issues that I have raised.

With regard to your question concerning that screening, it is likely that the conceptual approach we will forward will be one involving that kind of screening being involved when children go to their pediatricians for regular checkups. It is likely that the group upon which we should focus most of our attention, at least in terms of legislative requirements, should be the group aged six and under.

S U S A N R. S I L V E R: I could also take a crack at--

MR. BEN-ASHER: This is Susan Silver, from our Division of Public Interest Advocacy, who has worked extensively in this area, who I would like to also address this area.

MS. SILVER: Good morning.

SENATOR BASSANO: Susan, welcome.

MS. SILVER: Thank you. It is critically important to screen children at very young ages, as soon as they become mobile and engage in a sort of hand/mouth activity. As you know, children do engage in that kind of activity more often and also retain lead in their bodies to a greater extent than adults. So, as soon as a child becomes mobile, maybe, say, nine months, is when it is recommended that the child begin screening. I would envision every year after that point. But the way I would envision the legislation being drafted, is to allow the Department of Health to set the intervals that they feel are necessary to protect the children. There is a

consensus that the youngest children are at the largest danger, and that those children must be screened.

SENATOR BASSANO: I want to get away from this question. I have one other question with regard to the inspection program on houses, particularly single-family dwellings.

Do you envision that when a dwelling is sold, that prior to a new resident moving in, that at that point there be a screening take place of that residential dwelling? Is that the type of program you are interested in?

ASSISTANT COMMISSIONER BEN-ASHER: We would think that would be the logical point at which to do that inspection, since that is the point at which inspections are done for a number of other hazards -- asbestos, radon. This is certainly at least an equal hazard. Hopefully the procedures could be incorporated into that process, because ideally, in addressing the problem, we want to be effective and we also want to avoid creating unduly burdensome procedures and obligations.

SENATOR BASSANO: Correct me if I'm wrong that Massachusetts requires this type of screening activity, but yet they do not require cleaning up a lead problem, if one does exist.

MS. SILVER: It is primarily a notice requirement.

SENATOR BASSANO: It is just so that the owner is aware that the problem is there.

MS. SILVER: That there could be a problem and they may want to inspect.

SENATOR BASSANO: Yes.

MS. SILVER: We would recommend that this Committee go further than that, and actually have a requirement that before the property is transferred there be a home inspection and, if dangerous levels of lead are present, that there be abatement. In fact, one way to work that would be to have some kind of a lead-safe certificate program. Now, it could be either before

the property is transferred, or the buyer could be given an escrow account with enough money to do the appropriate work. But that is one good place to do a preventative program.

I think an inspection should also be triggered whenever you have a child with elevated blood levels, so you could identify the source and take steps to address the problem. In addition, as you know, multiple dwellings have a five-year inspection program. This should be included as part of the inspections, to have a lead inspection, so that tenants are also protected from the dangers of lead.

SENATOR BASSANO: So, what you are telling me is that you are not only looking to identify the problem out there, but before the transfer of a property takes place, you are suggesting that the actual cleanup take place.

MS. SILVER: Of course, we have to protect the children who have already been exposed, but we have to go further and try to prevent lead poisonings from ever occurring. So, yes.

ASSISTANT COMMISSIONER BEN-ASHER: Of course, the associated issues at that juncture are: What is identified as a lead hazard? What level of lead hazard is one that must be remediated? And, what nature of remediation, if any, must be required? Those are complicated issues that you are going to have the pleasure of addressing.

SENATOR BASSANO: Thank you. I appreciate your testimony and your input. I'm certain it is going to help us to draft some meaningful legislation. I do thank you.

MS. SILVER: Thank you very much.

ASSISTANT COMMISSIONER BEN-ASHER: Thank you.

SENATOR BASSANO: Our next speaker?

MS. SEEL: Dr. Philip Landrigan, Department of Community Medicine, Mount Sinai School of Medicine.

P H I L I P J. L A N D R I G A N, M.D.: Good morning, Senator.

SENATOR BASSANO: Doctor, thank you for being here with us today.

DR. LANDRIGAN: Thank you, sir. My name is Philip Landrigan. I am a pediatrician and a Professor of Pediatrics at Mount Sinai Medical School in New York City. I am also Professor and Chairman of the Department of Community Medicine at Mount Sinai.

Before I came to Mount Sinai, I served for 15 years as a commissioned officer in the U.S. Public Health Service, many of those years at the Centers for Disease Control in Atlanta. During those years, and still to the present, I have done a great deal of work on childhood lead poisoning. I have published extensively on that problem. In 1990 and 1991, I was a consultant to the Committee at the Centers for Disease Control to prepare this book, which you undoubtedly have a copy of, entitled, "Preventing Lead Poisoning in Young Children." It is the CDC's recently issued Bible, dated October 1991. It spells out many of the Federal recommendations on screening and diagnosis of lead poisoning in young children.

I would like to begin my testimony by complimenting you, sir, on your opening remarks. It was a lovely summary of the salient facts. It's nice to appear before a legislative body that is so well-prepared.

The first point I would like to make concerns the extent of childhood lead poisoning in the United States. As you said in your opening comments, pediatric lead poisoning is the single most common disease of toxic environmental origin in the United States. The Centers for Disease Control have estimated that between three million and four million American children have lead poisoning, lead poisoning defined by them as exceeding a blood lead level of 10 micrograms.

Lead poisoning is found in every sector of American society. Although it certainly is most common among minority children living in poverty, living in the hearts of our older

cities, we have seen lead poisoning in every sector of society, in the suburbs, in rural areas.

Now I would like to talk about the sources of lead for children, and particularly about lead-based paint. Paint is the single most important source of lead exposure for children in the United States today. More than 90 percent of the time when we see a child with clinical, overt, symptomatic lead poisoning in this country, the source is lead-based paint; either the direct ingestion of paint or exposure to the dust of paint, which is liberated during renovation, or through children having ingested dust and dirt that are contaminated with the weatherings and the chippings of lead-based paint.

The CDC has estimated that 74 percent of privately owned homes built in this country before 1980, are contaminated with some degree of lead paint -- so virtually three-quarters of the houses in the United States. And there is a North/South grading. In the northern states, because the housing is older, we tend to have more lead paint -- in New York, New Jersey, New England, and across the upper Midwest -- and there is less in the South. So, in New Jersey, we certainly have more than the national average of 74 percent of our houses contaminated with lead paint.

It is important to point out that lead paint did not get there by accident. The hazards of lead paint to children were first recognized almost 100 years ago. There was an article in the "Australian Medical Journal" in 1896 that described lead paint poisoning and kids in Australia who had eaten paint chips from painted porches. The first major report in medical literature in this country of children poisoned by lead paint was in the "New England Journal of Medicine," which even then was one of the major medical journals in this country. In 1914, they had an article on lead paint poisoning in children in Boston by Professor McCann, a prominent

pediatrician in Boston in that era, whose grandson today is head of Pediatric Neurology at Johns Hopkins.

So, the problems of lead paint are not new. Many countries outside of the United States listened to those medical reports in the 1890s and the early years of this century, and banned lead paint. Lead paint was banned in Australia; it was banned in many of the European countries around the turn of the century and in the first two decades of the 20th century. Unfortunately, in this country, the lead industry went around the country and waged a very extensive propaganda campaign. They went to state health departments; they went to legislatures in the '20s, in the '30s, in the '40s. They had a man named Felix Wormser, whose task was to persuade state health authorities that lead was not a problem for children. I have an advertisement in my office in New York taken from the "National Geographic" in the 1930s, an ad that bears the logo of the National Lead Industries, which used to be headquartered here in New Jersey -- maybe it still is.

The headline of this advertisement is, "Lead is good for your health," and it goes on to describe how lead in paint, lead in toys, lead in pipes, lead in various household products, actually tends to protect your health. It was the big lie, but it was successful. It is largely because of those efforts that thousands upon thousands of homes in this country were painted with lead in the '30s, '40s, '50s, '60s, and '70s. I am pleased that the lead industry is here today. You might be interested to ask them about that history, because it is not a pleasant story.

As I said at the beginning of my testimony, the hazards of lead paint are most intense in the heart of our major cities. In New York, for example, we estimate that over 400,000 preschool children live in homes that have lead-based paint. However, we have also seen lead paint in the suburbs. One of the saddest episodes that I have been involved in in my

years at Mount Sinai is a story that we wrote up in the "American Journal of Public Health," which I have attached to my testimony, which describes a whole family. The father was a professor at a university. The mother was a magazine editor. They had moved to a nice farmhouse in rural upstate New York in Putnam County, and were involved in deleading the house. Four children suffered lead poisoning. A dog was killed by lead. It was an absolute disaster. It makes the point that lead poisoning, although it is most common in the inner cities, is by no means to be found only in densely populated urban neighborhoods.

I would like to say something about the health consequences of lead poisoning. The most serious toxicity of lead is to the nervous system. In high doses, lead causes flagrant, acute neurological toxicity. It can cause coma; it can cause convulsions. Children who recover from that acute lead poisoning -- not all of them do, but those who do -- are left with grossly obvious mental retardation.

One of the most important recognitions over the three or four decades has been the realization by pediatricians and medical scientists that lead, at lower levels, levels not sufficient to produce acute symptoms, can, nevertheless, cause injury to the nervous system of children. This phenomenon is referred to as "subclinical lead poisoning," and it is the recognition that lead causes subclinical injury to the nervous system. It is that recognition that is driving the whole debate today.

As measurement instruments, as test instruments have become more and more sensitive over the last several decades, we have come to realize that lead is toxic to children at lower and lower and yet lower levels. It is for that reason that we now understand that lead causes damage to the nervous system of young children at blood lead levels between 10 and 20 micrograms per deciliter.

It is important to point out that this is mainstream medical science that I am talking about. There have been studies in Boston, studies in Cincinnati, studies in Australia, that have all shown essentially the same findings -- three convergent studies in three different parts of the world with different populations. The Boston population was mostly white; the Cincinnati population was mostly black; the Australian population was mostly white. These three quite different groups have all shown similar effects of lead on the brains of young children.

Moreover, as you mentioned yourself in your opening remarks, Senator, the injury that lead causes to the brains of young children is permanent. It cannot be treated. Sure, we physicians can treat acute lead poisoning. We can save lives through chelation therapy. But even when we save lives, we do not restore damaged brains. We are not able to replace neurons -- nerve cells -- that are killed by lead. When these are killed, the brain has no capacity to restore itself. The damage is permanent; it is irreversible; it is lifelong. Consequently, the child is left with lifelong neurological and psychological disability.

This disability plays out as slow learning, short attention spans, hyperirritable behavior, failure to graduate from high school, increased frequency of learning disabilities, and, some say, although this is not proven, increased frequency of criminal behavior, all of which are consequences that society must pay for because of our failure of prevention.

Because lead poisoning is not treatable, because the subclinical damage caused by lead cannot be repaired by medical science, the only rational approach to dealing with lead poisoning in kids is to take the approach you are taking here today, and that is to consider viable, effective means for preventing this tragic disease. There is no other option.

Prevention is the only way to go, and I congratulate you on taking this pathway.

Up until now in this country, our typical practice has been to use children as the canaries to tell us where lead exists in our society. We measure blood lead levels in children, and if a child's blood level is elevated, we deduce that there must be lead in the child's environment. Then we, in the best of circumstances, go out to the child's home environment and try to find the source of lead.

That, of course, is a backwards approach. What we should be doing, and I am pleased to see that you are considering this in your legislation, is to start where we ought to start, and that is with screening the home environment, the day-care environment, and the other environments where a child lives, identifying the lead, and using that as a guide to the prevention of lead poisoning in children.

In conclusion, I would like to summarize by reiterating several of the points that you and the man from the Department of the Public Advocate have already made. That is to say that pediatric lead poisoning is one of the most pervasive medical problems in modern society. It is the single most common cause of brain damage in the children of the United States and the children of New Jersey. We worry greatly in pediatrics about many other problems. We worry about other congenital abnormalities. We worry about inherited metabolic disorders, such as PKU. Those are important. I don't mean to minimize the importance of any one of them. But lead poisoning, by its sheer weight of numbers, overshadows all of these.

Two-thirds of our minority inner-city children in the United States are estimated by CDC to have lead poisoning. Seventeen percent of all American children are estimated to have lead poisoning. These are vast numbers. This, sir, is an

epidemic, and the only approach to an epidemic is through prevention. It is the way to go.

Furthermore, we must consider the economic consequences. It is expensive to treat lead poisoning; it is expensive to provide remedial education for lead poisoning, and I attached material to my testimony that goes into those costs. I believe you will hear more information on costs from other witnesses in the course of the hearing today. But there is also a long-term dimension -- a long-term economic dimension -- to lead poisoning that we all have to consider.

As we move into the 21st century, it is clear that we are moving into a new economic order. The U.S. is no longer the dominant economy in the world. Many nations are going to rival, indeed already rival us in terms of economic supremacy -- Japan, Germany, other European nations. If we are to compete successfully, we need the God-given endowment of all of our children. We, as a nation, cannot go into the next century with 20 percent of our children brain damaged. Japan never used leaded gasoline. They don't have this problem. They didn't use lead pipe. We cannot go into the next century behind. We have to act now. The savings will be great if we act now, even though there are obvious costs to abatement. If we are to restore the health of our nation, if we are to protect the health of the next generation, we need to embark upon the course that you are considering here today.

Thanks very much.

SENATOR BASSANO:-- I thank you for your testimony.

Eleanor, our next speaker?

MS. SEEL: Dr. Anita Curran, from the Robert Wood Johnson Medical School.

A N I T A S. C U R R A N, M.D.: Good morning, Senator Bassano. Thank you very much for the opportunity to testify.

My name is Anita Curran. I am the Assistant Dean for Clinical Affairs at the Robert Wood Johnson Medical School. I

received my M.D. degree from New York Medical College, and my Masters of Public Health degree from Columbia University School of Public Health. From 1974 through '78, I directed the New York City Lead Poisoning Prevention Program, and I have been involved with this issue ever since. I have been a consultant on lead poisoning to the Centers for Disease Control, Housing and Urban Development, and the Environmental Protection Agency.

The purpose of my testimony today is to call attention to the fact that one of the oldest preventable diseases known to man is still with us. Outbreaks of lead poisoning have occurred since antiquity. The Greek poet/physician Nicander described the disease over 2000 years ago. Roman food and drink, particularly reinforced wines, were heavily contaminated with lead. And, Sara C. Bisel reported in 1983, at an annual meeting of the American Association for the Advancement of Science, that chemical analysis of skeletons of Romans, killed by the eruption of Mount Vesuvius in 79 A.D., indicated high lead content in at least eight individuals.

In this country, the Massachusetts Bay Colony forbade rum distillation in leaded stills in 1723 to prevent "dry gripes," an intestinal condition. In 1767, Sir George Baker blamed "the endemic colic of Devonshire" on the use of lead-lined troughs in the making of apple cider. The dangers of occupational exposure to lead have been well documented for over a century. You heard Phil report on the early reports in this country and in Australia on childhood lead poisoning associated with lead in paint. And since the early 1930s, there has been an increasing study and resulting concern over this problem of childhood lead poisoning associated with the ingestion of leaded paint. This led to the banning of paint containing more than 0.5 percent lead for interior use in the late 1950s. Why then is lead poisoning, a truly preventable disease, still a cause for concern and the subject of so much study and worldwide controversy in the 1990s?

To understand the answer to this question, one must know the history of the fight against lead poisoning -- one of the outstanding success stories in the annals of public health. Unfortunately, the failure to eradicate the disease also reveals the enormous frustrations and disappointments experienced by workers in the field of public health. The intense battle against childhood lead poisoning illustrates the problem.

In the 1950s and 1960s, pediatricians, public health professionals, and other concerned citizens were appalled by the increasing number of inner-city children living in substandard housing who were suffering from the severe consequences of lead intoxication, including permanent brain damage and death. A national outcry resulted in the Federal government appropriating millions of dollars to fight the "silent enemy."

By the early 1970s, many of the major cities had begun federally funded childhood lead poisoning control programs. The conquest of childhood lead poisoning seemed within reach. Children were screened, treated, monitored, and removed from environments with high levels of lead. Data were collected and analyzed by the Centers for Disease Control, and a uniform reporting system was developed. As the number of children with extremely high blood lead levels dropped as a result of aggressive control programs, reports began to come in from around the country of children with elevated lead levels not associated with exposure to lead paint.

Investigators searched for other sources of lead. Baby food, canned milk, and other canned foods were found to contain unacceptable concentrations of lead as a result of contamination from lead solder during the canning process. Bottles of fruit juices, particularly apple juice, were detected that had been contaminated by lead arsenate used as a pesticide spray on the growing fruit. As each new source of

lead was revealed, steps were taken to eliminate or mitigate the exposure.

In 1970, in New York City, over 87,000 blood tests were performed on children; 2700 results over 55 micrograms per deciliter were reported. In those days, 60 micrograms was considered an acceptable cutoff level -- 60. By 1974, only 500 of 125,000 tests were reported over 55 micrograms. Already you were beginning to see an improvement. But now evidence was piling up that lower levels of blood lead were associated with subtle, but serious neurobehavioral changes, and that many children were still being damaged. Allowable blood lead levels were lowered from 60 micrograms to 40 micrograms per deciliter. Laws were proposed that further limited the concentration of lead in interior paint to 0.06 percent.

At this point, the Lead Industries Association, a nonprofit trade Association whose member companies include most domestic producers and commercial consumers of lead, and some paint manufacturers -- I stress "some," not all -- fought the changes, citing severe economic consequences to the industry and a lack of demonstrable need. Testimony was presented to congressional subcommittees. The evidence supplied by the public health community was overwhelming and the laws were changed.

Research continued, and the association of blood lead levels to the amount of lead released into the atmosphere was probed. The records of 170,000 children screened by the New York City Lead Poisoning Control Program from 1970 to 1976 were reviewed, and venous blood lead levels and demographic data were analyzed. Regression analysis indicated a significant statistical correlation between the geometric mean blood lead level and the ambient air lead level, even after adjustments were made for age and ethnic group. As a result of this study and several others, the Environmental Protection Agency proposed a standard for the allowable concentration of lead in

ambient air. Again the lead industry, including such giants as DuPont, the International Lead Zinc Research Organization -- ILZRO -- and others opposed the standard. They were joined by the American Petroleum Association, gasoline being the major source of air lead. Economics and the lack of demonstrable need were again cited. Testimony was provided to the EPA and to Congress. Again the public health community prevailed, and more stringent standards were set.

Continuing clinical research revealed that children were being damaged by levels once thought acceptable, and the allowable blood levels were lowered from 40 micrograms to 30 micrograms, and then to 25 micrograms per deciliter. Studies showed a clear association between the amount of lead in gasoline sold in an area and the blood lead levels of children screened. Data from the second National Health and Nutrition Examination Survey appeared to show a strong correlation between declining blood lead levels and the reduction in the amount of leaded gasoline sold. Further reductions in air lead were proposed, and the phasedown and eventual banning of lead in gasoline was recommended. Again the lead industry, led by ILZRO, the Ethyl Corporation, and others fought back. Experts were flown in from around the world to testify before scientific committees of the EPA. Again, the public health community rallied. William D. Ruckelshaus, then administrator of the EPA, announced at a news conference on July 30, 1984, that the agency's intention was total elimination of leaded gasoline by 1995. Citing "overwhelming" evidence that lead in gasoline is a serious threat to health, Mr. Ruckelshaus stated that the "social and economic benefits will be very substantial, and the costs will be minimal." The law was signed and air lead levels continued to drop.

However, while there has been a steady downward trend in lead exposure from air, solder, food, and water, and there has been a concomitant downward trend in blood lead levels of

the entire population, particularly children, lead-based paint, particularly in old or deteriorating housing, continues to be a major source of high-dose lead exposure and symptomatic lead poisoning for children in the United States.

Over the years, the seemingly endless resources available to industry to fund research and to hire experts to challenge the scientific validity of the various studies that document the adverse health effects of lead have been a constant source of envy and frustration to the public health community, which must live within the constraints of very limited funding.

One of my professors of health administration, Dr. Lowell E. Bellin, once told me: "Public health is incrementalism." Everything is accomplished one slow step at a time. And Dr. John J. Hanlon writes that public health is applied social science. I would add to this that I believe it is the integration of scientific fact with political and economic realism. And that is why I am here, and why, in the 1990s, lead poisoning, a truly preventable disease, is still with us. And why, as I stated earlier, whereas decreasing blood lead levels in the general population, particularly in inner-city children, represent one of the most outstanding success stories of public health, the struggle to reduce environmental and occupational exposure to lead points out the frustrations and disappointments with which the public health community must contend.

I have also been asked to very briefly discuss the CDC's most recent publication, "Preventing Lead Poisoning in Young Children." I have been involved with the publication of these documents since the very first one. The detection and management of children exposed to lead is a rapidly changing field. Over the course of the last 17 years, as new data and technologies became available to the Centers for Disease Control, they caused to be written and published guidelines for

the prevention, detection, management, and treatment of childhood lead poisoning.

The first was published in March of 1975; the second in April of 1978; the third in January of '85; and the last in October of '91. The most recent version was developed because new data indicate significant adverse effects of lead exposure in children at blood lead levels previously believed to be safe. Some adverse health effects have been documented at blood lead levels at least as low as 10 micrograms per deciliter of whole blood.

The 1985 intervention level of 25 micrograms per deciliter has, therefore, been revised downwards to 10 micrograms per deciliter. However, we now understand that times have changed and, because of that, the recommendations must change. It has become readily apparent that it is not possible to select a single number any more to define lead poisoning for the various requirements of all the concerned groups: Public health screening programs; pediatricians and other health-care practitioners; government agencies; elected officials; and private citizens. Consequently, the single, all-purpose definition of childhood lead poisoning has been replaced with a multitiered approach.

Community prevention activities should be triggered by the finding of a significant proportion of children with blood lead levels equal to, or greater than 10 micrograms per deciliter. That is on a community basis. Medical intervention and environmental intervention and remediation should be done for all children with blood lead levels equal to, or greater than 20 micrograms per deciliter. That is on an individual basis, as opposed to the community basis. Children with blood lead levels equal to, or greater than 15 micrograms should receive individual case management, including nutritional and educational intervention and more frequent screening. Depending on availability of resources, environmental

investigation, including a home inspection, and remediation should be done for children with blood lead levels of between 15 and 19, should these levels persist.

Again, I thank you for the opportunity to testify. I hope we have finally laid to rest the controversy as to whether or not lead poisoning is, indeed, a problem for children. Thank you.

SENATOR BASSANO: Dr. Curran, thank you.

MS. SEEL: Donald Ryan, Executive Director, Alliance to End Childhood Lead Poisoning.

D O N A L D R Y A N: Good morning.

SENATOR BASSANO: Good morning, Mr. Ryan.

MR. RYAN: My name is Don Ryan. I am Executive Director of the Alliance to End Childhood Lead Poisoning. The Alliance is a national, nonprofit public interest organization located in Washington. We are working to launch a national campaign to wipe out this disease through education, advocacy, and technical and policy support.

The Alliance's Board of Directors includes leading experts from around the country in medical research, environmental protection, low-income housing, learning disabilities, and civil rights. They share a frustration over the government's failure to act effectively on lead poisoning, especially, I should say, the Federal government's failure.

We want to commend this Committee for tackling this issue and taking a step forward. New Jersey has long shown leadership in fighting environmental health problems. I also want to note that in Washington, one of the leaders in the battle against lead paint poisoning is Congresswoman Marge Roukema, from New Jersey. She sits on the Housing Committee. There is a major piece of lead poisoning legislation -- housing legislation -- coming this year. Ms. Roukema, I think, needs to hear from the folks back home about the importance of this issue.

I want to add one insight, if I may, in terms of the health effects of lead, and that is to draw a distinction between lead poisoning and virtually every other environmental health problem. With all other environmental health problems we talk about risk. We look at multistage models and extrapolate from animal to human. We argue about assumptions and overexposure rates. We come up with a theoretical estimate of 10 to the minus 6, one in a million chance of cancer, and that triggers some regulatory action.

With lead poisoning, we do not face a risk. The two million to three million children in this country affected by lead poisoning do not have a risk of lead poisoning. They are lead poisoned. They have names and addresses.

As you look ahead to grappling with this problem, I think it is instructive for a minute to look to see how we got where we are right now. In 1971, Federal legislation established the national mandate to wipe out lead paint poisoning. The lead went to HUD, and over 20 years the signals from HUD were, "This is basically a nuisance level housing problem." Action was discouraged. The policy grew up that we look for and clean up lead paint hazards only after a child had been identified as poisoned. That policy, that inherently lame, limited, reactive approach was gutted in 1981, when Federal money for categorical screening grants to help cities and states test children, was eliminated.

So we had a policy that we act only when we find a poisoned child, coupled with a policy of almost intentional failure to find poisoned children. Cities and states were left holding the bag by the Federal government, and throughout the 1980s, local screening programs shriveled, many of them died, and awareness of the problem was continually reduced.

I am happy to say that in the past year there have been some dramatic changes at the Federal level. I think your

bill and the New Jersey legislation needs to leverage these, and needs to take advantage of them.

First of all, the problem has been acknowledged by the Federal agencies. The quotes you are hearing today, the estimates of the number of children, the quote that, "Lead poisoning is our number one environmental health hazard to children, our most societally devastating disease--" These are not the quotes from advocacy organizations. These are the leading environmental and health officials of the Bush administration.

Last year, HHS issued a strategic plan which offered a whole new vision to this problem, to bring about prevention instead of reaction. That plan included a cost benefit analysis, which shows that there is almost a two to one advantage in doing proactive lead abatement work. Up to this point, many landlord groups had been arguing, "It's cheaper, it makes more sense to chelate children. Wait until the child is poisoned and chelate him." Setting aside the moral and ethical dimensions of the issue, we now know it makes economic sense to get about prevention.

Universal screening is an amazing step forward -- the call for universal screening. We currently, in this country, are not screening nine out of ten children, coupled with our policy of acting only when we find a poisoned child. The recommendation now is universal screening. It is important that your legislation put teeth into that recommendation.

Also important, I think, in the last year, is the fact that the American public, through the press and the media, have been awakened to this problem. TV shows, the cover of "Newsweek," all help parents. Weekly magazines have covered the issue. This is not going to decrease. Within the next two months, a new education campaign is going to be launched from the White House. The President's Commission on Environmental Quality, which is a private sector group of about 25 CEOs, is

tackling a number of environmental issues in terms of private sector initiatives. Within environmental education, lead poisoning has been selected. There will be a number of public service announcements, campaigns, and the public is going to continue to wake up to the problem.

By July, the Federal government will have an 800 number for parents and contractors and homeowners to call for assistance in this issue. So the Federal government is waking up to the problem. The Federal government is beginning to respond, and I hope New Jersey can leverage on that.

I want to just quickly cite, in terms of the bottom line, the dollars, because in the austere budget environment we are in, we are seeing great, steady increases in terms of Federal commitment on this problem. I mentioned that the CDC screening grants were eliminated in 1981. Through a little sleight of hand of Congress, that program was reborn in 1988. The next year, \$4 million was provided. It went to \$8 million; it is now at \$23 million. The Bush administration has requested \$40 million next year. So, Federal funds are increasing for screening.

Even more important, Federal funds are now being provided to help cities and states to pay for the abatement, the cleanup of lead paint hazards in low-income housing; the first ever Federal funds available this year, \$47.7 million. This is for low-income private housing. The Federal government is stepping beyond their landlord role and is acknowledging the need to help cities and states deal with low-income private housing. That \$50 million program is being authorized at \$250 million in the housing legislation I just mentioned.

Another bill picking up on sort of the polluter pays concept would place a tax on lead; a 75 cents per pound tax on lead to generate \$1 billion a year, to go into a trust fund dedicated to low-income housing abatement. So the dollars are

going to be there, and the State of New Jersey needs to access these and needs to leverage these.

There are a couple of concepts that I hope you can consider and embody in your legislation. The first -- as you have heard from several people today -- primary prevention. True prevention needs to be the guiding principle of the bill. The current New Jersey statute, as so many other State statutes, is built on, once you find a lead poisoned child, go to X, Y, and Z. We have to get beyond that.

A key element of this is inspections. Opportunity points have to be taken advantage of to get houses inspected, to get risk assessments done. The State law needs to lay the foundation for abatement requirements. It is not enough to inspect a house and find the hazard, or to find the poisoned child. Local ordinances have to have a foundation to build on in terms of enforcing action.

While it is not per se part of primary prevention, universal screening is a key component in any comprehensive State program. I was frankly quite surprised to hear today that only 11 percent of the children in New Jersey are being screened. My impression was that New Jersey was above average. Nationwide, about 10 percent of the children are being screened. This needs to be made a routine part of Well Baby care. It needs to be plugged into the Medicaid program. Action needs to be taken to make sure that private health insurers reimburse this as an eligible expense.

Contractor certification is desperately important. It has been mentioned before. I would point out that without contractor certification, workers are going to be poisoned; workers' children are going to be poisoned; homeowners are going to be ripped off and taken advantage of by the untrained or unscrupulous operator. New Jersey was one of the two states with asbestos that really set the model for training and certification programs, and you really need to put together a

strong program on that front. It is also a requirement in terms of accessing the HUD grant funds. The State must have a contractor certification program.

I want to quickly address the issue of abandonment, because I know your Committee will be hearing cries that any action on lead poisoning is going to cause windows to be boarded up around the State. To a great extent, I am convinced that this amounts to nothing more than saber rattling by landlords. In states like Massachusetts and other areas where very tough restrictions have been put into place, wide scale abandonment has not happened. There are a few units at the bottom of the ladder that are just above the waterline. They have other code violations that are not economic in which lead paint may be used as the excuse for abandonment. We need to pump money, and the Federal dollars are focused at low-income housing. I hope your regulatory approach is bolstered by resources, as well. We need to put more money into low-income housing.

But, quite frankly, in my view, I think the greatest factor tying into abandonment is liability insurance and the loss of liability insurance. Right now, insurance companies are trying to walk away from lead poisoning, and this is irresponsible. Insurance companies need to be part of the solution. Insurance companies need to be part of the police force. They need to reinforce and reward people for doing the right thing. So I would urge you to address liability insurance.

In terms of funding mechanisms, I want to leave with you a publication the Alliance did about six months ago, entitled, "Resource Guide for Financing Lead-Based Paint Cleanup." This guide surveys all Federal, State, and local programs that are currently available, those under consideration, and also looks at a number of model programs.

I just wanted to mentioned quickly, the State of Massachusetts has a tax credit program, a very easy to administer program; a \$1000 per unit tax credit for lead paint abatement. In the first year, about 100 families took advantage of it; in the second year, 500; in the third year, 900. It has cost the state treasury a total of \$1.6 million over three years, not a lot of money, but it has given property owners an incentive. The average abatement cost for these projects in Massachusetts was something over \$3000, so this \$1000 tax credit had a strong leveraging effect. I would urge you to look at housing programs and look at implementation, in particular the need for safe houses, the need for some resource to relocate families while their units are being abated.

Finally, I want to mention that public sector resources cannot, and should not, pay the full cost of abatement. We need to wake up the housing marketplace. Currently, two houses sitting side by side, one a lead pit, the other a lead-safe house, are valued the same in terms of insurance, in terms of appraisals and lending. This is not right. The lead-safe house deserves a higher value, and the cost of abatement deserves to be rewarded.

One parting thought, and that is, there are a lot of folks at OMB and within the Beltway in Washington with green eyeshades who focus and fret over the cost of this, \$3000 per house, the expense of preventing lead poisoning. Well, it makes sense in terms of the benefits. It also makes sense, I think, when we look at this in another way. Lead abatement and lead poisoning prevention are an investment. We are investing in our housing stock, in our communities, and in the future generations. It makes sense.

I would commend this Committee for tackling this issue. We look forward to seeing a bill that I hope will be a model for the rest of the country. Thank you.

SENATOR BASSANO: Thank you for your participation.

MS. SEEL: Edmond Provder, Certified Rehabilitation Counselor, Diplomate, American Board of Vocational Experts.

SENATOR BASSANO: Good morning, Mr. Provder.

EDMOND A. PROVIDER, M.Ed.: Good morning.

Recently I was referred a six-year-old child for a rehabilitation assessment. During the interview, the child had demonstrated signs of hyperactivity and poor attention span. He was unable to sit in a chair. He could not answer even the most basic questions. During testing, he became easily frustrated, reacting to this frustration by banging his head into the test table. His mother reported that he routinely threatened and acted violently toward her and his siblings. He has been hospitalized for a month by a local school district for observation. This child had an initial lead poisoning level of 45 micrograms per deciliter, according to the screening performed at University Hospital. His current level is 32 micrograms per deciliter, despite hospitalization for chelation therapy.

Ladies and gentlemen, I am Edmond Provder, a rehabilitation counselor with my own rehabilitation company, Occupational Assessment Services. I hold bachelors and masters degrees in Education from Pennsylvania State University. I have done post-graduate work in New York University in rehabilitation counseling. I have worked in this capacity for almost 20 years, being employed at such well-known rehabilitation facilities as the Mount Sinai Hospital Department of Rehabilitation Medicine and the Federation of the Handicapped in New York City. For the past 13 years, I have been employed at my own rehabilitation firm, which was founded to assist disabled persons. Currently, I provide direct rehabilitation services to children and adults, as well as consult with private, public, and institutional agencies. My experience involves assisting the handicapped in coping with the limitations imposed by their disabilities and coordinating

services for the disabled, including assisting them in seeking employment.

I have been educated and trained to work with individuals that possess physical, developmental, psychological, neurological, and cognitive limitations. I have worked with wheelchair-bound paraplegics who have to be sustained on respirators, and babies brain damaged from birth trauma who have sustained physical and developmental impairments. Given the severity of impairments of the population with which I work, it is unusual for me to be affected by any one client. But the case I just referred to greatly affected me, on both a professional and a personal level, because the child's lead poisoning condition could have been prevented by abatements or early screening.

There is no doubt that lead poisoning is a preventable disease. The principal factors associated with exposure to lead include: being under the age of six; being poor; living in large cities; living in the center of cities; being a racial minority; having frequent hand-to-mouth activity; eating soil or paint chips; or living near an industry that has lead emissions, according to the Environmental Protection Agency. Areas in which these factors are most prevalent are labeled Priority I municipalities by the State of New Jersey. Essex County -- principally Newark, East Orange, and Irvington -- ranks number one in the State, with 40,594 children at risk under the age of five. It is estimated that there are 155,064 children under five years at a high level of risk in Priority I municipalities in the State of New Jersey.

I am here to discuss the effect of lead poisoning on the functioning and resultant needs of children through their school years. I will also discuss the effect of lead poisoning on their employability and economic productivity. I will speak about the cost that will be required to care for and maintain these children in society as they become adults.

The figures regarding this are noted by the New Jersey Lead Poisoning Statistical Summary done January to December 1989, published by the New Jersey Department of Health, which stated that over 1500, or 2.6 percent, of the almost 65,000 children screened had elevated lead levels at screening, and almost 1 percent, or 531, demonstrated a high risk at screening. The same governmental agency reported that 177,000 children have been determined to be at risk for lead poisoning in this State by virtue of their economic and environmental circumstances. However, only 34 percent, or almost 60,000, were screened in 1987. During the same year, 271 of this number were under medical management for lead toxicity, requiring inpatient hospitalization for chelation therapy to reduce the body burden of lead. A five-day inpatient cost of therapy ranged from \$2700 to \$3200 in 1987 dollars.

In New Jersey's Action Plan for Children, containing recommendations of the Governor's Committee on Children's Services Planning in 1984, the costs of not detecting and treating lead poisoning were estimated at \$350,000 per child in 1978. This cost represents the medical and special education needs for a child suffering the neurological effects of lead poisoning. They estimated the special education costs due to lead poisoning to be \$3300 per child.

Using the New Jersey statistics of 1841 children found to be lead poisoned in 1987, the total cost of not detecting and treating lead poisoning would be at least \$644 million, which includes medical and special education needs, as well as the lifetime loss of productivity.

The permanent mental retardation and brain damage of low-level chronic lead poisoning necessitates extensive medical treatment, special education, institutionalization, and other special costs throughout society. Early detection and treatment can prevent or limit the extent of damage.

According to "Longitudinal Analyses of Prenatal and Postnatal Lead Exposure and Early Cognitive Development," published in the "New England Journal of Medicine" April 23, 1987, by Dr. Bellinger of the Neuropharmacology Unit, Department of Neurology and Mental Retardation Center, Children's Hospital and Harvard Medical School, Boston, infants in the high prenatal exposure group scored lower than the infants in the low and medium prenatal exposure groups on the Bayley Scales of Infant Development.

In another recent study published in the "New England Journal of Medicine" in January 1990, done by Dr. Needleman, who did an 11-year follow-up study, 270 children initially screened from 1975 to 1978 indicated that this population had a seven times higher risk of dropping out of high school, and their incidence of reading disability was six times higher. In addition, individuals with higher levels of lead in childhood were also significantly associated with lower class standing in high school, increased absenteeism, lower vocabulary and grammatical reasoning scores, reduced eye/hand coordination, longer reaction times, and slower finger tapping. Also, significantly lower IQ scores were reported for the population studied. The researchers concluded that: "Exposure to lead in childhood is associated with deficits in central nervous system functioning that persist into early adulthood."

Another follow-up study conducted after three years found poor academic performance and a relative risk of repeating a grade due to the lead exposure. Also noted by the the U.S. Department of Health was that 20 percent of the children with blood lead levels greater than 25 micrograms per deciliter will require special education, such as assistance from a reading teacher, school psychologist, or other specialist, for an average of three years. They estimated costs for part-time special education to be \$5800 per year, using 1989 dollars.

A study conducted by Lead Free Kids Inc. for the Legislative Commission on Minnesota Resources indicated that children with lead poisoning will have a four times greater chance to have IQs of less than 80. This loss of IQ caused by lead poisoning exposure will affect incomes, as well as individuals' contributions to society, which is incalculable.

Poor, minority children in the inner cities, who are already disadvantaged by inadequate nutrition and other factors, are particularly vulnerable to this disease. A four-to eight-point loss in IQ for each 10-microgram increase of lead per deciliter of blood permanently shifts the child to the low end of the community scale. Learning disabilities and behavior problems have been associated with blood levels of 10 to 15 micrograms per deciliter.

The effect on future income is great. Millions of children in the United States are believed to have blood levels high enough to affect intelligence and development. A study by Chamberlain and Griliches in 1977 estimated that one year's increase in schooling would increase wages 6.4 percent. Other studies report increases from 4.8 percent to 8.8 percent. The U.S. Department of Health and Human Services estimates a 6 percent wage increase, which it notes is conservative.

In the Minnesota study which I referred to previously, they noted that exposure to lead over a period of 3.5 years caused a predictable loss in future income. This study estimated lost income of from \$1000 to \$3000 per annum, depending on the blood level of lead over a child's lifetime, which would yield a total loss in earnings of \$43,000 to \$134,000 over a work-life expectancy of from age 22 to age 65.

The United States Department of Health and Human Services also calculated the loss to be approximately the same. They totaled the loss to be anywhere from \$49,300 to \$134,000 over a person's lifetime, once they have been exposed to lead.

Using the New Jersey statistics of 1841 children found to be lead poisoned in 1987, the total loss of future income would be from \$2,111,627 to \$6,334,881, using the same work-life expectancy.

However, a more realistic methodology of determining loss of earning capacity would be to use the 1989 statistics from the United States Department of Commerce, Bureau of Census, which showed that the average lifetime earnings of an individual with eight years or less of school are \$754,865 over their work life. If a person were incapable of being employed in the competitive labor market due to the severe consequences of lead poisoning, he would sustain a total loss of earning capacity, or \$754,865.

The average annual earnings of a high school graduate are \$26,600, or approximately \$1,140,000 over a work life. If an individual who is lead poisoned is unable to complete a high school education due to his exposure, but is capable of being employed in another capacity, he would sustain a loss of earning capacity of almost \$390,000 over his work life, which would be the difference between the earnings of a high school graduate and earnings as a person with eight or less years of education. Using this methodology and the number of individuals found to be at high risk in 1987 in the State of New Jersey, they would have sustained a total loss of future income of over \$1.3 billion. This would affect the State in lost revenue in the form of taxes and services.

The residuals of lead poisoning are likely to affect participation in the labor force because of failure to complete high school, higher unemployment rates, and earlier retirement ages. Lead poisoning is highly correlated with attention span deficits and other effects, which would also likely reduce labor market participation. Individuals who do not complete high school have a 10.5 percent reduction in labor market

participation. High school dropouts are also more likely to have occupations which have a higher risk of disability.

The United States Environmental Protection Agency estimates that lead exposure costs society \$16 billion or more annually for medical and educational costs, plus reduced future earnings of thousands of dollars due to lower intelligence.

I have the following recommendations: The State of New Jersey can no longer ignore the problem of lead poisoning of children due to the high cost of required services for this growing population. By ignoring these children, the State is doing a disservice to both the individual and to society, which must bear the burden in cost of care and lost future productivity.

I recommend that a comprehensive lead poisoning screening program be provided to all children for early detection.

In addition, a statewide abatement program should be provided since the cost is estimated at only \$6500 per housing unit, as estimated by the Centers for Disease Control. This will not only decrease the amount of children currently exposed to lead poisoning, but also those in the future.

For persons who have high risk lead exposure, special education programs should be provided to assist them in compensating for their resultant neurological, cognitive, and emotional limitations. Once this population reaches adulthood, a special unit of the New Jersey Division of Vocational Rehabilitation should be mandated to provide the necessary comprehensive rehabilitation services which these individuals will require for entrance into the world of work and society.

Just to clarify what I mean by participation rate in the labor market, based on the studies-- This was developed (witness holds up chart) by the United States Department of Health and Human Services. They found that once a person became lead exposed, their educational attainment decreased

and their ability to participate in the labor market, or to seek a job, also decreased, which, of course, yielded less earning capacity.

Also, using another tack, lead exposure rate also decreases IQ, as I previously noted. IQ, based on the studies and the research, and on my own experience, affects the ability of someone to earn wages, which, of course, decreases their earning capacity.

Thank you very much for your time.

SENATOR BASSANO: Thank you.

MS. SEEL: Dr. Antonia Ty, Director, Lead Poisoning Program, Department of Pediatrics, New Jersey Medical School, University of Medicine and Dentistry of New Jersey.

A N T O N I A T Y, M.D.: Good morning, and thank you for the opportunity to testify before this Committee.

It was a wise Ben Franklin who, in a letter to a friend in 1786 describing his observations and insight on the toxic effects of lead, aptly closed his letter by stating that: "You will observe with concern how long a useful truth may be known to exist before it is generally received and practiced on."

My name is Antonia Ty. I am a pediatrician first, and a pediatric nephrologist second by training. Over 20 years ago, during my affiliation with a medical school in New York City, I got interested in the toxicity of lead on the kidneys in children, and ended up starting a lead clinic in an affiliated city hospital. In 1972, I left New York and joined the faculty of the New Jersey Medical School, the Newark campus of the University of Medicine and Dentistry of New Jersey, and assumed the position of Director of the Lead Poisoning Program in the Department of Pediatrics. Over the past 20 years, thousands of children with various degrees of lead exposures have gone through my clinics.

Over the past 25 years, I have witnessed the evolution of the clinical picture of this disease from the symptomatic cases of encephalopathy -- a condition of acute swelling of the brain manifesting as uncontrolled seizures and eventually going into a state of coma and culminating in death in some, or in severe neurologic impairment in others -- to the more common presentation of today, which is that of a clinically normal child without any complaints or symptoms, but with only a blood lead test to show evidence of impending risk of health effects.

The lead poisoning of children today is silent, more chronic, and exists in epidemic proportion. While it is true that some children may show some warning signs, such as hyperactivity, restlessness, loss of appetite, increased sleepiness, and other nonspecific signs, the incidence of that of frank encephalopathy is now a very rare phenomenon. Yet, the danger of this silent or this so-called asymptomatic presentation is the risk of missing the diagnosis at an opportune time when intervention may make a difference. Given what we now know about the significant harmful effects of lead, most especially the apparently permanent adverse neuropsychologic effects of even low-level exposure, and recognizing that acute signals are usually absent, early routine screening of all children should be an integral component of Well Baby care.

On the one hand, the very severe and symptomatic poisoning has been significantly reduced. This may be attributed to effective educational efforts to bring about early screening and follow-up of children at risk. On the other hand, the eradication of the disease altogether should be our goal today, recognizing that practically no dose of lead is safe, particularly in young children undergoing rapid development, especially that of the central nervous system.

Although implementation of universal screening is warranted because of the widespread prevalence of lead-exposed

young children, this strategy should only be viewed as an effort at secondary prevention. Primary prevention strategy should be directed at the identification and removal of major sources of lead, especially lead-based paint, without using our children as sentinels.

We have entered the decade of the '90s. My current caseload of 1090 children under active follow-up represents more or less the constant number of children under active follow-up in my clinics each year over the past five years. These children are referred into my follow-up clinics after they have been identified on routine screening to have blood lead levels greater than 24 micrograms per deciliter, which was the level previously considered to be indicative of undue exposure.

From January 1989 through December 1991, of the 6191 children who were screened through various pediatric services at the University Hospital in Newark, 5.1 percent were found to have blood lead levels over 24 micrograms per deciliter. The revised Centers for Disease Control statement on childhood lead poisoning released in October 1991, recommends downgrading the accepted "safe" level of lead in blood of young children down to 9 micrograms per deciliter. Therefore, using the recommended threshold level of 10 micrograms, 55 percent of the 6191 children screened are at risk for adverse effects of lead, a greater than tenfold increase in the number of affected children.

It is notably important for me to mention at this point that in certain geographic locations, especially in inner cities, we continue to find children with blood lead levels ranging as high as 60 up to greater than 100 micrograms per deciliter. These are the children who reside in old housing where the paint peeling from the walls contains enormous quantities of lead. Lead-based paint is still the most common source of extremely high-dose exposure among young children,

usually through just the normally common hand-to-mouth activities.

As you have heard, a 1990 HUD report estimated that about three million tons of lead still exist in approximately 74 percent of private housing units across the country built before 1980. The Agency for Toxic Substances and Disease Registry in 1988 reported that about two million children under seven years of age live in deteriorated housing with lead-based paint that is chipping, peeling, or creating dust that can be ingested by children.

We in the medical community can only offer emergency Band-Aid intervention to diminish the concentrations of lead that have been accumulated in the body, through a process called chelation therapy. This means the administration of pharmacologic agents either by painful injections or by mouth, which will bind the lead to be eliminated, primarily through the kidneys. However, unless the child can be relocated into a lead-safe home, the risk for reexposure is inevitable. We continue to see the perpetuation of the cycle of high-dose exposure undergoing therapeutic chelation followed by repeat exposure going on and on in many of our children in the communities we serve. Being in the same area for 20 years, I find myself treating the children of my patients from the early '70s.

At present, I can tell you that I am taking care of about 12 children from seven of my former patients. In many of these children with extremely high levels of lead in the blood, detectable developmental and language delays can be picked up early, as well as fine motor lag and cognitive deficiencies identifiable through formal evaluation. Such children may benefit from intervention with early stimulation and educational program placements, if we are to attempt to ameliorate some of the adverse effects of lead toxicity.

I would like to share some cases with you at this point to highlight some of the more serious existing problems that we encounter in our day-to-day management of these children:

J.P. was nine months old when he was first screened and found to have a lead level of 10 micrograms per deciliter, which was considered to be "safe" at that time. He had a repeat screening done 10 months later, and at this time he showed a more than double increase in levels to 23 micrograms per deciliter. Again, because this level was still considered "safe," nothing was done until four months later at the age of 23 months, when his blood lead had risen to 42 micrograms per deciliter, that an inspection of his home was carried out and revealed numerous areas of loose peeling and chipping lead-based paint. He underwent chelation treatment and it was recommended that he be temporarily relocated with relatives while abatement of the lead violations was being carried out.

However, since the home was owned by the family, abatement was not only slowly carried out, but also improperly done by family members. The child was only sporadically out of the house at this time, so reexposure further increased his lead levels in the blood to 76 micrograms per deciliter. To date, the home has not been declared completely lead safe, and this child was readmitted last week for another course of treatment because his levels again went up, this time to 79 micrograms. This case bears out a couple of blatant yet not uncommon problems. The first and foremost is the practice of using a child as the litmus for action. Because the first two blood lead tests were within what was considered normal ranges at the time, an inspection of the home was not carried out since current existing regulations did not require it.

The significant increase of this child's lead levels over a 10-month period was indicative of continuous exposure, and waiting for a magic value of lead level to trigger an

inspection only further increased his risk for exposure and adverse effects.

A second problem I would like to note here, is one whereby tenant-owned dwellings can not be properly abated in a timely fashion because of financial constraints of working-poor homeowners.

A developmental evaluation was done on the child last week during his hospital admission and it showed some significant developmental delays. Based on my experience, I know that the initiation of appropriate early intervention to address this problem will be time-consuming, and time is a luxury that this child cannot afford.

My next case is that of a child who was again first tested at the age 10 months and showed a blood lead level of five micrograms per deciliter. At the age of two years, he was retested and found to have a lead level of 18. Again, in spite of the more than threefold increase in his blood lead levels, because such numbers were considered acceptable at that time, no investigation was done of his environment. At the age of four years, this child was evaluated and identified to be autistic, and a repeat lead test revealed that his blood levels were quickly rising to 47, and subsequently to 57 micrograms within a very short period of time, and he was hospitalized for chelation.

At this time, the inspection of his home revealed numerous lead violations. This situation was complicated by a delay in issuing a notice to abate the lead hazards that were found, because the landlady had suddenly died and legal ownership could not be settled for some time. Soon after discharge from the hospital, the family decided to relocate. About two months after they relocated, this child had to be readmitted because his lead level was again 60 micrograms per deciliter. This present home was then inspected and found to have lead violations. In this case, an additional common

problem that we encountered was the lack of regulations for anticipatory protection through inspection and abatement of any existing lead-based paint hazard that is found, prior to allowing such a child to move in. This case also illustrates the lingering problem of lack of lead-safe housing in these areas.

My next and last case would be too complicated to present because the events surrounding his 13 hospitalizations over a two-year period would be too tedious to narrate. This child's degree of repeated exposure was so severe that on a couple of occasions his blood lead levels went up as high as 103 and 134 micrograms per deciliter. He also manifested severe language deficits and developmental delays.

Furthermore, his family was subjected to repeated attempts by the landlord to evict them, including on one occasion being padlocked out of the apartment when the mother came home from picking up the older children from school. This case took two years and numerous manpower hours of a social worker, psychologist, nurses of various disciplines, and including my own efforts, to finally be able to place him in an appropriate preschool program. This is just one of several extremely important components in the management of severe lead poisoning.

I would like to end by affirming what Ben Franklin had observed. The toxicity of lead-based paint has been recognized for well over a century, and its connection with childhood lead poisoning has been understood for over 80 years. The potentially harmful effects of even very low doses of exposure have been shown in literature for the past 20 years or so. Yet, unsafe levels of lead continue to be allowed to exist in the environment of vulnerable young children, as evidenced by the widespread prevalence of elevated lead levels among children, regardless of status and geographic location. A

useful truth long known to exist has generally been received, but still not practiced on.

Our young children today are the future of our society, the backbone of which relies on the integrity of their growth potentials.

The elimination of this long-existing, man-made but preventable problem, can be accomplished only through tireless public commitment. Universal routine screening of young children, early comprehensive but individualized management of children identified at risk for lead toxicity, education, general health maintenance, eradication of known sources of lead exposure through tighter laws and regulations, and availing alternate lead-safe housing constitute some of the ingredients for preventing repeated exposure and reducing the adverse health effects of lead. However, the only solution to reducing and eventually eliminating childhood lead poisoning is through primary prevention, which is by removing the major source of exposure.

I thank you.

SENATOR BASSANO: Dr. Ty, thank you.

MS. SEEL: Dr. Leah Z. Ziskin, Acting Deputy Commissioner, New Jersey State Department of Health.

L E A H Z. Z I S K I N, M.D.: Good morning, Senator Bassano. I really commend you for holding this hearing, especially at this point in time, because there really is no better time for New Jersey to now increase its attention to this critical public health problem. You have heard today about the new Federal publications, and you have had very eloquent testimony from some of my noted, learned colleagues, and I will try not to repeat that testimony.

I am here today to inform you that our own Commissioner of Health, Dr. Frances Dunston, as well as myself and a whole staff of the Health Department, are very committed, and for many years have worked on this problem. Dr. Dunston

now sits as Chair of a national committee -- the Lead Poisoning Committee of the Association of State and Territorial Health Officers -- so she continues in a long line of New Jersey commitment to this public health problem. In fact, in the Department now, we have formed an interdepartmental committee, which I am taking charge of, to work across all divisions. So we are actually reexamining our Health Department policies and approaches to this problem.

I would like to clarify some of the information you received today about how the Department functions. I am not going to repeat all of the information you have been given, or all the facts and figures from our Department that have been quoted. But I just want to tell you that when the Federal government dropped the categorical money for lead, the New Jersey Health Department was not asleep at the switch. We did continue our programs as best we could, using our Maternal and Child Health Block Grant moneys to continue funding the Project Cities in New Jersey, which formerly had direct categorical money from the Federal government. Plus, we have used about \$500,000 of State funds to continue our efforts. Needless to say, this has not been enough. I think we have gone on the record to say that we realize that our resources did not match the need. However, we are doing the best we can in trying to maximize the funds we have.

Secondly, we have worked with our own Department of Human Services and built screening into our Medicaid programs, into our EPSDT and our other child health programs that Medicaid does. We do get Medicaid reimbursement for lead screening and lead treatment. So we are matching our State dollars with the Federal match, there again to maximize our resources.

Third, Mr. Ryan spoke about our reports on screening, and, yes, New Jersey is higher. We do screen more than the 11 percent numbers you have. The reason for this is that we do

not get all the reported screening from private sources. We have reported screens from our publicly supported clinics in our Project Cities, and we get positives from laboratories. That currently is at 25 micrograms per deciliter. However, we are working to lower that level, but our broad general screening is now higher than the 11 percent that was quoted to you.

Fourth, I think one of your first questions was, "Would you support universal screening of all the children in New Jersey?" Our answer to that is, "Yes." We would support initial screening at six months to a year, followed by a second screening at two years of age. I think the need for this has been well documented by Dr. Ty's testimony, in which she portrayed a number of children where that first screening would have been overlooked, and the abatement of those properties would not have-- Well, with even those sad stories, we would not have picked up those children if we didn't have that kind of a screening program.

I want to stress, too, that New Jersey has a proven track record in certification and training of workers on asbestos abatement, and we would like to duplicate that for lead. Workers should be trained in the best way to abate properties of lead. Those workers must be protected themselves in how they treat the property during the abatement and how they leave the property at the conclusion of the abatement, because we would get into the same kinds of problems, and we don't want to be bombarded with, "Gee, you have made it worse."

Fifth, we are in favor of primary prevention. We want to work with our sister department -- the Department of Environmental Protection. We want to eliminate lead from the environment. That is the best way. We, too, are tired of seeing children being our sentinel, being the canary in the mine, which points the direction for those children who are

already poisoned. So, eliminating lead from the environment is absolutely the best way to go.

We know this is an enormous task, and we look forward to working with this Committee and our sister departments in trying to accomplish it.

Thank you very much.

SENATOR BASSANO: Thank you. I can tell you that this Committee looks forward to working with your Department.

MS. SEEL: Dr. Anna Haratounian, Director, Lead Poisoning Program, Children's Hospital of New Jersey, United Hospital Medical Center.

A N N A H A R A T O U N I A N, M.D.: Good morning. I am grateful for the opportunity to present at this hearing this morning.

I am Anna Haratounian, a pediatrician. After receiving my higher education, my medical education in Pediatric Specialty Training in New York City, I returned to my home State to practice. I would like to focus on lead poisoning 1992, the New Jersey experience.

For over 25 years, I worked in the field of childhood lead poisoning in New Jersey. Now, this really isn't about me, but it is to show a bit of background. I screened for lead poisoning as a Baby Station pediatrician; as a Head Start pediatrician. I surveyed the problem as a Public Health physician working for the New Jersey State Department of Health as a pediatric consultant, covering northern, and later Central New Jersey. I have treated children with lead poisoning as a private practicing pediatrician in the Clifton/Paterson area, and since 1971, as the Medical Director of the Lead Poisoning Program at Children's Hospital of New Jersey.

Children's Hospital is the old Newark Babies, which some of you may know. It is now a unit of United Hospital Medical Center, and it is a major teaching wing of the University of Medicine and Dentistry at Newark.

I didn't go to Newark as a "lead doc." I was hired as the Director of the Children's Ambulatory Unit. I was in charge of the Emergency Room, the general pediatric clinics, and the specialty clinics. I went to join the pediatric teaching staff at University, where I am now Assistant Professor of Clinical Pediatrics.

Soon however, I found the Newark lead problem to be so great and so serious, that it needed so much attention, coordination, follow-up, that I had no choice but to establish the Lead Program at Children's. These were the same years that my colleagues, Dr. Ty from University and Dr. Marcus from Newark Beth Israel, were having similar problems. We were gummed and mugged by the lead problem.

So, together we formed the Newark Lead Consortium. We shared similar professional philosophies, and our purpose was to improve the care of lead poisoned patients in Newark. We had an army of pediatric residents among us. We drilled them about lead poisoning. We adopted a unified protocol of treatment for them to use, and many of them are practicing in the State now. We made intensive efforts at parent education. We tried for years to work as a team with local health departments' lead programs. We have provided telephone consultation to hundreds of New Jersey physicians regarding childhood lead poisoning. We thought that in a few years, 10 at most, we would have this problem licked, and then we could go back to practicing medicine.

By the end of today's public hearing, a great body of important information about lead poisoning will have been presented. For me, the most important fact on April 29, 1992, the most painful for me to witness after a quarter of a century of strategies and battling in this field, the most frustrating, shameful fact about childhood lead poisoning, is that more children living in my beloved home State of New Jersey are at greater risk of becoming lead poisoned than children living

elsewhere in the United States. We have more lead poisoned children living here in New Jersey than anywhere else in the United States. It is very difficult to believe.

I am not going to duplicate or repeat a lot of the testimony. I am going to cut it out. But I will say that if we consider, it really only takes two conditions. Only two conditions need to exist to produce a state of childhood lead poisoning. We need children, and as the most densely populated State, New Jersey is blessed with children, and it takes the exposure of the children to a lead source. And here is our problem. Unfortunately, New Jersey is blighted by lead, dispersed throughout our environment in urban centers, in the suburbs, in the farmlands, in our food, water, and air.

You have heard that 70 percent of our entire housing stock, not just inner-city stock, contains old lead-based paint, still the highest density common lead source.

Again, I am going to cut some of this so as not to repeat, but we need to remember that lead-based paint is sweet. It is like a lead sugar, and it attracts children like bees go to flowers. Once they get a taste of it, they will keep going back. And as you have also heard, it can be inhaled. It wears naturally as a powder and makes a lead dust. Outdoor paint also peels and powders, so we have contaminated outdoor dirt, which, again, is another source to children playing there.

Significant environmental sources of lead, in addition to lead-based paint, are automobile exhaust, and although we are using unleaded gasolines, farm equipment -- farm machinery -- doesn't have to use unleaded gasoline. They may continue to use leaded gasoline, so we still have emissions coming from there. Our playgrounds are contaminated and, again, our water, from lead solder.

So, while there are many other conditions, such as iron deficiency and other things which may exacerbate lead

poisoning, really, only the two basic ingredients of children plus exposure to lead are what is causing our problem in New Jersey.

At Children's Hospital, since 1971, we have seen, and continue to see, what I consider large numbers of children who are lead poisoned. In our Lead Clinic alone-- We do follow children in the continuity clinics. We take out the most severely poisoned ones and follow them in the Lead Clinic. In our Lead Clinic alone, where we follow the more severely poisoned children, the number of patient visits still continues to run between 525 to 600 patient visits a year. Each year, there are between 125 to 150 new patients, and each year we have had to treat, pharmacologically, between 25 and 55 patients. Most of these children are from the inner city -- Newark, East Orange, Jersey City -- but 10 percent to 15 percent are referred to us -- which have been referred to us in the last three years, have been from the suburbs -- Montclair, Somerville, Ridgefield Park, Nutley, Bloomfield.

Because lead poisoning symptoms are subtle or nonapparent or nonspecific, and because our patients do reside in high risk for lead poisoning locations, at Children's we screen aggressively for lead poisoning, as in University and as in Beth. All children under six years who are admitted for whatever, all children who are seen in the Emergency Room or in the general pediatric clinics, who need any kind of a blood test, any child being evaluated in a Child Development Unit, children seeking such specialty services as cardiology, neurology, any of these children are screened.

These screenings total between 2700 to 3000 a year. Of these, between 20 percent and 55 percent are positive and they are followed up. I know this number is different from the number that Dr. Ty sees -- the number she has given. Even though we are a stone's throw from University on the other side

of Central Avenue, we do serve a different patient population, and these have been our numbers over the years.

The Environmental Defense Fund estimates that the percentage of children under age six who are at risk for toxic effects of lead in Newark are 30 percent; in Jersey City, about 29 percent; in the Passaic/Clifton/Paterson area, about 25 percent. The statistics from our clinic support this. In many areas, we really do not know what the prevalence is, because children are not screened. Remember that army of residents I told you are now practicing in New Jersey? Well, not all of them screen for lead poisoning. Many of them, as a matter of fact, do not, because they feel they are not in high risk areas; because sometimes they see children for acute episodes. When a child comes to you with a temperature of 104, screening for lead poisoning is not often your top priority, because screening for lead is a financial burden to the parents and is cumbersome sometimes to the physician. So in many areas where it is felt that they are not high risk, there is no screening going on. It is assumed that the areas and the children and the families are low risk. Unfortunately, we found that this is not so.

We have heard different kinds of testimony, but it occurred to me today that we haven't said very much about treatment. The pharmacologic treatment we are talking about in the acute cases, in the most severely poisoned children-- They are painful injections. There is a regimen of painful injections given every four hours for at least five days. In some of the lower ranges, we have now available medications by mouth, but in a large percentage, in a large range of these children, the children who are running between 10 micrograms up to 25 or 30 micrograms, and for some physicians even higher, the only treatment we have is removing the child from the lead environment. That is the only treatment we have. So this is not only a preventive thing we have to do; it is a therapeutic thing we have to do.

What are the problems facing childhood lead poisoning today that continue to exist? Detection. As you heard, the problem is often nonapparent. These children who walk in with leads of 140, very often they do not come in in seizures. Very often they come in maybe a little lethargic, maybe dragging, maybe not so peppy, but they walk and they talk, and unless you really look at them carefully and make a careful eval-- Even sometimes with a careful eval, at the moment you may not pick up any symptoms. So they can easily-- If you are waiting for symptoms, you are going to miss cases. So, again, we need screening.

Lead is a chronic disease. The disease itself is chronic and the problem is chronic, so we need repeat screening. A child who has one screening and is okay-- You are falsely secure if you think that child is home free. It must be repeated.

The price of lead screening is high. That is often a barrier, particularly to working poor people and to private pays. It needs to be more affordable.

The systems which are in place, the team systems, are dysfunctional and ineffective. We have poor coordination between physicians and health departments. The local inspections may not be done. They may be done incorrectly. They may be duplicated. They may not be followed up. This is a problem.

The price of abatement, as you know, is high. Abandonment, I hope, would not be a problem, but in the Newark area it is. The problem of repairing a home is so monstrous to some of the homeowners that the homes have been abandoned.

Housing is a problem. We have no lead-free housing. We keep returning our children-- The children we treat return to leaded homes. Safe abatement is a problem. At Children's, I am sorry to say, 15 percent to 20 percent of our children are re-poisoned during the abatement process, even though the Health

Department advises them, and we advise them that they must be out of the house during the abatement process. They have no place else to go.

In addition to the worry of having a lead poisoned child, families, despite the fact that there is a law preventing this, are threatened by eviction, and will often end up on the street.

In our experience, again in the Newark area, we have seen very severe cases resulting in death. We have seen severe cases, moderate cases, which result in mental retardation, and milder cases which have learning disabilities, and so on.

I would like to close by briefly presenting two cases: One is a child who was referred by a pediatrician in Verona. I was delighted that this pediatrician screened. He is a great reader; he keeps up to date. I think he was also impressed by the "Newsweek" article, The New York Times article, and he tried to stay current. He decided to screen. He has detected several children in his pediatric practice who have had abnormal exposure to lead, and he wasn't a bit surprised to find that. But he was surprised to have detected a frankly poisoned child in his population. This child had no other risk factor than that the child lived in a home that was leaded.

The second case is a family that I just saw last week, an inner-city family, a lovely little family with three children under the age of three. The oldest child was not yet three years old. They were Spanish speaking, and even with my pigeon Spanish I had to go get an interpreter because we could not understand each other. The reason we got this family in was because the youngest child had a congenital heart. Now, that was a success story. Twenty years ago, that child would not have been alive. He had a hypoplastic left heart. The child came in and had surgery. Remember, we said we screen

everybody. So this child had a congenital heart. He got that repaired and got lead screened.

The lead was in the range of 25. The other two children had not been screened. They were in the care of a private pediatrician, but they had not been screened. Of course, we screened them. The family had been living in a fourth floor walk-up apartment. Somehow or other, that apartment got repaired. Because she had these children, and the sick one, she managed to get an apartment on the first floor. That apartment was not repaired. She was afraid to have it inspected because she did not want to be evicted.

Now, I know there is a law on the books that says if there is a multiunit building, if there is one that has lead in it, all of the units have to be examined and repaired. I know there is a law on the books that says, "This person is not to be evicted." By the way, she has paid up her rent; she has no rent problems, and there seem to be no other problems. And yet we got a call. As soon as an inspector appeared, there was a threat of eviction. So here is this lady who is going to be out on the street.

This has been, and this is, our New Jersey experience. We are still very much in the midst of this silent epidemic. We must join our energies, our resources, and our strategies to protect our children by ridding our State of this problem. We must prevent this totally preventable disease.

Thank you.

SENATOR BASSANO: Thank you.

MS. SEEL: M. Steven Lajoie, Director, Research and Development, Church & Dwight.

A N T H O N Y P I Z Z A T I L L O: Good morning, Mr. Chairman. My name is Tony Pizzatillo. I am here today with Church & Dwight to talk about lead prevention in drinking water through the use of their anticorrosion technology. I would

like to thank you for inviting us to speak about their breakthrough and how we intend to utilize it in New Jersey.

I have here Steve Lajoie, who is a chemical engineer, and he would like to talk about the technology. Steve?

M. S T E P H E N L A J O I E: Good afternoon, Senator. I am Steve Lajoie, Director of Research and Development, Church & Dwight Co., Inc. We at Church & Dwight welcome and appreciate the opportunity to appear here today to comment on the serious problem of lead poisoning in children. We thank you, Mr. Chairman, for highlighting the importance of this critical issue.

Church & Dwight is a New Jersey-based company headquartered in Princeton. We are manufacturers and marketers of Arm & Hammer brand products. The familiar box of Arm & Hammer Baking Soda is the most widely recognized of our products. We are a U.S. company, founded in 1846, and we are the largest manufacturer of sodium bicarbonate, commonly known as baking soda, in the world. We have approximately 1000 employees in the United States, of which nearly 400 are located in our offices in Princeton. Our philosophy is to manufacture and market products that provide good value to customers and are environmentally responsible.

As the leader in bicarbonate products and technology, we have considerable experience in bicarbonate applications in water chemistry. An important application, and the reason for our being here today, is the reduction of lead exposure through drinking water by use of bicarbonate as a corrosion control treatment method, for potable water systems from point of entry into the water distribution system through to the tap in residences, schools, other public facilities, businesses, etc. I'm here to relay Church & Dwight's experience in the development and application of this method of corrosion control for lead exposure abatement, and to provide an outline of the technology and its practical aspects.

First let me touch on the magnitude of the problem. Lead exposure through drinking water affects approximately 130 million people in the United States, and contributes between 10 percent and 20 percent of total lead exposure in young children. We believe the bicarbonate-based method of corrosion control in potable water systems can contribute significantly to reductions in lead exposure in many communities.

Church & Dwight's experience in this technology dates back to 1977, when the City of Bennington, Vermont, was experiencing a severe problem of elevated lead levels in the potable water systems. Analysis of Bennington's incoming water to the distribution system showed that it was acidic. It was literally dissolving the piping, the fixtures, and the fittings throughout the community's residential homes.

In addition, their water distribution system was very old and contained considerable amounts of lead piping. It, too, was being aggressively corroded. Now, Bennington's water source was extremely pure surface water. It was low in pH, virtually zero hardness, very soft, and very low in alkalinity. There was no lead in the source water. However, because the water was very low in pH, was acidic, and absent of alkalinity, it was a condition conducive to the corrosion of the piping throughout the Bennington distribution system.

Bennington was one of the worst documented cases of lead levels in potable water for the U.S. We became aware of the Bennington situation through a consultant who was conducting basic research for us in the area of corrosion control. We proposed to the Bennington Water Board the process of adjusting pH and adding alkalinity in their system, as a means of mitigating their corrosion problem. Of all the proposals made, the pH/alkalinity process appeared to the Water Board to be the most feasible from the viewpoint of economics and implementation. We helped Bennington to design the system in exchange for data on the efficacy of the process.

plementation involved a simple installation of a mixing tank and a pump to introduce bicarbonate and hydroxide into their distribution main. By increasing the pH to make the water nonacidic and adding alkalinity, the water quality was changed from corrosive to noncorrosive. This technique brought them into compliance on lead level standards within a matter of weeks, and effectively maintained compliance.

In 1990, we revisited Bennington and modified the system to provide more precise and accurate control of the pH and alkalinity in anticipation of the issuance of new, more stringent requirements and standards under the Safe Drinking Water Act. These improvements brought the lead levels well within the current EPA action level of 15 parts per billion. We have, in effect, 15 years of experience in the application of pH and alkalinity control of corrosion to reduce lead levels in potable water.

More recently, the City of Fitchburg, Massachusetts, adopted the bicarbonate method of corrosion control in their potable water system. Like Bennington, their incoming water is very pure, and low in pH, alkalinity, and dissolved minerals. The water is aggressive. The process was implemented there in July of 1990. Similar to Bennington's experience, upon application of this process, the lead level of Fitchburg's water supply was quickly reduced to well within the standards on lead and copper.

These are the cases where we have rigorous data, but application is not unique to them. This method of adjustment of pH, in combination with the addition of bicarbonate for corrosion control, is being used in other cities in the United States, including five in Connecticut and the City of Fort Collins, Colorado. It is also used in Europe.

Sodium bicarbonate, in addition to being a source of alkalinity, is a buffer which assures stability of basic pH throughout the distribution system. This, by itself, reduces

the corrosive nature of the water. More important is the mechanism. Bicarbonate reacts directly with exposed metal surfaces. It forms an insoluble metal carbonate compound in a thin passivation layer, preventing the further leaching of metals into the water supply. This coating is very tenacious, but also forgiving. Once the passivation layer is formed, it is not affected by minor operating interruptions in the system, or even such things as a breakdown of the treatment equipment. The passivation layer is also self-limiting. Once the metal surface has reacted with the bicarbonate, the reaction stops so there is no further buildup or accumulation of a coating. If the passivation layer is mechanically damaged, it quickly self repairs. Lead pipes removed from the Bennington distribution system after 15 years of continuous service under this process support this.

In addition to lead and copper corrosion control, the system is also effective in passivating iron surfaces. Now this is not considered a health problem, but it is an economic one. Many of the distribution mains and branches leading into residential connections are made of iron.

The pH and alkalinity process is not a panacea. It is not a cure-all for all water systems. It is applicable specifically to water systems which are low in pH, alkalinity, and hardness, waters that are generally described as aggressive.

The process is inherently environmentally sound. It involves adding bicarbonate to water systems that are deficient in this material, to bring them up to levels that are naturally occurring in nonaggressive waters. Bicarbonate is found naturally in most water sources, and therefore is a normal constituent of most of our water supplies. However, watersheds that are affected by acid rain and other acid runoffs and are deficient in limestone-bearing subsoils, are devoid of natural bicarbonate alkalinity. Since the process is adding a naturally occurring substance, concerns with the introduction

of other nonnatural corrosion control chemicals and the impact on downstream wastewater handling and treatment systems are avoided.

In addition, this process improves the quality of sludge in wastewater treatment plants by minimizing the quantity of heavy metals in that sludge, thereby making the sludge land basing a more achievable goal. It should be noted that bicarbonate is also used in wastewater treatment itself as a method of providing pH control and alkalinity. It should be further noted that sodium bicarbonate is a GRAS -- generally regarded as safe -- list food ingredient.

This system is cost-effective in a couple of ways. The cost of raising alkalinity by 20 parts per million, which would be a typical requirement for most aggressive waters, amounts to two cents to three cents per household, per day. In addition to reduced lead exposure, the reductions in corrosion-related replacements and repairs throughout the distribution system and residential plumbing system infrastructure can more than offset the cost of this system.

Church & Dwight is currently working with the New Jersey Department of Environmental Protection and Energy to identify potential sites for the application and demonstration of the bicarbonate-based pH/alkalinity process of corrosion control within the State. The Department is in the process of developing data on New Jersey water systems that will provide the basis for the site selection.

In conclusion, the bicarbonate-based pH/alkalinity process for treating aggressive water supplies to render them noncorrosive to water systems is a proven technology for effective reduction in lead contamination of potable water. It is environmentally responsible, simple to implement, and is cost-effective. Church & Dwight is willing, and would welcome the opportunity to assist this Committee in the prevention of

lead poisoning via reduction in lead exposure through drinking water.

Again, Mr. Chairman, thank you for the opportunity to speak.

SENATOR BASSANO: Thank you.

It is now 12:30. We are going to break for 45 minutes until 1:15, to allow people to have a little bit of lunch. Those of you who are members of the press, I should point out that there is a press kit available which you can pick up in Room 103, should you desire to get a copy of some of the testimony that is taking place. I would urge you to do that.

I hope everyone will be back here sharply at 1:15, so we will be able to start promptly. Thank you.

(RECESS)

AFTER RECESS:

SENATOR BASSANO: May I have your attention, please? We would like to get started on the afternoon session if we can. There are a number of people who want to speak. I have a page-and-a-half of people who still have to give testimony. I am going to ask that you try to cooperate with us, and try to limit your presentation to 10 minutes, or less, so that everyone will have an opportunity to be heard. We will start now with our first speaker for our afternoon session. Eleanor?

MS. SEEL: Susan Adubato, Director of Project B.A.B.I.E.S.

S U S A N A D U B A T O, Ph.D.: Good afternoon. My name is Dr. Susan Adubato. I am a New Jersey licensed child psychologist, a faculty member of the University of Medicine and Dentistry, New Jersey Medical School's Department of Psychiatry, and on staff for both University Hospital and Children's Hospital of New Jersey in Newark. I presently am

Director of Project B.A.B.I.E.S., a residential and outpatient treatment program for drug-exposed infants and their families.

I come before you today to discuss a lost generation. I do not mean that which was and is no more, but that which may never be. I am talking about a generation of children needlessly and unknowingly exposed to lead. Lead poisoning is not something that one can easily see or feel, as we heard this morning, nor is it something that one can see immediate damages from.

Many feel that lead does no harm to our developing children. To those people, I invite you to be with me when I assess the damage caused to our children by high levels of lead exposure. I invite you to sit with me as I try to contain a little three-year-old who cannot focus on a task even for five minutes. Sit with me as we watch a five-year-old bounce around a room stripped bare so as not to distract her, touching everything in sight, trying to open and play with all she sees. Sit with me as I try to assess a 10-year-old who is functioning at the level of a seven-year-old, who cannot remember simple tasks, complete simple puzzles, or even draw a human figure.

I invite you to sit with me as I talk with parent after parent as they describe a healthy child prior to the lead poisoning, and then describe a child who is impulsive, aggressive, "nasty," hyperactive, and inattentive; a child who has such poor articulation problems that one has to listen very carefully as he speaks in order to understand him; a child that must be watched every minute of every day, because if he is not, he may continue to lick the walls or eat paint chips that have fallen on the floor.

A lead poisoned child is a child who has been damaged by a preventable toxin. These children present with a myriad of problems -- medically, educationally, behaviorally, and developmentally. Even if they are asymptomatic, with no

clinical signs, lead poisoned children run the risk of learning or behavioral difficulties years after the exposure.

Lead poisoned children are often diagnosed as attention deficit/hyperactive disorder. These are the children who are often described as spinning tops, children who are fidgety in their seats or cannot sit still. Lead poisoned children have expressive and receptive language problems. They have severe behavioral problems. Some cannot mentally process, and then answer, a simple question such as: "In what way is an apple and a banana alike?"

Children with pervasive developmental disorders, in which autism is subsumed, are often found to have blood lead levels significantly higher than their normal siblings. If lead exposed children first present with gastrointestinal symptoms, approximately 30 percent will exhibit permanent neurological damage. But, if they first present with symptoms of encephalopathy, i.e., confusion, seizures, lethargy, and vomiting, 80 percent sustain permanent neurological damage.

Lead poisoning in children impairs cognitive, behavioral, and linguistic functioning. These children show, and are rated by teachers and parents, as high in distractability, disorganization, daydreaming, frustration, and difficulty following directions. There is a decrease in their ability to learn, and an increase in their hyperactivity and poor classroom performance. Thus, lead poisoning in children can result in serious neurological impairment, mental retardation, and, if untreated, even death.

Increased lead levels are endemic in urban, high poverty areas. As with many of societal ills, children from poverty are the greatest casualties in our battle with lead, and our smallest, those aged four and younger, are most vulnerable, because of increased hand-to-mouth behaviors and because of the magnitude such an assault can have on their still maturing brain and central nervous system.

What we must also realize is that those children exposed to lead early in their lives are also more likely to have later reading and writing difficulties, drop out of school, lower IQs, and, some say, enter the juvenile justice system. Lead poisoning in children is something that does not need to be. We can do many things to prevent this toxin from damaging our children.

We can educate parents to ensure their knowledge of how lead exposure occurs, and of the sequela of lead poisoning on their children.

We can be vigilant in our surveillance and fining of landlords who do not properly abate a premise, or do not abate at all; landlords who continue to poison our children by their inactivity and their indifference.

We can carefully construct new housing, or refurbish old housing so our children can grow up in a safe and healthy home.

We can screen all children, particularly those who live in our urban centers, who are at high risk for lead poisoning, and, when needed, get them into programming, depending on their age, either an early intervention program for those children under three, or preschool handicapped for those between three and six.

We can provide teachers with the necessary tools to assist them in their classrooms in order to get the maximal potential from their lead poisoned students.

And, we can address our legislators and our Senators, as we are doing here today, to inform them of the dangers our lead exposed children face, and enlist their support in our fight against lead poisoning in children.

Growing up is difficult enough for our children. They are exposed to many things -- to drugs, to alcohol, to abuse of all kinds, to drive-by shootings, and to needless violence -- many of which we cannot control. But to allow our children to

be exposed to lead, a toxin that can be eradicated, is a crime, and it will result in a lost generation -- our future generation, our children -- if we do not act now.

Thank you.

SENATOR BASSANO: Thank you.

MS. SEEL: Vincent M. Coluccio, Vice President, ATC Environmental Inc.

V I N C E N T M. C O L U C C I O, D R. P. H.: My name is Dr. Vincent Coluccio, and I am Vice President of ATC Environmental Inc., a nationwide environmental consulting firm. I am also Director of a federally cosponsored three-day course, Identification and Abatement of Lead-Based Paint Hazards, offered jointly by the UMDNJ Robert Wood Johnson Medical School and Rutgers University. I serve as President of the newly created National Lead Abatement Council, and I am a member of the New York City Mayors' Advisory Committee on Lead Paint Poisoning.

I have 17 years of professional environmental experience, and a doctorate in Public Health from Columbia University. In recent years, my practice has focused on assessing and managing lead-based paint hazards, particularly within New Jersey's residential sector.

The purpose of my presentation is to describe some of the deficiencies in New Jersey's approach to testing and abating residential lead hazards, and to offer recommendations for addressing those deficiencies.

We have already discussed the nature of the lead paint hazard, that it is a dust problem as well as a paint chip problem, and I will not repeat that. But I will give a sort of generalized scenario that I am familiar with in New Jersey on how we are addressing the problem.

It begins when concerned parents request that a local health department assist in testing their homes for lead hazards. If the parents report that none of their children are

lead poisoned, the health department typically will not test for the lead hazards, but will advise the parents to contract a "qualified" lead testing service. Unfortunately, lead testing firms are not being evaluated and licensed in New Jersey, or most other areas, and the bewildered parents are not provided with practical guidance on selecting a qualified firm. In my opinion, quality controls and scientific competence are pretty low priorities in the flourishing lead testing industry. I am seeing a number of problems with the type of work that is being done.

When a case of child lead poisoning is confirmed, the local health department will inspect the child's dwelling for lead-based paint. In too many instances we find undertrained inspectors, using outdated inspection techniques, failing to identify all lead-based paint hazards, nor do they test for lead dust or lead in soil, which are also correlated with blood lead levels of children.

The health department will order the landlord to abate the detected "lead violations," but will not provide thorough lead abatement guidelines or monitor the abatement work.

If the landlord does not act, the local health department will contract the abatement to a firm, but will not require that the firm have lead abatement training, proper equipment, adequate worker safety and health programs, or occupant protection plans; will not have post-abatement clearance standards to determine that this is a safe apartment when they leave, or other components required for effective abatement.

Many abatements performed by both landlords and agency-contracted firms often are done so poorly that lead hazards are actually exacerbated, and I will show some slides on that in a moment. In some cases, these dwellings are approved by health departments for occupancy following faulty abatements, resulting in children being reexposed to lead.

We heard a figure today that maybe 25 percent of the children in one clinic may be recurring cases of lead poisoning. Directors of urban lead poisoning programs in New Jersey believe that that figure may be as high as 50 percent, meaning that that many children that they see in their clinics have actually been there before and have been reexposed to lead in their apartments, and are coming back for follow-up treatment. I would like to add that when the new CDC guidelines for lowering the definition of lead toxicity are incorporated into the State regulations, we will see a staggering number of cases of lead poisoning being reported. From my perspective, there will be a tremendous increase in the demands for testing and abatement services. Yet we are not at the point-- We do not have a competent industry to provide that testing and abatement service. So there is a need to cultivate that industry.

I would like to show some slides of actual sites I have been on. This is the apartment of a three-year-old child who was lead poisoned. She had 45 micrograms per deciliter. The local health department ordered an abatement. Unfortunately, the child was in the apartment during the abatement, and her blood lead level went up to 98. The human dimension of this problem struck me when I was doing the investigation and the girl was in the apartment in what appeared to be a comatose condition.

We can see here that the abatement was done to remove lead paint on what are called "malleable" surfaces, on the woodwork going up four feet. Above four feet it is not required to be abated. We can also see that islands of paint remain on the woodwork. Current Federal guidelines and the state of the art would require that that wood be stripped bare, and that the wood be resealed; in other words, repainted or covered, before anyone may reoccupy the apartment. But of

course, the child was there at the time, and that is the way the conditions remained.

No effort was made to cover the furnishings in the room, so all of these items are saturated with lead dust. Now these furnishings become a long-term reservoir for ongoing lead exposure. You can see on the back wall that there is a burn mark where open flame torching has been used to remove lead paint. In addition to the fact that it is poor craftsmanship, it is also extremely hazardous because it liberates very large amounts of air-borne lead dust.

This was also a feeble attempt at abatement. Incidentally, most of these conditions are being approved by local health departments following abatements. Now, I am generalizing, and there are some health departments that have better capabilities and resources to implement better guidelines. But here we see that a thin layer of blue paint was intended to incapsulate this door, but when the hinge broke and the door went into the casing, you can see a chip of paint missing. We do not consider merely painting over lead paint to be an adequate form of abatement.

This is the living room floor. (witness changing slides as he goes along) It is lead-based paint. From my knowledge, it was not recognized as such in the report. The mere act of walking or moving furniture on that floor will help to contribute to the hazard.

Now, I took a wipe sample of lead dust from the kitchen floor and compared the results to levels that the Federal government would consider acceptable following an abatement. The HUD guideline would say that 200 micrograms of lead per square foot -- and a microgram is a millionth of a gram, so we are talking small amounts -- would be an acceptable amount, meaning that a competent abatement was done. In contrast to the 200, I found 4800 micrograms per square foot.

So there is definitely a lead hazard in the form of both available paint chips and dust.

I will go through these very quickly just showing additional cases of poor abatements that have been approved by health departments. In a case like this, where we see renovation dust, which we typically consider to be a nuisance, we now have to recognize it as a hazard. I don't even have to take a sample from that floor to tell you that it is very high in lead dust.

In this case, the violation report did not indicate that there was a problem with the window in the kitchen, but that is all lead-based paint. Again, I took a wipe sample on the floor in the kitchen, and found 14,200 micrograms per square foot. This, again, was a local health department-approved abatement.

These are pretty much more of the same. Here we see, at the level of a child -- my partner is on his knee here -- a door casing that had tight paint on it at one time and was stripped as part of the abatement. Now when you run your finger along it, you will have dust on it. That is lead dust, and in that sense we took probably a minimal hazard situation and made it into a higher hazard. On that kitchen floor I found 14,900 micrograms per square foot.

Here is a home in Montclair. A young couple with children were planning to move into this home and renovate it. This was all lead paint. In fact, every single surface on the inside and outside of that home was covered with high levels of lead-based paint. Their plan was to move in and do piecemeal renovations while living in the house with their two children. My strong recommendation was to have that work taken care of beforehand, and then move in after the house had been deemed to be safe. Their dilemma, as I mentioned before, was not knowing who to go to to do the abatement or the follow-up testing.

On the upper end of the economic scale, we have clients-- This is a situation where the exterior of the home was sandblasted, and in this case the painter did what sandblasters have been doing for decades, just shooting high velocity particles of sand or grit against the wall to knock the paint off. This is the soil surrounding the home. There is enough lead in that soil to constitute a Superfund hazardous waste site. That is a direct threat to any child playing or walking on that soil. Then you can also correlate the soil lead levels with the lead dust in the home.

At the time this was taken -- this was about a year ago -- the home was sealed up. The family had moved out and left all of their possessions inside. This is in litigation, but you can see here that lead dust managed to make its way into the house, so that everything inside the home was contaminated with lead dust. The question came to me, as an industrial hygienist, "How can we get this house clean and safe for children?" There is no way I would be willing to sign that this is a safe environment. We can significantly lower the lead levels, but what to do with the possessions still remains a mystery.

The joy of owning or renovating a home in this case -- and in many other cases -- turns into a financial and an emotional catastrophe.

Other upscale situations: This is lead-based paint in a very flaking and dusting condition, and it would be a direct hazard to a child. We can see large particles of paint falling off the front. There are proper ways of doing this. In this case, the client actually decided to power wash it with high streams of water, which would distribute the lead. At a point like that, I decided to disassociate myself from the client.

But here is another example of where we are going to run into incompetence. A prior consultant had come in and found 450 parts per million of lead in the paint on the walls

in this home, and he recommended abatement. The homeowner was about to spend \$30,000 to do the abatement, when she asked me my opinion. I told her that she could get paint with legal amounts of up to 600 parts per million of lead in that paint, as compared to the 450 in here. So she would actually have spent \$30,000 to remove lead paint -- I'm sorry, to remove nonleaded paint, only to replace it with paint that might have more lead in it.

Some might be familiar with the situation in New Jersey. A locker pavilion which was sandblasted -- uncontained sandblasting-- It allowed lead debris to go onto the beach, which is on the other side of that wall. The contractor was then required, once this was found out, to remove up to four feet of sand along the beachfront.

Another example of a nonresidential situation that we have to address, as well-- This is in Texas. This is a very large water tower. Half of it was stripped of lead paint, and at that point, when the community realized that a good part of the community was covered with a layer of paint, this was the result -- a \$600,000 cleanup that took 95 days. Roofs had to be replaced; lawns had to be taken up; homes had to be vacuumed. It was a very invasive and expensive procedure to try to clean up.

These are some of the many case studies we have on file now. The Federal guidelines, those that are put out by HUD, are a step in the right direction. They set out testing and abatement guidelines that will serve as the template for many states and municipalities that are developing regulations. But I believe that in New Jersey we should make quick progress in training and certification requirements. A valuable insight into the State's training needs has already been acquired at the UMDNJ/Rutgers Training Program. The EPA is now developing curricula for training supervisors and people doing lead testing.

I believe we need to have a registry of qualified testing and abatement firms, and that we need to be experimenting with lead hazard assessment models. What that means is that we need to get away from the HUD approach, which is to say, "We have lead paint in this apartment. Let us do a full-scale abatement." We need to refine our techniques; to use more than just lead testing techniques to look at lead dust, the condition of the paint, and the behavior of the occupants, and come up with more tailored abatement approaches that we will call "repair and maintenance," equivalent to operations and maintenance in asbestos. I believe this will be a cost-effective way of addressing the problem in the interim.

I believe that risk assessment and repair and maintenance strategies that have already been developed should be implemented in New Jersey on a small scale demonstration basis, so we can evaluate how effective these are in the State, and evaluate the different costs involved in these different methods.

Finally, in terms of cultivating an effective testing and abatement industry, we have created a National Lead Abatement Council, which is a nonprofit organization headquartered here in New Jersey. Our goal is to instill quality controls on the work that is done. We stand ready to assist the State in the regulatory development by encouraging communication between the industries that will be doing the work and the regulators.

That is the end of my statement. Thank you.

SENATOR BASSANO: Thank you.

MS. SEEL: Stephen Sides, Director, Health, Safety & Environmental Affairs, National Paint & Coatings Association.

S T E P H E N R. S I D E S, CIH: Thank you, Mr. Chairman. My name is Steve Sides. I am Director of Health, Safety & Environmental Affairs for the National Paint & Coatings Association. With me today is Allen Irish, our

Environmental Counsel, also familiar with, and currently working on lead issues, both at the Federal and the State levels.

Contrary to, perhaps, popular opinion in this room, I am not here to represent the lead industry. I am here to represent the paint industry, which is making every effort to divorce itself from that unfortunate name association game of "lead paint" or "paint lead."

I have been at NPCA for the last seven years. I have had the good fortune of working on many health, safety, and environmental issues, proactive efforts. The industry has a long and productive experience of work in that area. We are a trade Association that is over 100 years old. We represent about 85 percent of the manufacturing capacity of the paint industry.

I am not here today to debate health issues associated with lead. The toxicity of lead is well documented in literature. There is new and ongoing and very exciting research that is pointing to the need to move effectively to deal with this important public health problem. A lot of the information is very confusing and very difficult to communicate to the general public. We take what we find in studies involving populations of people, and it is very difficult to articulate down to what constitutes, always, an individual problem, the health of an individual child.

We need to move forward and do more effective blood lead screening in the general population, but, unfortunately, we are hampered by some methodology problems that will not allow us to get down to the target levels we would like to get at. We are also hampered by the fact that there is very little we can do medically with these individuals and children once we find them, so we have to move into what others have described to you today as "primary prevention." We support that effort. Virtually everyone who has come before you here today has

placed before you some pearls of wisdom, but they have also repeated some of the rhetoric, which we feel is also unfortunate.

I would like to go through some things today that the paint industry has uncovered, and hopefully set the record straight on some issues. First of all, the extent of lead-based paint in residences. You, yourself, quoted the 57 million housing number. It has alternately been described as 74 percent of our nation's housing stock. All of those numbers have come from a study that was done and reported in 1990 by the U.S. Department of Housing and Urban Development. It was done on private sector housing. By and large, this has been used throughout the media reports to articulate the extent of the lead-based paint problem.

The paint industry's own experience with this formulation practice raises some significant questions about those estimates. They are inconsistent with known formulations produced over the years. The paint industry believes that they stem, in large part, from sampling and analytical procedures used to determine currently the content of lead paint in film.

Lead-based paints, by the way, were manufactured by the paint industry; those that were formulated with lead carbonate, or white lead, or what we historically call "lead-based paint." They were manufactured up into the 1940s, and were known to contain more than 50 percent lead, by dry weight. Other historical uses of lead and paint have been as a color pigment. There they are present at 5 percent to 7 percent. Lead dryers and catalysts: There they are present in concentrations, generally less than one-half of a percent.

Now, HUD's procedures for determining lead-based paint have been mandated by a Federal standard. It is not New Jersey's fault; it is a Federal statute that is the problem. They are based on two different sampling and analytical methods with dramatically different errors and biases.

The first, measurements for lead in a paint film using an instrument known as the "x-ray fluorescence instrument"-- There the HUD standard would call lead-based paint something that contains more than one milligram per square centimeter of surface area. If you translate that into the lead content of the paint film, it comes out to be about 12 percent lead for a single film. Obviously, multiple films would reduce that content significantly. But that definition, by the way, the one milligram per square centimeter definition, would encompass only paints manufactured prior to the 1940s.

The second definition which involves another analytical method, or atomic absorption, says you have lead paint if it is more than one-half of 1 percent lead by dry weight. The paint industry supports that standard, albeit more restrictive, because the analytical method is much more accurate. That is not our opinion. It is an opinion that is expressed by many in the lead area, the knowledgeable lead folks. The National Institute of Standards and Technology, which I referenced in my written remarks given to the Committee today, has indicated that the x-ray fluorescence instrument is problematic. It has potential errors of plus or minus 60 percent of the true value. We think it is important that accurate analytical methods be used in determining lead paint hazards in buildings.

Clearly, public health agencies will face a dilemma. On one hand, there are known extreme high costs associated with this massive primary prevention effort. On the other hand, there are unknown costs which will result from continued inaction on what may be a potential public health problem of extreme proportions.

Unfortunately, the issue isn't simply the costs, or even who will pay for it. The plain truth is that there is little agreement as to what safe, effective abatement means. When a building has been found to contain accessible, old,

deteriorating or peeling or chipping lead-based paint -- whatever you want to call it -- a potential hazard exists, and removal or enclosure of these lead-painted surfaces is a job for properly trained professionals, observing strict rules to make sure that they are protected and that no hazardous residues remain.

But once housing authorities have dealt with the obvious high-hazard situations -- that is where lead paint is chipping, deteriorating, and peeling -- they are left with a number of questions. The most pressing is the fact that deteriorating lead-based paint is not the only source of lead exposure for children. Lead found in everyday household dust is now known to be a major source of exposure. But in contrast, intact lead-based paint, despite enormous media coverage and rhetoric, has yet to be substantiated as a source of exposure to lead. Numerous research efforts -- and again, they are referenced in my text -- have established that the presence of lead-based paint in residences is not associated with the existence of a lead dust hazard. In that same report to Congress that HUD issued, it emphasizes that of the homes with interior lead-based paint, less than six out of 100 were found to have elevated dust lead levels. Even more revealing is the fact that four of 100 homes with no lead-based paint still had elevated dust lead levels, which is strong evidence that there are other sources of lead operating.

The clear evidence is that the lead in household dust arises from a source other than paints. It points to, and supports the fact that widespread abatement of intact lead-based paint -- as our previous speaker said -- can often create a worse situation.

Similar findings emerged after years of efforts to abate another environmental hazard; that is, asbestos. Building owners were compelled to remove asbestos from ceilings and pipes at tremendous cost, only to find that well-intended

abatement activities produced more exposures to the workers and the occupants than maintaining the asbestos in place. Clearly, prudent public policy on lead abatement should seek to avoid those kinds of problems that were encountered with asbestos.

It is critical that public agencies recognize and deal responsibly with all the likely sources of lead in the environment. Soil contaminated with lead from gasoline and, quite frankly, from paint, in some instances, is a very real source of lead exposure for children. It may, in many instances, be the primary source of lead in household dust, not the mere presence of paint. Lead contaminated water is also an issue, as you have heard today. The paint industry continues to support efforts already underway at the Federal level to determine how these relative sources of lead equate with respect to exposure, and how effective controls can be developed to reduce exposure to lead.

I just want to summarize briefly our recommendations on the lead issue: First and foremost, as New Jersey pursues legislation in this area, they should establish accurate uniform guidelines for evaluating lead hazards. Clearly there are problems with approaches that we have been taking in the past. We don't need to chase after lead paint in houses. We need to make houses lead safe. They cannot be made lead free, because lead is ubiquitous in the environment.

We have to undertake clear and responsible risk communication to alert the public. The public is constantly confused and barraged by another new source of lead exposure, and this is not helping the situation at all.

We also should support in legislation practical and affordable solutions for controlling lead exposure. There is a growing body of evidence that for intact lead-based paint, that is, paint that is well maintained, it is best for it to be managed in place; that is, abatement is not something that needs to be undertaken in those situations.

Clearly the first step -- and I hesitate to bring it up, because it has been referred to alternately today as canaries or sentinels-- But, the first step is the children. Children need to be tested to see if they have lead poisoning. That is an important facet. Whenever I bring it up, we get immediate rhetoric about the sentinel issue. Other states have taken, and have embraced very emphatically, the need to do universal screening. The State of California passed a bill last year -- Assembly Bill No. 2038. Assemblyman Connelly did it. I recently questioned him in California about that very problem. How is he going to deal with public perception? California is first going to move toward universal screening, and second, move toward abatement. He very realistically said, "We need to understand where we have a problem, to what extent we have a problem, before we commit very valuable resources to the correction of that problem." That is a tough thing to do politically, but that is something that California -- in perhaps a similar, if not a better financial situation than New Jersey -- has undertaken.

We have found across-the-board that Federal, State, and local agencies have been coming to the private sector for support in the lead abatement initiative, and we are pursuing those invitations vigorously. We stand ready to work with your Committee in the future to give you the paint industry's perspective on this. We definitely feel that the paint and coatings industry has to be part of the solution as we move forward, since we were a part of the problem in the past.

Thank you.

SENATOR BASSANO: Thank you.

MS. SEEL: Madeline Brown, Coordinator of the Lead Program in Jersey City.

M A D E L I N E B R O W N, R.N.: Good afternoon. I, also, welcome the opportunity to speak to you today.

Presently I am the Coordinator of the Jersey City Lead Poisoning Prevention Program. There are 13 programs similar to Jersey City's funded by the New Jersey State Department of Health, located throughout the State. They are: the Burlington County Lead Program; the Camden Lead Program; Cumberland County has two Lead Programs, Vineland and Bridgeton; the East Orange Lead Program; the Newark Lead Program; the Gloucester County Lead Program; the Trenton Lead Program; the Middlesex County Lead Program; the Long Branch/Monmouth County Lead Program; the Paterson Lead Program; the Elizabeth Lead Program; and the Plainfield Lead Program. These all have Lead Poison Prevention Programs in their communities funded by the State Department of Health.

In addition, the Centers for Disease Control has allocated dollars to Essex County, specifically Newark, East Orange, and Irvington. All of the programs' goals are to address the issue of childhood lead poisoning in their communities. The New Jersey State Department of Health screening programs are to identify lead burdened children, make certain the children identified are under medical management, determine the source of lead in the child's environment, and ensure proper abatement -- removal -- of the lead hazards in the child's environment.

I will detail to you specific facts regarding the screening program in Jersey City. I think it is somewhat representative of the other 13 programs' plight. It is determined from census data that Jersey City has 21,000 children six years and younger residing in the City. The Lead Program has a screening objective of 6000 children per year. Therefore, more than two-thirds of the children at risk in the City for lead poisoning may not be screened. This points out the need for universal screening.

The State-funded programs do not have the resources to screen every child in their communities. Private physicians

and children's health services must routinely and systematically screen children for lead. Mechanisms must be put into place to make sure certain children are tested. Last year, the Jersey City Lead Program experienced a 2 percent positivity rate -- two out of every 100 children tested confirmed to having blood lead 25 micrograms per deciliter of whole blood or greater.

The recent CDC statement released last fall suggesting the level for intervention be lowered to 10 micrograms per deciliter of whole blood presents a problem for the State-funded programs. It is estimated that the lower levels will increase the Jersey City caseload by almost 40 percent. Translated, that means more sampling of blood, and the present lowest rate is \$12 per sample at the State lab. We will need more intense detailed health education, time and materials, and teaching and preaching to the community what lead is, and how children and adults can be harmed by lead in the body. The exposure to lead must be prevented.

We will need more staff to canvass the community; cluster screening, screening around an identified case, and screening where young children are -- WIC, day-care centers, Head Start Programs, etc. More case management: children identified lead burdened must be referred to other services in the community for neurological testing. Behavioral problems, speech therapy, learning disabilities must be identified and addressed to make certain the child is able to reach his or her full potential in spite of the damage lead has done to the brain. Recent studies have made us aware that lead exposure, even at low levels, does impair reading, writing, math skills, and the ability to develop abstract thinking.

My husband is an administrator at one of the elementary schools in Jersey City very near the Lead Program's office. He comes home often frustrated at the time he must spend dealing with the discipline problems. He describes

children's behavior, short attention span, poor speech patterns, extremely poor writing skills. On more than one occasion when the family name was mentioned, indeed that child was identified lead burdened at two or three years of age, and now at seven and eight is presenting a problem learning. The school systems do not have adequate resources to deal with these children.

Before I prepared my comments today, I canvassed the other program managers in the State. I wanted to be able to share their concerns with you today, making certain you got a consensus of opinions on this number one primary environmental health threat described by Dr. Louis Sullivan, Secretary of Health and Human Services. The area of concern most frequently mentioned by the other coordinators is the problem of abatement. We agreed the programs are not really able to function as Lead Poisoning Prevention Programs. We do function well as Lead Identifying Programs. We are successfully finding lead burdened children. We are not successfully preventing children from becoming lead burdened, because of the huge amount of lead found in the children's homes.

Exposure to lead, I have learned, in the Jersey City community crosses all socioeconomic barriers. The lovely old, perhaps renovated, brownstone on Mercer Street, an affluent neighborhood, contains just as much, or perhaps even more lead than the wood frame deteriorating house on Martin Luther King Drive. Any young child or pregnant woman residing in those buildings is at great risk for lead exposure. The need for safe lead-free housing is dire. The need for proper abatement techniques and trained workers is critical. The need for temporary housing for families while abatement work takes place is essential.

Senator, I know very well of the stressful economic times we are all facing. I know State dollars are limited, but the proposed legislation does address and detail the

establishment of a Lead Trust Fund. This Fund would allow moneys to be generated and could be used to enhance State-appropriated funds making certain that: Children are tested for lead; lead inspections of properties occur in an efficient, timely period; low or no interest loans are in place for qualifying families; and temporary safe housing for lead burdened children and their families is established. The cost benefit is significant. The CDC has studied and demonstrated it is more cost-effective to prevent a child from becoming lead poisoned, than it is to maintain and provide the services needed by a child who is lead poisoned.

Thank you, again, for the opportunity to speak.

MS. SEEL: Cecilia Zalkind and Reginald Dorsey, from the Association for Children of New Jersey.

C E C I L I A Z A L K I N D: Thank you, Senator Bassano.

My name is Cecilia Zalkind. I am the Assistant Director of the Association for Children of New Jersey. With me is Reginald Dorsey, a Policy Analyst with the Association.

The ACNJ is a statewide child advocacy organization that has its roots in Newark back to the 1800s, when we began as the Newark Orphan Asylum. Lead poisoning, prevention, and treatment, as well as other medical issues for children, have long been on our agenda for children in this State. We want to thank you very much for holding this hearing today, and for indicating your very strong commitment to this issue. We look forward to working with you on it.

Our role here today is not to go over again the medical evidence. You had many medical experts here this morning who talked quite a bit about the causes of lead poisoning and its impact on children. Our role is rather from an advocacy perspective. We are here to support the introduction and passage of legislation to prevent and treat lead poisoning, and to ensure that any approach that is taken is a comprehensive one, because we feel that this is critical to addressing this serious problem in our State.

Reggie is going to begin by discussing some elements of that comprehensive approach, and I will follow up with some specific recommendations for legislation.

R E G I N A L D S. D O R S E Y: Thank you, Ceil. Good afternoon, Senator Bassano. First of all, I would just like to thank you for your previous support on child health issues, including bike helmets, school bus safety issues, and also your continued support on such issues as childhood lead poison prevention.

As has been mentioned earlier today, the threshold for safe lead levels in children has recently been lowered. The reason for this is, of course, that studies have shown that tiny amounts of lead can be harmful. A child can be severely lead poisoned by ingesting one milligram of lead paint dust, which is equivalent to about three granules of sugar, each day during childhood. To achieve blood lead levels of more than three times the level currently regarded as harmful, a child would have to eat the equivalent of just one granule of sugar a day.

Probably the most disturbing fact about lead poisoning and its threat to our children, is that it is completely preventable, yet once damage has occurred, it is irreversible. We believe there must be a comprehensive approach to lead poison prevention and treatment. A comprehensive approach to childhood lead poisoning must begin with prevention efforts. Presently there is no primary prevention program addressing lead poisoning in the United States. Children are first identified as lead poisoned. Then the environmental source of lead is sought and removed. Finally, the child undergoes a series of treatments to remove the lead from his body.

Prevention education must be directed toward parents, as well as pediatricians and all adults. Education should begin with pregnant women and potential mothers. As we know, low levels of lead during pregnancy can affect the babies.

Again, parents must be taught about the various household items that are lead toxic. Treatment -- when we talk about treatment-- Again, screening is a necessary part of treatment for lead poisoning. Also, as mentioned earlier today, the symptoms of lead poisoning are generally not apparent until significant damage has been caused. Thus, screening children at risk for lead poisoning is of the utmost importance.

Abatement: Again, finding the source of lead and removing it is vital for a comprehensive approach. In serious cases, as we know, children must receive potentially painful chelation therapy which assists in removing lead from the body. However, chelation is not a cure for lead poisoning. It prevents bad effects from getting worse, but it cannot undo the damage that has already been done.

At this time, Ceil will talk about how we ensure a comprehensive approach. Thank you.

MS. ZALKIND: Thank you. Some of our suggestions for that comprehensive approach start first with primary prevention. We feel that any comprehensive approach must deal with prevention. As you have already heard earlier today, an approach which focuses solely on screening, abatement, and enforcement comes too late for children.

In fashioning a legislative response, it is critical to focus on preventive education. A major public education campaign should be required to publicize the dangers of lead exposure and the importance of early screening. This should be followed up by aggressive outreach to families in high risk communities. We also believe that lead prevention must be made an important part of State health programs for children, such as Health Start and the EPSDT Program.

It is interesting to note that New Jersey recently expanded eligibility levels for children in the Health Start Program, so the ability of families to pay for screening and obtain health care is now there. We are very concerned that

the Departments of Health and Human Services have not done sufficient outreach to make sure that those families are included, and that they do access lead screening, lead prevention efforts, through these programs. New Jersey has an abysmal participation rate in the EPSDT program. Recent estimates suggest that we only serve about 11 percent of eligible children. This should be looked at, and could be part of your legislative proposal.

Further, nutrition programs, which can make children less vulnerable to lead exposure, such as the WIC program -- the supplement food program for Women, Infants, and Children -- and the School Breakfast and Lunch Programs, should be expanded. This is another prevention effort that can assist children.

As you have heard today, abatement can be addressed in a more preventive role. Mandated regular testing for lead can result in the removal of lead before the child is permanently harmed. Testing can be required, as you heard, as part of the periodic inspections of multiple dwellings and when private homes are sold.

The second important element of a comprehensive approach is expansion and improvement of screening efforts. Testing is currently required in New Jersey for a limited number and age range of children. Recent research has indicated that screening would be important for children under the age of one and over the age of six, as well as pregnant women, since there is evidence that exposure to lead can impact on the developing fetus. Expanding screening to a broader age group of children and to pregnant women could be one legislative response. However, these suggestions continue to target lead screening at a predefined high risk group. A more comprehensive approach, as has been discussed in prior testimony, could be to require screening at periodic intervals for all children age six and under. Private physicians, as well as health care facilities, could be required to screen.

To ensure that screening takes place, enrollment in school, preschool, or child-care centers could be dependent upon proof of screening, just as records of immunizations are now required.

The third element of a comprehensive approach is ensuring effective enforcement. State law is fairly clear on an owner's responsibility to abate the lead exposure if a child has been found to have high blood levels. The issue is that that law is not enforced. Issues of cost and concerns about loss of housing are just two reasons why enforcement has not been aggressively pursued. Any comprehensive legislative response to this issue must address more effective enforcement. It is possible that the fines and penalties for noncompliance could be increased. A more positive approach could be to provide incentives to landlords and homeowners who follow through on abatement. As you have heard, some states have set up trust funds, some established by inspection fees, some established by fines levied against companies which have contributed to lead contamination, to assist landlords and homeowners with low interest loans for lead abatement. Tax credits could be another incentive. How about tax credits for companies, like paint companies, which might want to voluntarily contribute to such a trust fund?

Some of these proposals are addressed in the Public Advocate's draft.

Additionally, we think it is very important that mechanisms be put into place to provide temporary housing to families while the source of lead is abated. The communities that you have heard about that are at high risk for lead poisoning, are also at high risk for homelessness. It would be very critical to ensure that families are not permanently displaced while abatement occurs.

Our last suggestion is to make sure that any legislation that is drafted takes a coordinated approach. A comprehensive approach in addressing the problem of lead

poisoning cannot be dependent upon one entity or agency. Communication and cooperation must occur across State divisional and departmental lines, as well coordination among different levels of government. Lead prevention and treatment is not just a State problem, but also requires the commitment of county and local governments, and we encourage legislation to address this kind of a coordinated comprehensive approach.

Again, I would like to close by thanking you for your interest in this issue, and to offer whatever support and assistance we can give you in the months ahead.

SENATOR BASSANO: Thank you for your suggestions.

MS. ZALKIND: Thank you.

MS. SEEL: Patricia Griffiths, parent of a lead-poisoned child.

P A T R I C I A G R I F F I T H S, R.N.: My name is Pat Griffiths. I am a Registered Nurse, but my education in lead poisoning came through my children, not from my nursing school.

I am divorced, and the single parent of six children. My two girls and four boys range in age from four to 19 years. Though I have recently taken steps to return to work, I have not been employed as a nurse for many years, in part because of the very substantial time I must spend to counter the effects of lead on my children, and also because of the costs -- the medical costs that I would incur trying to help my children to recover from the lead poisoning.

I have always believed that education provides the key to unlocking our children's future. My oldest child, Kristin, is a sophomore at Douglass College in New Brunswick; Jennifer, 12 1/2 years old, attends the Far Brook School in Short Hills on a full scholarship. Matthew, almost 10, is an honor roll student at Central Elementary School. My three youngest children are not so fortunate.

Though we didn't know it at the time, we moved into leaded housing in Newark when Justin was 17 months old. He was

identified with an elevated lead level through a WIC screening program. Now eight-and-a-half, Justin has had elevated lead levels for the last six years. He is classified for special education in a neurologically impaired class. He suffered from severe speech disorders and has been in speech therapy for the past six-and-a-half years. He also has many of the behavioral problems that have been described to you today, and has been in counseling for these problems for two years.

Kevin, age seven, suffered the highest lead levels of my children. His blood lead levels peaked at 85 micrograms per deciliter following a machine sanding abatement in our home in Newark. This was in 1986 then sanding was still allowed under the code. He was hospitalized and went through painful chelation which perhaps saved his future, because it did lower his body's burden of lead. Though he suffers no apparent learning disabilities, he, too, has a severe speech disorder and has been in speech therapy for five years.

My youngest son, Brian, almost four-and-a-half, has not been as fortunate as Kevin. Brian had a cord blood of less than five, but by the age of six months, after living those six months in our abated home, a home that the Newark Lead Program had approved the abatement of, he then had a blood lead of 58. We were evicted from that home in Newark specifically because of lead. The owner made the statement that she would not get rid of the lead; she would get rid of us. Using the part of the eviction statutes that state that if an owner personally intends to occupy the home, we were evicted, and the home stands abandoned, as it has been since we were evicted from it.

We then moved to East Orange. We asked for an inspection of the premises before we signed the lease in our East Orange home and were told that an inspection had been carried out the previous year, and that the house was lead free. Unfortunately, they came back, reinspected, because of

Brian's grossly elevated lead levels, and discovered that they had made a mistake.

The devastation that my family has experienced has been caused by leaded paint, but the inspections and the abatements have greatly contributed to our problems and to their problems. We have had abatements done by shoe salesmen, jewelry salesmen, one paint contractor, but generally speaking, the people doing the abatement have known absolutely nothing about lead or hazard abatement.

We have lived in Newark, East Orange, and Orange, and have had the same problems with the inspections and abatements in all three communities. All of our homes were abated only after court action was threatened, and actually the courts intervened. Still the abatements ranged from five months to the longest one in Newark of two years. The children were not in the home during the actual abatements, but did return to the home sometimes in the evenings, but always after the abatements, and in none of the abatements did any of the people doing the abatements make any effort at all to either contain or clean up after their abatements.

The abatements we went through also included an abatement in our East Orange home in a second apartment. This also caused greater contamination. During each abatement, even again though the children were not in the home, the children's lead levels did increase.

I am a member of the Essex County Childhood Lead Poisoning Prevention Coalition. We are a group of public health people, concerned professionals, and citizens attempting to address the causes and consequences of lead poisoning. One of our goals is to provide a lead-free safe house in which families can live while their residences are being abated. This will only be practical if there can be some mechanism in place to ensure a prompt and safe abatement. To me, this would

also include dust sampling after abatement, and cleanup procedures must be done in a safe way.

Just last week I witnessed and agonized over yet another abatement. After noticing chipping and peeling paint falling from the windows of the 79-year-old Central Elementary School, where Kevin and Matthew are students, I wrote to the Health Department and the Board of Education, requesting that an inspection be done. At the same time, I requested that if lead were found, they please seek expert advice in dealing with the situation. An inspection was done on April 2, and an immediate lead paint hazard was, indeed, discovered at the Central Elementary School.

The Health Department did not provide the Board of Education with a copy of the standards that are now part of Chapter 13, which deal with the removal of lead-based paint, and the Board of Education, in fact, hired a company to clean the windows, without even telling them that a lead hazard existed. Fortunately, the children were not in school -- spring break had emptied the building -- but there was no attempt to contain the debris while the work was being done. The windows were scraped. Hydroblasting, uncontained, was used. The paint chips and residue which were on the windows were pushed so that they are now in the lot next-door, a churchyard. This is also visible in the parking lot of the YWCA.

Monday morning when school reopened and the children went back to school, the Health Department and the Board of Education people went with me to the school, and specifically to Kevin's classroom, where he sits very close to the windows, and were very pleased with the job, or they were until I pointed out the paint chips and dust that still contaminated the classroom. They did evacuate that particular class to another room, and have spent the last two or three days trying to clean up this classroom. But this, again, is Kevin's

classroom, and it was cleaned and given special attention to begin with. Now it is the only classroom that is getting special attention to try to clean up the hazard that was caused by the so-called abatement.

My experiences with lead paint hazards and their abatement are, unfortunately, not unique. Unless inspectors are adequately trained to identify and evaluate lead hazards, and workers are trained and properly supervised in lead hazard abatement, this entirely preventable and largely silent problem of lead poisoning will continue to steal the futures from large numbers of our children.

In terms of cost, I mentioned that the medical expenses were one reason why I haven't returned to work. In the last six-and-a-half years, my sons, altogether, have undergone speech therapy, which, if I were paying for it myself -- Medicaid is paying for it -- would cost me close to \$200,000.

Thank you.

SENATOR BASSANO: Thank you.

MS. SEEL: Dr. Richard P. Wedeen, Associate Chief of Staff for Research and Development, the VA Medical Center.

R I C H A R D P. W E D E E N, M.D.: Thank you for the opportunity to speak here today. I will give you some other titles. I am also Professor of Medicine at the New Jersey Medical School in Newark, and I am Professor of Preventive Medicine and Community Health at the New Jersey Medical School in Newark, where I am also Director of the Division of Occupational and Environmental Medicine.

I come to you today as a physician who has done research in New Jersey for many years on lead, but in contrast to the physicians who have spoken here earlier, I am not a pediatrician. My interest is in adults. My concern is that the lead that you are planning to abate and deal with, in fact, has enormous impact on adults, and that is almost universally overlooked.

My own research, which was done first in Jersey City among lead workers, lead smelters, demonstrated that back in the mid-'70s, a good deal of kidney disease was induced by lead in this State, and that is entirely overlooked by physicians and health services. We did that by showing that the blood lead is not an adequate measure, and that, in fact, as others have pointed out, lead is accumulated in the body for many years. In fact, 90 percent of the body burden of lead is in bone, where it is stored for what we call a "half life" of 20 years. Blood lead, on the other hand, reflects the least exposure. It has been extremely practical and useful in children, but it only reflects -- or, it primarily reflects exposure of the previous three weeks.

In those studies I did in Jersey City, and then later amongst veterans at the VA Medical Center, where I am in charge of research and do my own, we showed that the blood lead does not reflect the cumulative stores. We use chelation testing. You have heard about chelation today in terms of treatment, but the same drugs will bring lead, bound to them in the urine, and one can measure the body burden.

In addition, we have developed a new technique, which is the future, to deal with this problem of cumulative lead absorption, which is called "in vivo tibial X ray fluorescence." Now, X ray fluorescence is a term you have heard, because it is used to measure lead on walls and in paints. We take that technique to its extreme sensitivity, and measure it in the leg bone noninvasively and safely, and therefore get a direct estimate of the amount of lead that has been accumulated over many decades. We are doing this as a reserach program at the New Jersey Medical School. It has important implications for what you are doing here today, because if lead exposure continues, we will be very busy with this in the decades to come.

I would like to point out what lead, in fact, does do to adults. There are three groups that are primarily affected that we see. First are the children that you have heard about, who have neurobehavioral disorders, grow up, and get in difficulties with the courts, with teachers, and so forth. It is extremely difficult when they are young adults to identify the cause as individuals. But as you have heard, population studies make it quite clear that lead is making a major contribution, and the source is not always obvious. Paint is a very important source, but it is not the only source. Ceramics are important, too.

A second group are adults who have more severe exposure, that is superimposed upon the ambient lead that we get from water and food. If they have more severe exposure, like childhood pica, they will develop hypertension and kidney disease. Now, that is my field. I am an internist and a nephrologist, and that is what I have been looking for and finding, as have others throughout the world; that young adults will develop a specific kind of kidney disease due to lead, which is often overlooked by physicians because lead measurements are not made. The source of exposure was way in the past. It is 20 or 30 years, or even 40 years after exposure, which can be casual environmental exposure, as well as occupational exposure.

And finally, we have lead workers, a very important problem. As the New Jersey Department of Health has pointed out, construction workers have a tremendous hazard in New Jersey from lead exposure because they are not covered by OSHA. When they burn off lead paint or cut metal structures, they are often seriously exposed. Severe problems have been noted in California and Massachusetts.

In addition, the exposures that are encountered among adults during their occupations, from time to time are superimposed on whatever happened to them as children. It is

cumulative; it is long term; and by the time they are middle aged and have hypertension and kidney disease, people have forgotten what the cause was.

I would like to point out two very important subgroups of adults that come to public health attention, as well as to the physicians. First, our black males. We know from surveys done in the United States that young, black, impoverished males have the highest blood leads in the United States. We also know, in my field, that black males are very much overrepresented, sixfold in end stage renal disease and dialysis programs. They develop hypertension, hypertensive renal disease, and are placed on dialysis sixfold in excess of their representation in the population. This is a serious, but a preventable problem. The role of lead has not been precisely defined, but there are some interesting coincidences there.

Finally, I bring to your attention the fact that the young children who are exposed to lead in paint and housing primarily, grow up to be young adults. These women, of course, have children, and the fetus is heavily exposed. It is passed from the bones of the mother to the fetus, and these children are often born with excessive lead levels, a hazard which I know you have also been acquainted with today.

Our own work in trying to identify these long-term delayed effects which are often overlooked, continues at the New Jersey Medical School. I hope the legislation will take efforts to see to it that that becomes obsolete for my children.

Thank you for your attention.

SENATOR BASSANO: Thank you.

MS. SEEL: Christopher Placitella, Esq.

C H R I S T O P H E R P L A C I T E L L A, E S Q.: Good afternoon. I will try to be brief, because the hour is late.

My name is Chris Placitella. I am an attorney. By order of the court, I currently represent 28,000 children in the City of Newark who are at high risk for developing lead

poisoning. We seek, in our lawsuit, to ensure proper testing and medical surveillance and proper abatements.

In the context of that case, we asked the toxicologist who did some of the lead studies in Newark in the early '70s, to go back and look at his numbers in light of the new CDC guidelines. In other words, from '70 to '78, they did testing in Newark -- pretty adequate testing at the time, and came up with some numbers based on the figure of 40, which was then accepted as toxic. When we asked him to look at it in light of the new number, 10, he told us that 70 percent to 80 percent of the children who were tested back then would be considered lead poisoned under today's standard.

In the context of our investigation, we have heard countless stories that make you sometimes wonder when you go into Newark or Jersey City, and into certain areas, whether you are still in the same State that I grew up in. I have interviewed people and children who were believed to be autistic, who were treated for that, only to find out that they were lead poisoned and had been wrongly treated for many years.

I have one child, every time she goes to the supermarket and she sees the butcher in a white coat, she runs and hides behind her mother, because she thinks the butcher is the doctor who has chelated her four or five times in the past.

To be sure, we have failed as a society up to this point in addressing the issue of lead poisoning. It started with the lead industry. They knew of the dangers. They put profit over people. I am heartened to hear today that the paint companies which once owned the lead mines and were married to the lead industry, have now proclaimed a divorce. I am heartened that they have acknowledged that they were part of the problem, but I am concerned that -- and I think you will hear this in the future as the legislation progresses-- I am concerned about their sponsoring studies and rhetoric, as they call it, to somehow disprove that lead is so bad.

To be sure, the lawyers have failed. We have failed to protect the rights of our children. We have not given the proper assistance to the people in need. They don't even know that the system is there for them. The pediatricians have failed. A number of years ago, Dr. Haratounian sent a bulletin out to all the pediatricians in the State of New Jersey, asking that they screen the children voluntarily, and that has not been followed. The city government has failed. They have not provided any funds, or regulations with teeth in order to address the problem.

Senator, you are our last hope. Everyone who is in this room, no matter from what walk of life they come, or whatever their discipline is, everyone here is here, and stayed here this afternoon long after they made their presentations or after their interests were aired, to show you support for what you are doing. We thank you for that, and we appreciate it.

Thank you.

SENATOR BASSANO: Thank you.

MS. SEEL: Missy Dickenson, parent of a lead poisoned child?

COUNCILWOMAN MIA ANDERSEN: (speaking from audience) I know she is on her way. She had baby-sitting problems, but she promised that she would get down here. Could you reserve her place? Perhaps she will get here before we are finished.

MS. SEEL: Audrey McKinney, representing Concerned Citizens for Head Start and New Jersey Anti-Lead Coalition?

COUNCILWOMAN ANDERSEN: She is also on her way.

MS. SEEL: Okay. Glenna Gundell, Director, New Jersey Coalition for Prevention of Developmental Disabilities.

GLENN A GUNDELL: I thought I was going to be anchorman today, and that you would all get to go home after you listened to me. Sorry that's not true.

I am Glenna Gundell. I am Director of the New Jersey Coalition for Prevention of Developmental Disabilities. I have

a copy of my testimony. I didn't arrive until later this afternoon, so I will give it to you as soon as I finish.

I am also a member of the Interagency Task Force on Lead Poisoning Prevention. I don't know whether anyone has mentioned this interagency effort to you earlier today or not, but many of the members of the audience are members of this effort. Dr. Robert Tucker, who is also sitting in the audience, chairs the committee -- or the Task Force.

It has been nearly eight years ago that I served as a staff person to the Governor's Council on Prevention of Mental Retardation. At that time, I worked with, and for, one of the task forces which studied environmental conditions that caused mental retardation. In particular, one of those conditions was lead poisoning.

I just want to share a couple of quotes from that report, and I happen to have a copy with me. It is a 23-chapter report that was presented to Governor Kean in 1985. A couple of quotes are: "Lead poisoning is a preventable cause of mental retardation." "An educational program to inform the public of the seriousness of the lead poisoning problem should be undertaken." These are recommendations that the Governor's Council put forth at that time in this report.

"A concerted effort needs to be mounted to rehabilitate the housing stock, since much of the severe lead poisoning in children occurs today because of ingestion of lead paint and plaster from dilapidated housing." "Increased effort must be made to identify children with elevated lead levels at early stages, so that medical intervention can prevent the long-term consequences."

And lastly, "Financial aid programs should be available, on a graduated-fee scale, for families with a lead-poisoned child to assure follow-up, diagnosis and therapy, and abatement of hazards of lead in the home."

These are recommendations that were made, along with others, in 1985. The need for action is not any less crucial now than it was then. I urge you to study carefully the information presented here today, and to begin considering action that will eliminate the problem.

Thank you for all that you do.

SENATOR BASSANO: Thank you.

Is there anyone else in the audience who has not spoken, who would like the opportunity? (no response)

I want to take this opportunity to thank all of you for being here. What you have heard today is the beginning of the legislative process. With your participation and your testimony, hopefully legislation will be drafted and will be introduced to try to solve some of the problems that exist out there in our society.

I can assure you that whatever we do, we will share with you, and we will welcome your input, to either amend or change that legislation, should it not conform with what we all feel has to be done to correct this problem.

In closing, let me thank Mia Andersen, who is about to sit down, who brought this matter to my attention. Mia is a Councilwoman in the district that I represent, in Summit. I know of her involvement in this issue. I thank you, Mia, for getting me to grab ahold of this issue and to try to be of assistance.

As I said earlier, we will be back in contact with all of you. Thank you for your participation today.

(HEARING CONCLUDED)

APPENDIX



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BASSANO SAYS HEARINGS ON LEAD POISONING

SHOULD LEAD TO CRAFTING OF BILL TO PREVENT CHILD EXPOSURE

Senator C. Louis Bassano, R-Union, Essex, said today that the opening of hearings by the Senate Health and Human Services Committee on the problem of lead poisoning should help forge legislation aimed at protecting the state's children from the nation's most common and insidious form of environmental illness.

Bassano prefaced the hearings by calling lead poisoning "the most ignored and least understood health care problem in the state of New Jersey and our nation."

In citing federal government statistics that some 57 million dwellings across the country contain lead-based paint, Bassano said hundreds of thousands of children's lives have been dramatically altered or ruined because of the problem.

While noting that recent studies have estimated that some 177,000 New Jersey children may be at risk, Bassano stressed that no child is fully safe from exposure. The Senator warned that any exposure can be dangerous in quoting the words of one of the leading environmental authorities at the Center for Disease Control, who stated: "If there is a threshold for the adverse affects of lead on the young, it may be near zero."

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Lead poisoning--Add one
April 29, 1992

Bassano pointed to a 1990 study conducted by the Environmental Defense Fund which found that 59.5 percent of children in Trenton had levels of lead contamination placing them at risk of mental or physical health damage. Twenty-four point-five percent of Trenton youngsters tested at levels indicating they were suffering from lead poisoning.

Depending upon the level of exposure, lead poisoning may cause any number of physical and mental health problems including kidney disease, brain damage, convulsions, coma and death. Its more subtle and insidious effects include decreased intelligence, learning disabilities and behavioral abnormalities.

Pregnant women exposed to structures or dwellings with lead-based paint risk congenital abnormalities, premature delivery and low birth weights, while their future child may be born with minor malformations and impaired development, Bassano said in his opening statement.

"Lead poisoning has tragically taken or ruined the lives of tens of thousands of young children, many of whom have contracted the problem in the very places they should feel safest: at home or in school," Senator Bassano said.

Bassano said the greatest tragedy of all in regard to the problem is that lead poisoning is "entirely preventable." Many children have sustained health damage, according to Bassano, because of the "past failure of state and federal government to react effectively in doing something to protect children from this menace."

One of the most important points of information Bassano said he wished to communicate to the public is that "regardless of whether you live in the city or the country, whether you are rich or poor, and whether your children go to public or private school, this a problem that could affect any child in any family."

--more--

Bassano said the threat of lead poisoning is hard to avoid in modern industrial society since one can be exposed to lead toxins from vehicle emissions, contaminated land areas near lead-painted structures and from drinking water that flows out of old water foundations or from a tap with deteriorated piping.

Many children have contracted lead-related health problems simply from playing in their yard or at playgrounds where tiny amounts of lead-based paint have been scattered on the ground or as invisible dust particles in the air.

Joining Bassano at the hearing were New Jersey Public Advocate Wilfredo Caraballo, Donald Ryan, executive director of the Alliance to End Childhood Lead Poisoning; and Glenna Gundell, director of the New Jersey Coalition of Prevention of Developmental Disabilities.

Parents of children afflicted with lead poisoning were also on hand to recount the impact of the disease on their family.

Several leading pediatricians and medical experts from hospitals in New Jersey and New York City submitted statements or gave testimony to the committee about the dimensions of the problem.

TESTIMONY
OF
THE DEPARTMENT OF THE PUBLIC ADVOCATE
BEFORE THE
SENATE HEALTH AND HUMAN SERVICES COMMITTEE
ON THE
NATURE AND EXTENT OF LEAD POISONING
IN NEW JERSEY
AND POSSIBLE SOLUTIONS TO THE PROBLEM

WILFREDO CARABALLO
PUBLIC ADVOCATE OF NEW JERSEY

By: DAVID BEN-ASHER
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Dated: April 29, 1992

Good morning Chairman Bassano and members of the Committee. I am very pleased to be here today to address the critically important child safety issue before this committee.

The Public Advocate has made lead poisoning a priority issue for our Department. We have devoted substantial Departmental resources researching available federal, State, and private studies and data concerning lead poisoning, meeting with nationally recognized experts on lead poisoning, and exploring solutions to address this problem. The reason for our concern is easy to understand. Lead poisoning is the most prevalent environmental health problem facing children in New Jersey today. New Jersey is the most densely populated state in the country with an old and extensive industrial heritage. Many of our homes are frame houses which were painted, inside and out, with lead-based paint. We have been using lead in the New Jersey environment for centuries.

1. How Extensive a Problem is Lead Poisoning

We must first ask how extensive a lead poisoning problem we have in this State. According to the federal Centers for Disease Control, virtually all children are at risk for lead poisoning. The state Department of Health estimates that over 177,000 pre-school children in New Jersey are at particularly high risk of lead poisoning.

Unfortunately, of the State's 600,000 pre-school children, only 11% are currently screened for blood lead levels. In 1990, 67,000 pre-school children were screened in county and municipal

programs, and of these, 2.6% were found to have lead poisoning. In certain areas of New Jersey, the numbers are much bleaker. For example, in Irvington, 17% of the children screened in 1990 were found to have lead poisoning. In Newark, 8% of the children screened in 1990 had lead poisoning.

We should bear in mind that all of these numbers were based on a now out-dated definition of lead poisoning which underestimated the toxic effects of lead. Under the Centers for Disease Control's current definition of lead poisoning, the number of lead poisoned children in our State is actually much higher. Using this current definition, a full 55% of the children screened in Newark over the past three years have had blood lead levels high enough to cause mental and other health problems.

Who are these children? They come from all socio-economic and ethnic backgrounds. Lead poisoning is not a disease facing poor children alone. A child can become severely lead poisoned by eating just one lead chip the size of a postage stamp. A child can become ill merely by regularly touching a windowsill with lead-laden dust and then sucking his thumb. If a home is undergoing renovation, even a well-maintained and expensive home can have toxic levels of lead dust. Anyone is at risk of lead poisoning if they live in an older home.

New Jersey is filled with older homes. According to Dr. John Rosen, the Chairman of the CDC Advisory Committee on Childhood Lead Poisoning Prevention, it is generally assumed that all housing built before 1959 has some lead-based paint in it.

In fact, the New York City Health Code provides that buildings built before 1960 presumptively contain lead paint. Up through the 1950's, lead paint was in widespread use, and lead paint was still available for home use in this country until 1978.

Lead paint is the most dangerous and frequent source of lead exposure for children. The oldest housing has the highest lead concentration in its paint. In Jersey City alone, 72.6% of all children between the ages of 6 months and 5 years live in pre-1950 housing. This is the highest percentage of children living in old housing in the nation. More than half the preschool children in Newark, Paterson, Clifton, Passaic, and Trenton live in pre-1950 housing. In fact, the New Jersey Department of Health estimates that 65% of New Jersey's housing stock contains lead-based paint. This amounts to 1.6 million homes in New Jersey with lead. However, under the current statutory scheme, only 174 homes were abated of lead in 1990. We need to do better than this. Our children are being poisoned by the very walls that should protect them.

The Department of Health has identified 69 municipalities in New Jersey as "Priority I" municipalities which present the highest risk of lead poisoning. There are 155,000 children under the age of five who live in these communities. In fact, most of the members of this Committee represent Priority I communities. In Senator Codey's district, Orange, East Orange, and Newark are priority I municipalities posing the highest risk of lead poisoning to the children who live there. Senator Dorsey

represents Morristown and Victory Gardens which are both Priority I municipalities. Senator Matheussen represents the priority I communities of Clayton, Lindenwald, and Glassboro, and Senator Rice represents the Priority I municipalities of Newark and Irvington.

Over 400 New Jersey municipalities are listed as Priority II municipalities. Priority II means the municipality is at moderate risk for lead poisoning. This includes most of New Jersey and every municipality in Senator Bassano's and Senator Sinagra's district.

Lead-contaminated soil and dust is the second major source of lead. Lead-laden soil and dust may contribute as much as 30% of exposures leading to elevated blood lead levels in children. This lead comes from flaking paint near buildings and from automobile and industrial emissions. A Department of Health study of lead in New Jersey soil showed the highest quantity of lead-contaminated soil to be in Newark, followed by Jersey City and Secaucus. In a Department of Environmental Protection and Energy study of 80 New Jersey soil samples, all 80 samples contained lead, and 33% of the samples had lead levels greater than the risk value set by the Department of Health.

Lead may be present in our drinking water as well. Unfortunately, all children in our State may be exposed to some level of lead in drinking water since water is such a good solvent, and lead is so widespread. Some parts of New Jersey still have lead pipes in the water delivery system, and some

homes still have lead service connections from the delivery pipes into the houses. For homes with private wells, lead in the well packing may also be a source of exposure. Some refrigerated water coolers, common in schools and other public buildings, have lead solder in their reservoirs, where water can sit for long periods of time and absorb unacceptable levels of lead.

However, the major source of lead in water is the plumbing inside the home. Solder containing lead is often used to join copper pipes, and the lead may gradually dissolve into the water. Water that has been standing overnight in pipes is more likely to contain high concentrations of lead. To reduce the concentrations of lead in water, people should let water run for several minutes whenever the water may have been standing in the pipes.

In January 1987, New Jersey banned the use of lead-based solder in drinking water systems. However, most homes built before 1987 probably still contain lead solder, and some plumbers may still be impermissibly using it. Both the federal Environmental Protection Agency and the state DEPE estimate that 20% of the population is exposed to lead levels in drinking water that contribute to elevated blood lead levels. Other sources include lead in ceramics, food cans and lead crystal, and lead in the ambient air. As the federal Agency for Toxic Substances and Disease Registry concluded, "[l]ead is potentially toxic wherever it is found, and it is found everywhere."

2. The Effects of Lead Poisoning

Lead is a poison that affects virtually every system in the body. Fetuses and young children are at highest risk of injury to the developing brain and nervous system. Very severe lead poisoning can cause convulsions, coma, and even death. Lower levels of lead exposure can cause decreased intelligence, short-term memory loss, learning disabilities, mental retardation, poor classroom behavior, lack of coordination, slower reaction time, vomiting, abdominal pain and kidney damage.

The blood lead level considered to indicate lead poisoning has fallen steadily since the 1970's as our understanding of the effects of lead poisoning has grown.

The federal Centers for Disease Control now recognize that even a blood lead level as low as 10 micrograms per deciliter of whole blood, causes lower IQ levels, reduced concentration and attentiveness, decreased stature or growth, decreased hearing ability, and poor posture. Women with lead poisoning are more likely to be infertile or have miscarriages or stillbirths. Even low levels of lead may cause pregnant women to have premature or low birth weight babies. A 1990 study that examined lead in teeth that first and second graders shed showed that dentine lead levels above 20 parts per million were correlated with a seven-fold risk of not graduating from high school, a six-fold risk of having a reading disability, deficits in vocabulary, problems with attention and fine motor coordination, greater absenteeism,

and lower class ranking. These problems persist and rob too many children of their ability to learn and succeed in life.

3. What Can Be Done

Finally, we must ask what can be done. We should find hope in the fact that lead poisoning is a public health problem that is completely preventable. Sadly, once a child is lead poisoned, there is no cure. Although high levels of lead in the blood can be removed through an often painful process called chelation, the devastating effects of lead poisoning must be prevented before the harm is done.

Our current statutory scheme only requires a home inspection or lead abatement after a lead poisoned child is identified. By then, it is too late to prevent the irreversible harm that child has suffered and will continue to suffer the rest of his or her life. To prevent lead poisoning, lead hazards must be identified and removed before they poison our children. To accomplish this goal, we must adopt comprehensive legislation that addresses the multifaceted aspects of the lead problem.

First, we need legislation that mandates a universal screening program to identify those children with elevated blood lead levels. The Centers for Disease Control, the American Academy of Pediatrics, and the Agency for Toxic Substances and Disease Registry all recommend universal lead screening. This is critical if we are to provide children with necessary medical evaluation and treatment, remove children from dangerous sources of lead, and target the homes that need abatement work.

Screening programs are particularly cost-effective. In Newark, the numbers of children requiring hospitalization for chelation therapy declined from 1972 until 1976 and then sharply increased through 1980 to a hospitalization rate nearly 4 times the rate in 1976. This rise in chelations coincided precisely with a cut-off in funds for the Newark lead screening program. The lesson is clear. If we do not identify children in the early stages of lead exposure, they can become so poisoned that they will require costly hospitalization.

Second, we need legislation to identify the homes and child care facilities that are poisoning our children. The Centers for Disease Control states that its most important theme in its recent statement on lead poisoning is the need to identify and remove sources of lead exposure before children are harmed. If we do not know the source of lead, we cannot take steps to remove our children from a lead exposure that can cause devastating harm.

We recommend legislation to require a home inspection whenever children have dangerous blood lead levels. Since we need to examine all parts of a child's environment, legislation should also require lead inspections of pre-schools, child care facilities, nursery and elementary schools, school yards and shelters serving young children. Multiple dwellings should receive lead inspections to protect tenants from the dangers of lead exposure. Residential properties should be inspected for lead at the time of the sale, and homeowners should inspect for

lead before undergoing the kind of extensive renovation that could pose a lead hazard.

Third, legislation should be adopted that will train and certify lead inspectors and lead abatement workers. Unfortunately, when an abatement job is done improperly, an entire house can be contaminated with lead. This is the reason that states such as Massachusetts and Rhode Island have certification programs in place. A certification and training program is essential to ensure that inspections and abatements are done safely and reliably and that children are not lead poisoned as a result of abatement work done in their home. Another important advantage to adopting certification legislation is that this will enable the State of New Jersey to qualify for federal Housing and Urban Development funds. HUD has a \$47.7 million appropriation to be distributed to states with lead certification programs, and HUD will be requesting applications for the grant money in the beginning of May. Since the greatest obstacle to abating homes is the cost, we cannot afford to let this federal money slip through our fingers.

Fourth, legislation should specify the circumstances under which homes must have lead hazards abated. There will be instances in which homes will have lead on the walls but because the house is in good condition and the paint is not peeling or chalking or chipping, the lead does not pose an immediate hazard and need not be abated. However, abatements should be required where a lead inspection reveals a serious lead hazard in a

dwelling occupied by a lead poisoned child or a lead hazard in in a child care facility, school, or shelter serving young children. In appropriate circumstances, owners of multiple dwelling units should abate after an inspection reveals lead hazards. Buyers and sellers of residential property should be able to negotiate between themselves as to who will be responsible in those instances in which abatement is required for lead hazards discovered when a lead inspection is done. Unless we remove dangerous lead from the places where children live, our children will continue to be poisoned.

Fifth, legislation should provide a variety of financial incentives and programs to enable owners to afford the costs of abating dangerous lead conditions present in their homes. For example, we should consider legislation to provide owners with some form of tax credit for abatements done by certified workers. Legislation might also provide a low interest loan program to assist owners who lack the financial means to abate lead hazards in their properties.

In sum, lead poses an enormous danger to our children. It will take an equally enormous legislative will and dedication to address the lead problem in an effective manner. But steps can and must be taken. Otherwise, children will be permanently robbed of their full potential forever. We owe it to our children to give them a future.

Thank you very much for this opportunity to testify on this most important issue.



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Testimony on Childhood Lead Poisoning

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New York, New York

Before the
Health and Human Services Committee

New Jersey Senate

Trenton

April 29, 1992

Philip J. Landrigan, M.D., M.Sc.

Mr. Chairman and Members of the Committee:

Thank you very much for having invited me to appear before you this morning.

My name is Philip J. Landrigan, M.D., M.Sc. I am Professor of Pediatrics and Chairman of the Department of Community Medicine in the Mount Sinai School of Medicine of the City University of New York. I have been involved for more than twenty years with research on childhood lead poisoning, and I have published extensively on this topic. In 1990 and 1991, I was a consultant to the Committee convened by the Centers for Disease Control to reevaluate the definition of pediatric lead poisoning in young children in the United States. A copy of my curriculum vitae is attached.

The extent of childhood lead poisoning in the United States. Pediatric lead poisoning is the single most common disease of toxic environmental origin in the United States. The Centers for Disease Control (CDC) have estimated that between three and four million American children have blood lead levels above 10 µg/dl. This is the level defined by the CDC as diagnostic of pediatric lead poisoning (1).

Lead poisoning is found in every sector of American society. Although pediatric lead poisoning is most common among children living in poverty in the core areas of our central cities, cases of lead poisoning have been documented also in the suburbs and in rural areas.

The role of lead-based paint in high dose lead exposure. Exposure to lead-based paint has decreased among children in the United States since passage of the federal Lead-based Paint Poisoning Prevention Act in 1970. Prior to that time, some interior paints contained more than 50% (500,000 ppm) lead by weight,

Philip J. Landrigan, M.D., M.Sc.

whereas today the legally mandated limit for the lead content of new paint established by the Consumer Product Safety Commission is 0.06% (600 ppm).

Nevertheless, old paint remains the principal source of high-dose lead exposure and lead poisoning for American children (2). Most lead-based paint is encountered in housing that was built before 1970. Virtually every case of symptomatic high dose lead poisoning that is encountered in pediatric practice in the United States today is related to the ingestion of lead-based paint by young children.

The hazards of lead-based paint are most intense in major metropolitan areas. In the New York City standard metropolitan statistical area, an estimated 422,860 (60.1%) of 703,500 children 1-5 years of age live in pre-1950 housing units, potentially contaminated with lead-based paint.

However, lead paint poisoning has also been encountered among children in the suburbs. Lead-based paint is no respecter of social station. Several years ago at Mount Sinai, we had a tragic episode of lead poisoning in a professional family whose children were seriously exposed during a renovation of a Victorian farmhouse in rural upstate New York (a copy of that case report is attached to my testimony) (3).

Additionally, it is important to bear in mind that the flaking and weathering of leaded paint contributes to the lead content of urban dust and soil.

The health consequences of lead poisoning. Lead affects numerous organ systems in a growing child. Among the organs damaged are the developing red blood cells and the kidneys.

Philip J. Landrigan, M.D., M.Sc.

However, the most serious toxicity of lead to children is in the central nervous system. Lead has been shown beyond any shadow of a doubt to cause brain damage in young children (4,5,6). High-dose exposure to lead is known to cause coma, convulsions and obvious brain injury.

Lead also is toxic to the brains of children at lower levels of exposure. Landmark epidemiologic studies conducted over the past decade have shown that relatively low doses of lead, not sufficient to produce clinically evident signs and symptoms, also produce brain injury in children that is manifest as neurological and psychological damage. This lead-induced brain injury is evident as decreased intelligence, shortened attention span and behavioral disturbance. As children who have suffered subclinical lead toxicity grow into adolescence, they manifest an increased rate of permanent reading disability, a higher than normal rate of failure to graduate from high school and a high prevalence of behavioral disturbance.

Because the nervous system of a child has little capacity to repair itself once damaged, the injury to the central nervous system that is caused by lead is considered by physicians and medical scientists to be permanent, irreversible and untreatable. For this reason, the only logical approach to dealing with the neurological damage caused by lead is to prevent it.

The cost of lead poisoning. Various econometric assessments of the costs of lead poisoning have been developed. All of these analyses have several components. First, they consider the direct medical costs of treating children with symptomatic lead poisoning. Secondly, they must evaluate the indirect costs

Philip J. Landrigan, M.D., M.Sc.

of childhood lead poisoning, that is, the costs that result from long-term care and treatment.

In addition, lead poisoning has delayed costs that are extremely difficult to quantitate. These are the costs to our society that result from truncated achievement, diminished productivity and the blighted futures of our children who are damaged by lead. These children will not function in society as they should. They will be subtly handicapped as they proceed through life. They will have difficulty in graduating from high school. Most of them will not go to college and very few will ever attend professional school. They will become a drag upon our society rather than a gift to it.

The monetary costs of lead poisoning are vast. The CDC has estimated that the total benefits to American society of abating all lead contaminated housing units would be in excess of 100 billion dollars. These cost estimates compare in medical benefits to be achieved by abatement. They weigh those medical gains against the cost of abatement. They do not consider the moral cost of lead poisoning and they do not consider the future cost of lost productivity or foregone lives.

Prevention of lead poisoning. One of the most tragic aspects that I have encountered in the treatment of children with lead poisoning is the return to hospital with recurrent lead poisoning of a child whom I have sent home after previous treatment. Recurrent lead poisoning is a disaster. It is a situation that our society should not tolerate. The abatement of lead in a housing unit should be an integral part of the care and management of every child with lead poisoning, and the child should not be allowed to return home until the environment has been deleaded.

Philip J. Landrigan, M.D., M.Sc.

Even more importantly, however, it is essential that environmental monitoring be a routine part of the activities undertaken by state and local health departments in the prevention of childhood lead poisoning. At the present time and for the past two decades, we have used children as the canaries to tell us the locations of lead-contaminated homes. We do not screen homes for lead. We screen children for lead. We screen a home only after we discover an elevated blood lead level in a child. This approach is backwards. We should and can do better. I would argue the need for systematic screening of all housing units, or at least of all housing units build before 1960, for lead.

Conclusion. Pediatric lead poisoning is one of the most pervasive disease problems in modern society. It is the single most common cause of brain damage in the children of the United States and in the children of New Jersey. It is, however, an entirely preventable disease. I congratulate the New Jersey Senate in considering legislation to eradicate pediatric lead poisoning from our society.

As the United States and as the State of New Jersey move into the 21st century, we move into a world of increasing international economic competition. Our only hope of survival and success in this new era will be to utilize the God-given brain power of each of our children to forge our future. If 15 to 20% or more of our children are damaged by a preventable neurological toxin that cause irreversible brain damage, and the children of other nations are not so damaged, then we enter the next century substantially behind the rest of the world. Although this economic rationale should not be necessary to correct a medical problem, nevertheless it adds another dimension that we must consider as we ponder the allocation of monies in an increasingly stringent fiscal environment.

Philip J. Landrigan, M.D., M.Sc.

I hope that these remarks are helpful to you in your deliberations. I shall be pleased to answer questions.

PJL:jlr

Philip J. Landrigan, M.D., M.Sc.

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April 1992

CURRICULUM VITAE

Name : Philip J. Landrigan, M.D., M.Sc., D.I.H.

Born : Boston, Massachusetts, June 14, 1942

Wife : Mary Florence

Children: Mary Frances
Christopher Paul
Elizabeth MarieEducation:

High School: Boston Latin School, 1959
College: Boston College, A.B. (magna cum laude), 1963
Medical School: Harvard - M.D., 1967
Internship: Cleveland Metropolitan General Hospital, 1967-1968
Residency: Children's Hospital Medical Center, Boston,
(Pediatrics), 1968-1970
Post Graduate: London School of Hygiene & Tropical Medicine, 1976-77
Diploma of Industrial Health (England) - 1977
Master of Science in Occupational Medicine,
University of London (with distinction) - 1977

Positions Held:

Ethel H. Wise Professor of Community Medicine and
Chairman of the Department of Community Medicine,
Mount Sinai School of Medicine, 1990-Present.
Director, Division of Environmental and Occupational Medicine, Department
of Community Medicine, Mount Sinai School of Medicine, 1985-Present.
Professor of Pediatrics, Mount Sinai School of Medicine, 1985-Present.
Director, Division of Surveillance, Hazard Evaluations and Field Studies,
National Institute for Occupational Safety and Health,
Centers for Disease Control, 1979-1985.
Chief, Environmental Hazards Activity, Cancer and Birth Defects Division,
Bureau of Epidemiology, Centers for Disease Control, 1974-1979.
Director, Research and Development, Bureau of Smallpox Eradication,
Centers for Disease Control, 1973-1974.
Epidemic Intelligence Service (EIS) Officer,
Centers for Disease Control, 1970-1973.

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Adjunct Positions:

Clinical Professor of Environmental Health,
School of Public Health and Community Medicine,
University of Washington, 1983 - Present.
Visiting Lecturer on Preventive Medicine and Clinical Epidemiology,
Harvard Medical School, 1982 - Present.
Visiting Lecturer on Occupational Health,
Harvard School of Public Health, 1981 - Present.
Assistant Clinical Professor of Environmental Health,
Department of Environmental Health, College of Medicine,
University of Cincinnati, 1981 - 1986.
Visiting Fellow, TUC Institute of Occupational Health,
London School of Hygiene and Tropical Medicine, 1976 - 1977.
Clinical Instructor in Pediatrics: Harvard Medical School, 1969 - 1970.

Memberships:

Fellow, American Academy of Pediatrics
Member, American Association for the Advancement of Science
Member, Society for Epidemiologic Research
Member, American Public Health Association
Elected Fellow, Royal Society of Medicine
Member, International Commission on Occupational Health,
Scientific Committee on Epidemiology
Member, American Academy of Clinical Toxicology
Fellow, American College of Epidemiology
Member, American College of Epidemiology,
Board of Directors, 1990 - 1993.
Elected Member, American Epidemiological Society
Fellow, Collegium Ramazzini
Member, Herman Biggs Society
Fellow, New York Academy of Sciences
Member, New York Occupational Medicine Association,
Board of Directors, 1988 - 1990.
Fellow, American College of Occupational Medicine
Elected Fellow, New York Academy of Medicine
Member, The PSR Quarterly - Advisory Board

Specialty Certifications:

American Board of Pediatrics - 1973
American Board of Preventive Medicine:
General Preventive Medicine - 1979
Occupational Medicine - 1983

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Awards and Honors:

Department of Health, Education and Welfare - Volunteer Award - 1973
U.S. Public Health Service, Career Development Award - 1976
Centers for Disease Control, Group Citation as
Member of Beryllium Review Panel - 1978
U.S. Public Health Service, Meritorious Service Medal - 1983
Institute of Medicine, National Academy of Sciences - 1987

Visiting Professorships:

Visiting Professor of the Faculty of Medicine,
University of Tokyo - September 1989
Visiting Professor of the University, University of Tokyo - July 1990
Visiting Professor, Department of Community Health,
University of Cape Town Medical School, March 1992
Catherine Boucot Sturgis Visiting Professor in Community and
Preventive Medicine, Medical College of Pennsylvania, March 1992

Committees:

American Academy of Pediatrics - Committee on Environmental Hazards,
1976 - Present. Chairman, 1983 - 1987.
National Research Council, National Academy of Sciences,
Assembly of Life Sciences. Board on Toxicology and Environmental
Health Hazards, 1978 - 1987; Vice-Chairman, 1981 - 1984.
National Research Council, National Academy of Sciences, Assembly of
Life Sciences, 1981-1982; Commission on Life Sciences, 1982-1984.
National Research Council, Institute of Medicine, Committee for a
Planning Study for an Ongoing Study of Costs of Environment-
Related Health Effects, 1979 - 1980.
National Research Council, National Academy of Sciences, Assembly of
Life Sciences. Panel on the Proposed Air Force Study of
Herbicide Agent Orange, 1979 - 1980.
National Research Council, National Academy of Sciences: Committee on
the Epidemiology of Air Pollutants, Vice-Chairman, 1984 - 1985.
National Research Council, National Academy of Sciences: Committee on
Neurotoxicology in Risk Assessment, 1987 - 1989.
National Research Council, National Academy of Sciences: Committee on
the Scientific Issues Surrounding the Regulation of Pesticides
in the Diets of Infants and Children. Chairman, 1988 - 1990.
Governor's Blue Ribbon Committee on the Love Canal, 1978 - 1979.
Harvard School of Public Health, Occupational Health Program,
Residency Review Committee, 1981 - 1983; Chairman, 1981.
World Health Organization. Contributor to the WHO Publication:
Guidelines on Studies in Environmental Epidemiology
(Environmental Health Criteria, No. 27), 1984.

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Committees (continued):

INFORM, Board of Directors, 1991 - present.
National Institute of Environmental Health Sciences, Third Task Force
for Research Planning in the Environmental Health Sciences.
Chairman, Subtask Force on Research Strategies for Prevention
of and Intervention in Environmentally Produced Disease, 1983-1984.
National Institutes of Health, Study Section on Epidemiology and
Disease Control, 1986 - 1990.
International Agency for Research on Cancer, Working Groups on Cancer
Assessment, October 1981 and June 1986.
(IARC Monographs No. 29 and No. 42).
Association of University Programs in Occupational Health and Safety,
1985 - Present. President, 1986 - 1988.
New York Lung Association: Research and Scientific Advisory Committee,
1986 - 1989. Board of Directors, 1987 - 1990.
Mount Sinai School of Medicine, Clinical Research Center Advisory
Committee, 1986 - Present.
Mount Sinai School of Medicine, Clinical Research Center,
Acting Program Director, 1987 - 1988;
Associate Program Director, 1987 - Present.
Mount Sinai School of Medicine, Executive Faculty, 1988 - Present.
Milbank Memorial Foundation: Technical Board, 1986 - 1988.
State of New Jersey, Meadowlands Cancer Advisory Board,
Chair, 1987 - 1989.
State of New York, Asbestos Licensing Advisory Board,
Chair, 1987 - Present.
New York Academy of Medicine, Working Group on Housing and Health,
1987 - 1989, Chair, 1989.
Centers for Disease Control, Alumni Association of the Epidemic
Intelligence Service, 1972 - Present. President, 1988 - 1990.
City of New York Mayor's Lead Paint Poisoning Advisory Committee, 1991.

Editorial Boards:

Editor-in-Chief: American Journal of Industrial Medicine,
1992 - Present; Consulting Editor, 1979 - 1992.
Editor-in-Chief: Environmental Research, 1987 - Present.
Consulting Editor: Archives of Environmental Health, 1982 - Present.
Editorial Board: Annual Review of Public Health, 1984 - 1990.
Senior Editor: Environmental Research, 1985 - 1987.
Editorial Board: American Journal of Public Health, 1987 - Present.
Editorial Board: New Solutions: A Journal of Environmental and
Occupational Health Policy, 1990 - Present.
Editorial Board: The PSR Quarterly: A Journal of Medicine
and Global Survival. 1990 - Present.

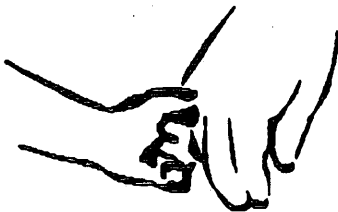


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Interpretation of blood lead test results and follow-up activities: Class of child
and lead concentration.

BLOOD LEAD (UG/DL)	COMMENT
≤ 9	A child in class I is not considered to be lead-poisoned
10-14	Many children (or a large proportion of children) with blood lead levels in this range should trigger community wide prevention activities. Children in this range should be screened more frequently
15-19	A child in Class IIB should receive nutritional and educational interventions and more frequent screening. If the blood level persists in this range, environmental investigation and intervention should be done.
20-44	A child in this range should receive environmental evaluation and remediation and a medical evaluation. Such a child may need pharmacologic treatment of lead poisoning.
45-69	A child in Class IV will need both medical and environmental interventions, including chelation therapy.
≥ 70	A child with Class V lead poisoning is a medical emergency. Medical and environmental management must begin immediately.



ALLIANCE TO END CHILDHOOD LEAD POISONING

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Don Ryan
Executive Director

April 29, 1992

Written Testimony Submitted to the Health and Human Services Committee New Jersey Senate regarding

Childhood Lead Poisoning Prevention

Presented by Don Ryan, Executive Director

I am Don Ryan, Executive Director of the Alliance To End Childhood Lead Poisoning. The Alliance wants to commend this Committee for holding this hearing and beginning your deliberative process on what we hope will be a model piece of state legislation -- and a giant step forward in bringing an end to childhood lead poisoning. New Jersey has a long record of leadership in fighting environmental health problems. Your bill can build on efforts at the federal levels and legislation in other states to provide a comprehensive model for effectively preventing lead poisoning.

The Alliance

The Alliance is a national nonprofit public interest organization focusing exclusively on ending the epidemic of childhood lead poisoning. The Alliance was formed just 18 months ago by leaders in medicine and research, public health, environmental protection, low-income housing, education, and children's welfare. It was born from the failures of the government -- especially the federal government -- to respond effectively to prevent childhood lead poisoning. I would like to insert for the record biographical sketches of our Board of Directors to demonstrate the depth and diversity of the Alliance. The Alliance also has a standing Technical Advisory Committee of more than 60 experts from across the country representing every field and discipline involved in developing and implementing solutions to childhood lead poisoning. I am pleased to tell you that many national experts on lead poisoning

The problem
is so well defined,
so neatly packaged,
with both causes
and cures known,
that if we don't
eliminate this social
crime, our society
deserves all the
disasters that have
been forecast for it.

— Rene Dubos

prevention come from New Jersey -- and several serve on the Alliance's Board and Technical Advisory Committee.

The Alliance's mission is to bring all resources to bear -- other organizations, scientific and technical knowledge, public policy, economic forces, and community action -- to raise awareness and change perceptions about childhood lead poisoning and to develop and implement effective national prevention programs. Our comprehensive approach to the problem combines education and advocacy efforts with technical assistance and policy support.

The Alliance is funded about half by private foundations and half by special project grants from Federal agencies. We accept no funds from industries with a direct economic stake in this issue: the lead or paint industries, cleanup contractors, or abatement product manufacturers.

Scope and Severity of the Problem

We worry about lead poisoning because lead is a powerful neurotoxin. Even at low levels -- well below those which produce identifiable symptoms -- lead affects children's brain function and nervous system development. The human health effects of lead include: mental retardation, IQ reductions, hyperactivity, reading and learning problems, attention-span deficit, hypertension, liver and kidney damage, and at high levels coma, convulsions and even death.

The usual uncertainties and honest debate which surround so many environmental health risks are not present with lead. There is broad consensus among scientists and across Federal agencies that children are suffering adverse cognitive effects at very low levels. The jury is in, as evidenced by the Centers for Disease Control's revised guidelines and health recommendations for preventing childhood lead poisoning. The reduction in the threshold for childhood lead poisoning from 25 micrograms per deciliter (ug/dl) to 10 ug/dl results in a ten-fold increase in the number of children recognized as lead poisoned -- between two and three million preschoolers.

The concomitant call for "universal screening" and a shift to a more sensitive screening test will also result in sharp increases in the number of young children who will actually be identified as lead poisoned in the future. Lead poisoning eclipses virtually all other environmental health hazards -- and all other preventable diseases of childhood.

The Primary Cause of the Problem

We are all exposed to lead from a multitude of sources: lead-based paint and dust; emissions from gasoline, industrial sources, and municipal incinerators; drinking water; food (from lead solder

in food cans and poorly glazed ceramics); soil; hobbies; and lead in the workplace and lead dust brought home from the workplace. Various federal agencies are taking steps to reduce exposures from all these sources.

But one source is responsible for the most intensive exposures which are poisoning our children. One source is primarily responsible for the epidemic of childhood lead poisoning in this country. We now know that the overwhelming cause of the problem is lead-based paint and dust in homes. Federal agencies -- EPA, HHS and HUD -- are now in general agreement on this.

I want to destroy two myths about lead paint poisoning which have worked to discourage effective steps at prevention. First is the stereotype that lead poisoning is a disease only of the inner city poor. True, children of poor, inner city families do have the highest rate of lead poisoning (because of the prevalence of lead paint in older housing often in poor condition). Although prevalence rates exceed 50 percent in many cities, that is only half the story. Based on screening data, we know unequivocally that lead poisoning affects children in every socioeconomic stratum, making it the foremost preventable pediatric disease.

Second, I want to debunk the myth that children have to eat lead paint chips to become poisoned. We now know unequivocally that the dust from lead paint is the most common cause of lead poisoning. The primary sources of lead dust are 1) chipping and peeling leaded paint, 2) lead painted windows which grind the paint as they are raised and lowered, and 3) home renovation and lead abatement projects conducted without proper controls, containment and cleanup. Lead dust is invisible, it is sticky and it is poisoning children day in and day out.

The most definitive data on the presence of lead-based paint and dust in U.S. homes comes from the national survey HUD conducted last year at the direction of the Congress. In its December 1990 Report to Congress on lead paint in private housing, HUD concludes that more than half of U.S. housing built before 1978 contains some lead paint -- 57 million units altogether. Of course, like asbestos, the mere presence of leaded paint does not indicate an immediate hazard. But HUD found hazardous conditions (chipping and peeling leaded paint or high lead dust levels) in an estimated 20 million houses. Based on HUD's figures, that means that lead paint and dust hazards are present today in almost 20 percent of the U.S. housing stock.

According to this same Report to Congress, 3.8 million of those homes now have families with young children living in them, prompting HUD to coin the term "priority hazards." That's 3.8 million homes in which young children are now living in the presence of peeling lead paint or high lead dust levels. I want to point out how closely this number corresponds to the EPA and

HHS estimates of three to four million lead poisoned children nationwide. What this means is that each young child living in one of these 3.8 million "priority hazard" homes has an excellent chance of being poisoned.

Historical Backdrop

In 1972, federal legislation established the national mandate to wipe out childhood lead poisoning caused by lead-based paint. Primary responsibility was given to the Department of Housing and Urban Development -- under the auspices of our commitment to "decent, safe and affordable housing." In Administration after Administration at HUD, lead-based paint hazards have been downplayed or dismissed. This resulted in a de facto policy in most cities across the country that lead paint hazards in homes would be abated after and only after a lead-poisoned child was found. We have been, in fact, using young children as "lead detectors."

This inherently lame, reactive approach was bankrupted in 1981 by the termination of CDC's categorical grant program funding state and local screening programs. The result was that many local screening programs died and almost all withered. Just as important as the funding reductions was the elimination of the staff at CDC and the system for collecting statistics on lead poisoning. Over the 1980's, local programs were left in a free-fall, and the national system of data reporting disintegrated.

Leveraging Change at the Federal Level

For two decades the Federal Government has ducked its responsibilities and left cities and states holding the bag in dealing with childhood lead poisoning. But, in just the past year major changes have begun to happen at the federal level. I want to quickly review these changes because it is important that new legislation in New Jersey capitalize on them.

- o **Recognition of the Problem** Last October CDC lowered the threshold from 25 ug/dl to 10, which amounts to something on the order of a 10 fold increase in the number of children recognized as lead poisoned. Lead poisoning is now seen as "our most societally devastating disease" and "the No. 1 environmental health hazard facing American children."
- o **The Need for a Fundamentally New Approach** HHS's "Strategic Plan for Eliminating Childhood Lead Poisoning" released one year ago maps out a fundamentally new approach. Instead of waiting until children are found poisoned, we must take steps to prevent the exposure before the damage is done.
- o **Correcting Lead Hazards in Housing** Lead comes from many sources, but there is a general consensus among federal agencies that lead-based paint and dust is the primary cause

of most poisonings, the source of the most intensive exposures, and the largely unattended problem.

- o **Understanding the Economics** As recently as three years ago, some landlords argued that it was cheaper to chelate poisoned children than abate lead paint hazards. Setting aside the moral and ethical considerations, we now know, based on HHS's cost/benefit analysis, that lead abatement makes economic sense. The benefits in reduced medical costs, special education, and improved performance and earning power, far outweigh the costs of cleaning up lead hazards.
- o **Universal Screening** Although minorities and the poor bear a disproportionate burden of lead poisoning, federal agencies now recognize that children across all economic strata are at risk. CDC has called for "universal screening," the routine testing of all young children beginning at about 12 months. In addition, CDC has called for a shift from FEP to blood-lead tests. If a blood-lead test is not used, many poisoned children tested will not be identified.
- o **Tighter Restrictions on the Use of Lead** Given what we know about lead's toxicity at low dose, it makes sense to stop using inappropriate and dispersive uses of lead. EPA is working on regulations to tighten standards and reduce exposures in many areas, and the Congress is working on legislation to establish limits on the amount of lead in various products and to restrict dangerous new uses.
- o **Advances in Abatement Technology** Lead-based paint abatement is inherently dangerous and, like asbestos, there is nothing worse than a sloppy cleanup project. But, we do now know how to abate lead safely and effectively. Federal investments in research continue to increase; the technology continues to improve; and costs continue to come down.
- o **Training and Certification** Nationwide, the biggest obstacle to progress is the lack of trained, qualified, and certified contractors. The Congress has given EPA a one-year deadline to establish a system for certifying training programs for contractors, workers and laboratories.
- o **Coordination among Government Programs** At all levels of government lead poisoning prevention has dropped between the cracks of health, housing and environmental programs. Coordinated and collaborative efforts are essential. Because these don't come naturally to different organizations and programs, pressure from legislative bodies is needed to overcome bureaucratic inertia.

- o **Leveraging Existing Programs** There is a new recognition at the federal level that we must take advantage of all existing programs and resources to cost effectively prevent lead poisoning. This means using the Medicaid program and EPSDT to screen children with a blood-lead test. This means factoring in lead hazard reduction in all existing housing programs.
- o **A Strategic Approach to Reducing Lead Paint Hazards** Because half the U.S. housing stock has some lead paint, it is essential to set priorities and target resources to target the most serious situations. High risk situations need to be identified through inspections and risk assessments and steps taken to cost-effectively reduce lead poisoning hazards. A major piece of federal housing legislation makes major strides in this direction.
- o **Public Education and Awareness** Education is no substitute for action in reducing lead hazards, but education is important. The national media has greatly raised awareness in the past year. In the next few months, a major public education campaign on lead poisoning prevention will be launched by the "President's Commission on Environmental Quality" with television and print public service announcements.
- o **Technical Assistance and Information** Within the next three months the federal government will also be starting an 800 number telephone hotline. This is a collaborative effort by EPA, HUD and CDC to provide "one-stop shopping" for parents and homeowners for information on lead poisoning.
- o **Notification and Inspection** There is growing attention in the Congress to mandatory inspection and notification of lead based paint hazards. Three different pieces of legislation lay out a range of options and opportunity points for triggering inspections.
- o **Increased Resources for Lead Abatement** Finally, there is a new recognition at the federal level of "the bottom line:" more money is needed to correct lead hazards in low-income housing. This year the Congress appropriated the first ever funds for federal grants to help cities and states cleanup lead paint hazards in private housing. This \$50 million appropriation is proposed to be increased to \$250 million by the pending housing authorization bill. Another bill will impose an excise fee on all uses of lead to raise \$1 Billion per year to go into a trust fund dedicated to lead paint abatement in low-income housing.

Critical Principles and Elements of State Legislation

A number of states are now focusing on childhood lead poisoning prevention and a variety of bills are moving which make important advances. The Alliance hopes that this Committee will structure a comprehensive bill which incorporates a number of elements critical to making prevention efforts more effective. The Alliance recommends for your consideration, a number of specific elements and principles which we hope will be embodied in your legislation.

Primary Prevention

As is the case in almost all states, New Jersey's current statute keys action to look for and treat lead hazards to the identification of a lead-poisoned child. It is the Alliance's strongest recommendation to this Committee that primary prevention -- true prevention -- be the guiding principle behind your new legislation. Programs must be put in place, enforceable mechanisms established, and opportunity points for action specified to identify and abate lead hazards before the child is poisoned.

Mandatory Inspections and Risk Assessments

Primary prevention is nothing more than a lofty goal unless provisions are made to have houses and apartments inspected to identify lead-based paint hazards. Home buyers deserve the right to an inspection and the right to know if lead-based paint hazards are present. Knowledge of the presence of lead-based paint on a surface by surface basis is also important in order to avoid disturbing the paint and aggravating lead exposures during remodeling or renovation projects. The standards of care in rental housing must be changed to make risk assessments and inspections for lead-based paint hazards routine.

Hazard Abatement Requirements

In addition to identifying hazards, a workable system with mechanisms for enforcing abatement of lead hazards must also be put in place. In sharp contrast, most programs which currently screen children to identify those lead-poisoned have difficulty in getting lead-based paint abated even after the hazard and the cause of the poisoning has been identified. I believe that this is the case with some local lead poisoning programs in New Jersey. A strong state statute must lay the foundation for requirements to have clear lead hazards abated.

Universal Screening

At the same time that emphasis is being shifted to lead hazards in housing, it is also essential that universal screening be instituted, as recommended by CDC and HHS. A comprehensive state statute must make screening (by blood-lead tests) mandatory for

all young children. Provisions need to address Medicaid and EPSDT, private providers, as well as the eligibility for reimbursement under private health insurance policies. For the individual child, the benefits are detection of the problem so that steps can be taken to prevent further exposures and damage, as well as protecting siblings and other children who may move into the home in the future. On a program-wide basis, screening data document the scope of the lead poisoning problem and highlight "hot spots" for special emphasis. It is essential that provisions be made for the collection and reporting of all data on lead poisoning.

Contractor Training and Certification

It is essential that this New Jersey legislation establish a workable program for contractor and worker training and licensing. New Jersey was one of the first states to establish a system for assuring the quality control of asbestos abatement contractors and this statute needs to set the example again. Without training and certification, abatement workers will be exposed to severe health hazards and property owners will be left to the mercy of the unqualified or unscrupulous operators. In addition, the State of New Jersey and its municipalities will not be eligible for HUD's competitive grants being awarded later this year to help cities and states defray the cost of lead-based paint abatement in private low-income housing.

Discouraging Abandonment of Rental Housing

In several cities and states there have been widely publicized threats by landlords to abandon rental properties if they are required to do anything to address lead-based paint hazards. It is the Alliance's strong belief that in the vast majority of cases, these threats amount to nothing more than "saber rattling." The strict requirements of the Massachusetts state law have certainly not produced abandonment except in isolated situations in which units were uneconomic for a variety of other reasons. The Alliance believes that two issues should be addressed in state legislation to discourage abandonment. First, as discussed below, funding mechanisms must be provided to help offset the costs of abatement for low-income housing. Second, and of equal importance, is the need to assure liability insurance coverage.

In many states, liability insurance companies are walking away from coverage on lead poisoning wherever possible. The loss of liability insurance coverage (and the threat of exposure by the landlord to large damage awards) is the single greatest threat to the supply of affordable housing. It is not responsible for insurance companies to walk away from lead poisoning. Liability insurers should be exerting pressure on landlords to "do the right thing" by undertaking inspections and risk assessments and intervening to abate lead-based paint hazards. As in the case of

asbestos, the absence of liability insurance for abatement contractors can also be a substantial obstacle to building capacity for expanded abatement projects.

Housing Programs

In addition to the regulatory and enforcement mechanisms aimed at prevention lead-based paint poisoning, the Alliance would urge this Committee's consideration of changes in state housing programs. There may be important opportunities to harness existing programs to support the abatement of lead-based paint hazard reduction. For example, federal legislation is now moving which would require all communities to include within their "Comprehensive Housing Affordability Strategies" consideration of lead hazards. Lead paint hazards need to be factored into all housing decisions, in terms of subsidies, project selection and the design of rehabilitation programs and projects. In addition, provisions need to be made for "safe houses," to provide temporary housing for families who have been displaced from units while abatement projects are underway. The lack of "safe houses" is hampering abatement work in cities across the country; your bill could light the way in tackling this relatively small but critical obstacle.

Funding Mechanisms

Additional funding mechanisms are an essential ingredient in expanding lead-based paint hazard abatement and need to be addressed in a comprehensive state lead poisoning prevention bill. The Alliance has prepared a "Resource Guide for Financing Lead-Based Paint Cleanup," which I am pleased to provide to the Committee. This guide surveys all existing and potentially available federal, state and local programs that can be used for financing abatement work. Information is also provided on initiatives proposed and under consideration.

In particular, I want to mention a state income tax credit which has shown some success in Massachusetts. This tax credit program offers a \$1,000 per unit credit against an individual's tax liability for undertaking lead-based paint abatement. The abatement must be done by a certified contractor and the work inspected. In Massachusetts, this tax credit has resulted in increasing abatement work each of the past three years. The number of tax credits filed has increased from 125 in 1988, to 529 in 1989, to 927 in 1990. The cost to the state treasury from this tax credit totalled \$1,627,000 over the three year period.

This Committee should also be aware of opportunities to recover costs through fees for service. Several state laboratories generate revenues for administrative and field staff by charging for the analysis of blood-lead and other samples. In addition, costs for some functions can be shifted from state program budget to the interested parties, such as is the case with private

inspectors licensed for a fee by the state. The Alliance's "Resource Guide" provides a number of other suggestions.

Market Forces

It is the Alliance's view that the cost of abating lead-based paint and dust hazards cannot be fully borne by the public sector. The federal government is now providing resources and state and local governments must also contribute. But, it is essential that private market forces be engaged to provide incentives for lead hazard reduction efforts. Currently, the marketplace does not recognize the added value of a lead-safe home, so that property owners get no credit for investments made to reduce lead hazards. The Alliance would encourage this committee to explore avenues for nudging market forces to support and reward the abatement of lead-based paint hazards.

Conclusion

There is a growing recognition and conviction across the country that the time has now come to confront the disease of childhood lead poisoning. The time has now come to put an end to the tragedy that strikes one out of every six U.S. children under age six. The time has now come to stop tolerating this disease that disadvantages more than half of our preschoolers in many cities. The Alliance commends this Committee for your leadership in crafting a comprehensive state statute. We hope that your legislation to build a model for lead poisoning prevention in New Jersey that the rest of the country can look to. We would be pleased to provide any supporting materials or information to support your Committee's work.

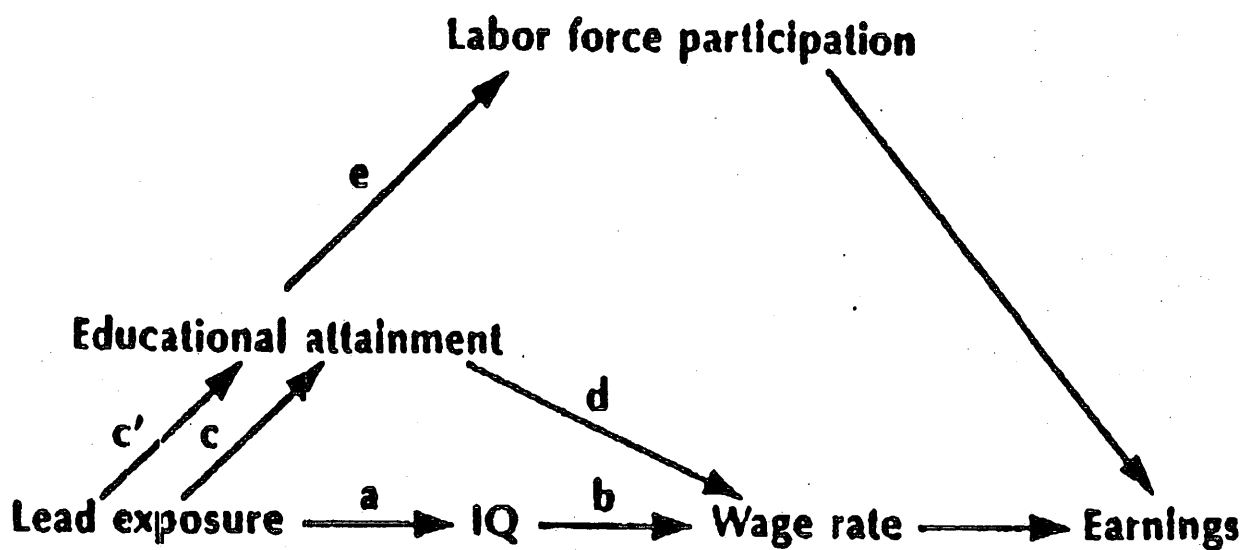


Figure 1. Effect of lead exposure on earnings.

Source: "Strategic Plan for the Elimination of Childhood Lead Poisoning,"

U.S. Department of Health and Human Services, February 1991

Testimony before the Senate Health and Human Services Committee on
The Prevention and Treatment of Lead Poisoning in Children

On Wednesday, April 29, 1992 at 10:00 A.M.

Presented by
Leah Z. Ziskin, M.D., M.S.
Acting Deputy Commissioner
New Jersey State Department of Health

Chairman Bassano and Members of the Senate Health and Human Services Committee, I commend you on taking this opportunity to take testimony on the effects of lead poisoning and how to prevent and treat this condition. With the publication of the federal government's Strategic Plan for the Elimination of Childhood Lead Poisoning in February, 1991 and the Center for Disease Control statement on Preventing Lead Poisoning in Young Children released in October of 1991, there is no better time for New Jersey to increase its attention to this critical public health problem.

I am here today to inform you that Commissioner of Health, Dr. Frances Dunston is very interested and concerned about Lead Poisoning in Children, and is currently serving as the Chair of the Lead Poisoning Committee of the Association of State and Territorial Health Officers. From this position of leadership interest pervades the department and a interdepartmental task force has been formed which is reexamining the department's policies related to lead across all divisions and formulating a comprehensive departmental policy and approach.

The Department of Health can provide you information about the results of many years of screening of children, abatement of dwelling places, occupational exposures and their effect upon the community, and environmental conditions - all of which ultimately effect the health and well-being of New Jersey's children.

I will not attempt to present you with all this information today. However, I want to emphasize, that the Department of Health is very committed to working with this committee and to do all we can to prevent and eliminate childhood lead poisoning. To this end, we are eager to share with you:

- the information we have which documents the problem,
- the efforts we have made over the years,
- and our recommendations on how best to make New Jersey a safer, healthier place for all our children to develop and grow to their full potential.

The Department of Health has been concerned and involved in the prevention of Childhood Lead Poisoning since 1956. We have witnessed the horror of lead encephalopathy followed by death or profound mental retardation of its victims in the fifties and sixties, when lead levels were over 100 ug/dL. Through our screening and abatement efforts in project cities, we have been able to identify children at highest risk. These children have been referred to the medical care community for treatment.

Research studies are now showing that permanent brain damage can occur from blood lead levels well below 25 ug/dL and in fact lower IQ scores. Studies have also shown that maternal lead levels can damage children in utero. We are therefore committed to intensify our search for affected children and look forward to a universal screening program directed at children six months and two years of age. Such a program is necessary if we are to alter the insidious harm lead does to children in limiting their ability to reach their true capabilities.

In addition to screening children and referring them for treatment and follow-up, the Department of Health can offer the following:

- Referral to an Early Intervention Program or a Child Study Team for an assessment of development and educational placement,
- Referral to a local health department for property assessment and abatement,
- Establishment of training courses and certification of workers who can abate lead from residences and other buildings where children especially can come in contact with lead,
- Education to professionals and to the public on being aware of the dangers of lead, sensitizing both health care workers and families to how lead finds its way into the child's environment and how they must be ever vigilant to protect children from its dangers.

Lead is a poison that we have known about for thousands of years. We are convinced that the best way to prevent lead poisoning in children is to work toward its elimination from the environment. In public health terms this approach is known as primary prevention. We recognize that this is a massive undertaking, and we do not underestimate its enormity. It will take a coordinated, cooperative effort among many departments of state government. To accomplish this broad agenda the department recognizes that legislation will be needed. We are willing to work with this committee and other departments of state government to develop a bill which will best meet the needs of New Jersey's children.

In conclusion, we look forward to working with you and all other interested groups in surmounting this problem. The gains we can make are worth all our combined efforts.



EPA-019 February 28, 1990

CEM Message

Cooperative Environmental Management Message

Judging
from
Bennington's
experience,
sodium
bicarbonate
may well
become one
of the most
popular
weapons in
the fight to
keep our
nation's
water safe
and potable

Bennington, VT Revisits Its Sodium Bicarbonate Water Treatment Method

In the late 1970s when Bennington, Vermont first began to investigate how to treat its lead contaminated drinking water, a common method of corrosion control used in several European cities was the adjustment of pH in combination with the addition of sodium bicarbonate to reduce metal contaminants. This *CEM Message* discusses Bennington's 1977 test of this process, the town's ten year experience with sodium bicarbonate/hydroxide treatment of its drinking water, and the potential of this treatment method to meet new Federal safe drinking water requirements.

Background

EPA guidelines governing drinking water quality have been published as "Interim standards" for many years, however, it was not until the last decade that mandatory compliance became tied to numerical values. The Safe Drinking Water Act (SDWA) approved by Congress in 1974 and amended in 1986, called for the EPA to establish maximum contaminant levels (MCLs) for 88 specific chemicals and establish a timetable for action on toxic contaminants.

Final SDWA standards, expected early next year, will bring to 61 the number of contaminants affected. It will be no surprise to municipal water suppliers when the proposed ten-fold MCL reduction of lead — from .05 to .005 mg/L at the plant — becomes law. While there are some "non-action" contingencies in EPA's proposal, the new regulations are bound to trouble

distributors in regions of the U.S. where excessive lead levels at the tap are largely a result of geological conditions at the source.

One of the affected regions is in New England, where acid rain and the lack of carbonate as natural limestone produce very soft water with low pH and alkalinity — a condition which favors corrosion of the distribution lines and consequent leaching of lead into drinking water. A 1977 study of 16 New England water distribution systems reported twelve of them exceeding the current lead standard of .05 mg/L, and the EPA itself found excess lead in over 90 percent of the samples collected in Vermont.

That same year, an OSHA team checking blood-levels of workers at a Bennington battery factory became alarmed when not only the workers, but a control group made up of other townspeople in this Vermont community, exhibited high lead content. The problem was traced to the town's corrosive water supply, and to the fact that one-third of the dwellings in Bennington had lead service lines connecting the water main to the houses. Lead levels as high as 86 mg/L were measured at the tap — over 17 times the .05 mg/L maximum contaminant levels.

The Vermont Department of Health and EPA's Region I office in Boston were alerted and immediately organized a survey of the Bennington area to evaluate possible quantitative effects of any future treatment scheme.

Beginning in April of 1977, three morning samples were collected at each of ten

residential locations on a monthly basis. All the homes on the survey had lead service lines; most had interior copper plumbing.

While the pretreatment survey was in process, Bennington's Water Department heard a variety of proposals for solving the problem. The one that appeared most feasible, from the viewpoint of economy and implementation, was developed by Dr. James W. Patterson, Professor of Environmental Engineering at Illinois Institute of Technology.

Patterson's technology was currently undergoing tests by two separate study groups working independently at the Institute and at the Lawrence Experiment Station in Massachusetts, both reporting favorable results. These groups were investigating the European corrosion control method of

adjustment of pH in combination with the addition of sodium bicarbonate to reduce metal contaminants, a technique which although common in Europe, had never been applied specifically to limiting lead levels.

City officials agreed to test the bicarbonate method for raising the alkalinity to 20 mg/L. But, owing to the extremely acidic condition of the untreated surface water (pH 4.9), it was necessary to also add small amounts of caustic to achieve a final pH of 8.0 to 8.6. Treatment was begun in June of 1977, allowing two months of pretreatment data to be evaluated.

Carbonate and the pH Factor

When rainwater that has been acidified by dissolved CO_2 percolates through limestone subsoil it picks up calcium

salts, primarily in the form of carbonate. Water "hardness" relates to the concentration of the dissolved calcium ions and is commonly reported in terms of their calcium carbonate equivalent.

(It is not alkalinity *per se* but, rather, calcium carbonate in solution that determines hardness. With proper pH adjustment CaCO_3 will form a protective barrier against corrosion in water mains and pipes; however, this coating is extremely difficult to control.)

Corrosive waters, on the other hand, tend to be acidic and relatively free of mineral content. They are generally associated with low carbonate alkalinity levels, low pH, low dissolved solids, and (sometimes) high dissolved oxygen.

continued on page 3

Bennington, Vermont Lead Monitoring Study

Average Lead Values (mg/L) For All Samples

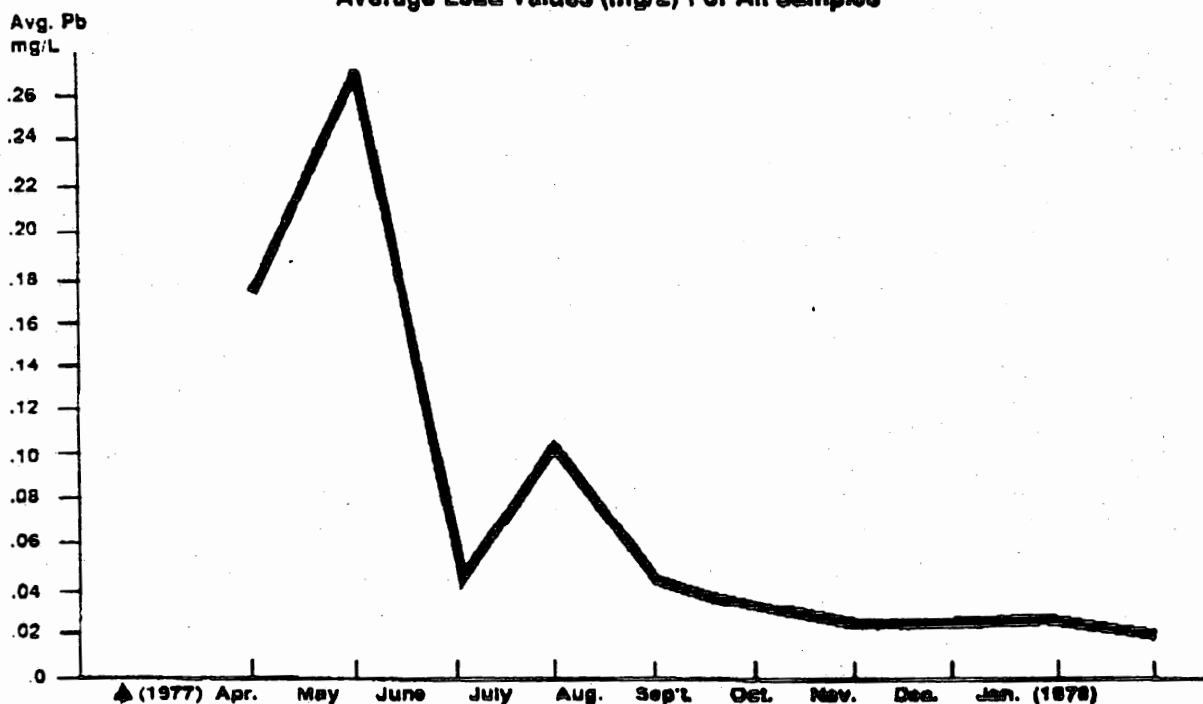


FIG. A: Representation of an EPA chart showing average lead concentration levels in Bennington's drinking water from the initial reading in April, 1977 through stabilization of the corrosion treatment begun in June of that year. Lead levels have remained essentially unchanged since January of 1978.

In natural waters, the carbonate system — comprised of carbon dioxide (CO_2), carbonic acid (H_2CO_3), bicarbonate (HCO_3^-) and carbonate (CO_3^{--}) ions — regulates pH. The solubility of metals and their compounds is affected by pH, as, incidentally, are many of the processes used to treat public water supplies, including coagulation and chlorination. By maintaining pH and carbonate alkalinity at the proper levels, plant equipment and piping in the distribution systems can be provided with a protective metal oxide or hydroxy-carbonate lining which prevents corrosion and the release of metal ions such as copper, lead, zinc and cadmium.

The greatest reduction of lead corrosion occurs when carbonate levels are adjusted along with the pH. Optimum pH appears to be between 8.0 and 8.6 with a minimum alkalinity level of about 25 mg/L (as CaCO_3). Hence the decision to add both caustic (NaOH) and bicarbonate (NaHCO_3) to Bennington's water.

The primary consideration in this strategy was based on the low theoretical solubility of metal carbonate salts — particularly lead hydroxy-carbonate. At the proper water pH and carbonate alkalinity levels, this salt will deposit itself uniformly on the pipe surface, providing a thin impervious anti-corrosive coating. The coating once formed is very tenacious and its protective character will prevail through minor system upsets. However, if either pH or carbonate alkalinity level should go outside the control limits for a significant period of time, then the piping system will revert to its former corrosive condition.

From a public health viewpoint, pH adjustment in the absence of sufficient carbonate alkalinity may be worse than no treatment at all. Under these conditions it is possible for large slugs of toxic lead hydroxides to

slough off periodically from the piping and be ingested by the consumer. Because this unloading effect tends to be intermittent, it may escape detection by monitoring surveys.

The salutary aspects of moderate carbonate alkalinity have been recognized for many years. Carbonates were claimed to inhibit iron corrosion as early as 1926, and similar protection has since been reported for cadmium, lead, and zinc. With respect to removing lead contaminants from water in contact with lead pipe or fixtures, the use of bicarbonate provides three key requisites: a source of carbonate alkalinity, a protective lining on the water vessels, and stabilization of pH in the distribution system

Results of the Bennington Experiment

The approved sodium bicarbonate/hydroxide treatment program was initiated in early June 1977. The chemicals were supplied by Church &

References Regarding the use of Sodium Bicarbonate To Control Drinking Water Corrosion Problems

Patterson, J.W. & J.E. O'Brien, *Control of Lead Corrosion*, Journal of American Water Works Association, May, 1979

Bilodeau, E., "Old Water System Gets New Life", feature story American City & County, February, 1980

Barber, N.R., "Effects of Alkalinity on Controlling Drinking Water Corrosion Problems". Presented at AWWA, Connecticut Section, 1979

U.S. Environmental Protection Agency, *Quality Criteria for Water*, U.S. Government Printing Office, Washington, D.C., 1976

Klein, W., "Lead Levels Down Dramatically", news article in Bennington Banner, Bennington, VT, Feb. 23, 1978

Green, H., "Former City Official Urges Pipeline Corrosion Control Study", news article in Fitchburg Sentinel, Fitchburg MA, Feb. 12, 1980

Dwight Co., Inc. and added to the municipal water source at Bolles Brook.

By the end of the month corrosion rates had dropped sharply, as can be seen from EPA's lead concentration chart [Fig. A]. Within the first six months, lead corrosion was down by 92 percent, and copper by 85 percent. By January of 1978 average lead concentration had decreased from .21 to .021 mg/l — less than half of EPA's current MCL of .05. Recent results from Vermont Department of Health suggest that the technology can meet the even more stringent new EPA requirement.

The Region 1 monitors dispatched a letter to the town's Water Department, commending them on the action taken. "You have done an excellent job," it said. Louis Saralas, who was Town Manager at the time, noted, however, that the good results "still do not relieve the town of the responsibility for removing the lead

continued on page 4

pipes." His aggravation was perhaps compounded by the fact that the chemical addition was performed manually in the first years of treatment, necessitating overtime shifts on the part of Water Department employees. This situation was resolved in the spring of 1979 with the installation of a treatment plant incorporating automatic injection equipment.

Heeding its manager's advice, the town gradually began replacing the offending lead lines, giving top priority to those pipes serving households with young children.

Treatment has quietly continued over the past eleven years, with lead concentration levels maintained well within the current Interim SDWA regulations.

According to Terry Morse, who has been acting Water Superintendent for Bennington since 1982, no adverse effects have been attributed to the corrosion treatment system, despite momentary peaks in source water acidity.

Turbidity is controlled by the addition of a polymeric coagulant at the filtration plant site. One part per million of cationic polymer is used as a filter aid. Chlorination takes place at the end of the filter run in a clear well which provides storage for a quarter of a million gallons. Water is discharged to the mains at the rate of 1700 gal./min., the sodium bicarbonate solution and liquid caustic being added just before discharge.

The only other chemical used in Bennington's water is chlorine dioxide, to stabilize plate counts in Vermont's moderate season, starting in May and continuing until about the beginning of November.

Superintendent Morse recalls that a pump failed soon after the automatic facilities went on line in 1979, forcing an interruption in the corrosion

treatment for several weeks while they waited for a replacement. The incident is worthy of mention because, during this period, several local residents reported observing some blue (copper) streaking on their sinks and tubs — a clear indication that in less than a month, without sodium bicarbonate/hydroxide addition, the system had started to revert to its corrosive phase.

Bennington's water treatment costs are quite modest, considering that they have succeeded in overcoming a public health problem. According to Morse, the total cost for sodium bicarbonate and caustic amounts to about two cents per thousand gallons of water treated. Moreover, the present procedure obviates the need for more costly corrosion prevention chemicals, such as metaphosphates which are notorious for leaving sludges that run afoul of EPA waste-water regulations.

As to whether adding these two chemicals will satisfy EPA's impending .005 mg/L lead limit, Morse was optimistic. "We feel fairly confident that we'll be able to meet the new requirement with only minor adjustments to the present bicarb/hydroxide system," he said. "We don't expect the necessary modifications will have any significant impact on Bennington's yearly costs."

Meantime, other communities in the New England area have watched the pioneering experiment in Bennington with great interest. A pilot program for at least one other such installation will be tested this year on the Falulah Reservoir system which serves about a third of Fitchburg, MA.

Some say that the sodium bicarbonate/hydroxide method is one of the best kept secrets in the U.S. water treatment industry, but the cat will soon be out of the bag. With as many as 42 million Americans drinking lead contaminated water and more stringent EPA regulations on their way, sodium bicarbonate may well become one of the most popular weap-

ons in the fight to keep the nation's water safe and potable. At least it warrants serious consideration for treatment of other soft, acidic water sources far beyond these two New England towns.

For more information

For more information on the sodium bicarbonate/hydroxide water treatment method please contact:

Jeff Kempic, Environmental Engineer
US Environmental Protection Agency
W1-550D

Office of Drinking Water
401 M Street SW
Washington, DC 20460
(202)475-9567

or

Scott Compton
Church & Dwight Co., Inc.
468 North Harrison Street
Princeton, NJ 08543
(609) 497-7202

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ATC ENVIRONMENTAL INC.

PRESENTATION OF

VINCENT M. COLUCCIO, DR.P.H.

BEFORE THE
NEW JERSEY STATE LEGISLATURE
SENATE HEALTH AND HUMAN SERVICES COMMITTEE
PUBLIC HEARING ON

THE PREVENTION AND TREATMENT OF LEAD POISONING IN CHILDREN
APRIL 29, 1992

INTRODUCTION

MY NAME IS DR. VINCENT COLUCCIO AND I AM VICE PRESIDENT OF ATC ENVIRONMENTAL INC., A NATIONWIDE ENVIRONMENTAL CONSULTING FIRM. I AM ALSO DIRECTOR OF A FEDERALLY CO-SPONSORED 3-DAY COURSE, IDENTIFICATION AND ABATEMENT OF LEAD-BASED PAINT HAZARDS OFFERED JOINTLY BY THE UMDNJ-ROBERT WOOD JOHNSON MEDICAL SCHOOL AND RUTGERS UNIVERSITY. I SERVE AS PRESIDENT OF THE NEWLY CREATED NATIONAL LEAD ABATEMENT COUNCIL AND I AM A MEMBER OF THE NEW YORK CITY MAYOR'S ADVISORY COMMITTEE ON LEAD-PAINT POISONING.

I HAVE 17 YEARS OF PROFESSIONAL EXPERIENCE IN ENVIRONMENTAL AND OCCUPATIONAL HEALTH SCIENCES, AND A DOCTORATE IN PUBLIC HEALTH FROM COLUMBIA UNIVERSITY. IN RECENT YEARS MY PRACTICE HAS FOCUSED ON ASSESSING AND MANAGING LEAD-BASED PAINT HAZARDS, PARTICULARLY WITHIN NEW JERSEY'S RESIDENTIAL SECTOR.

PURPOSE OF PRESENTATION

THE PURPOSE OF MY PRESENTATION IS TO DESCRIBE SOME DEFICIENCIES IN NEW JERSEY'S APPROACH TO TESTING AND ABATING RESIDENTIAL LEAD HAZARDS, AND TO OFFER RECOMMENDATIONS FOR ADDRESSING THOSE DEFICIENCIES.

Solutions For Environmental Concerns

104 East 25th Street, Tenth Floor, New York, NY 10010 • TEL: 212-693-8330 • FAX: 212-693-8306

LEAD-BASED PAINT HAZARDS

LEAD-BASED PAINT IS THE GREATEST SINGLE SOURCE OF LEAD CONTRIBUTING TO ELEVATED BLOOD LEAD LEVELS AMONG OUR NATIONS CHILDREN.

DETERIORATING LEAD-BASED PAINT RELEASES LEAD DUST PARTICLES ONTO HOUSEHOLD SURFACES AND IN THE SOILS ALONG EXTERIOR PAINTED SURFACES. THIS LEAD DUST IS INGESTED BY CHILDREN WHO PLACE THEIR LEAD CONTAMINATED HANDS, TOYS AND OTHER OBJECTS INTO THEIR MOUTHS.

LEAD DUST HAZARDS ARE PARTICULARLY SEVERE WHEN LEAD PAINTED HOUSEHOLD SURFACES ARE DISTURBED BY RENOVATION OR PAINTING ACTIVITIES. MEDICAL CASE STUDIES SHOW THAT WORKERS WHO PERFORM THESE ACTIVITIES USING CONVENTIONAL CONSTRUCTION PRACTICES EXPOSE THEMSELVES, ADULT AND CHILDREN OCCUPANTS, AND THE ENVIRONMENT TO HAZARDOUS LEAD LEVELS. RENOVATION DUST HAS TRADITIONALLY BEEN CONSIDERED A NUISANCE; WE NOW RECOGNIZE DUST ALONG WITH CHIPS OF LEAD PAINT TO BE HAZARDOUS.

DEFICIENCIES IN CURRENT PROGRAMS

IN NEW JERSEY, WE OFTEN LEARN OF A RESIDENTIAL LEAD PAINT HAZARD ONLY AFTER A CHILD HAS BEEN REPORTED WITH LEAD POISONING. IN SUCH CASES STATE AND LOCAL AUTHORITIES RESPOND TO RATHER THAN PREVENT LEAD-BASED PAINT HAZARDS, AND IN MY EXPERIENCE THE RESPONSE ACTIVITIES OFTEN EXACERBATE RATHER THAN ABATE THE LEAD HAZARDS.

THE FOLLOWING GENERALIZED SCENARIO ILLUSTRATES REGULATORY DEFICIENCIES I FREQUENTLY ENCOUNTER:

- CONCERNED PARENTS WILL REQUEST HEALTH DEPARTMENT ASSISTANCE IN TESTING THEIR HOME FOR LEAD HAZARDS. IF THE PARENTS REPORT THAT NONE OF THEIR CHILDREN ARE LEAD POISONED, THE HEALTH DEPARTMENT TYPICALLY WILL NOT TEST FOR LEAD HAZARDS BUT ADVISE THE PARENTS TO CONTRACT A "QUALIFIED" LEAD TESTING SERVICE.

UNFORTUNATELY, LEAD TESTING FIRMS ARE NOT BEING EVALUATED AND LICENSED IN MOST AREAS AND THE BEWILDERED PARENTS ARE NOT PROVIDED WITH PRACTICAL

GUIDANCE ON SELECTING A "QUALIFIED" FIRM. IN MY OPINION QUALITY CONTROLS AND SCIENTIFIC COMPETENCE ARE LOW PRIORITIES IN THE FLOURISHING LEAD TESTING INDUSTRY.

- **WHEN A CASE OF CHILD LEAD POISONING IS CONFIRMED THE HEALTH DEPARTMENT WILL INSPECT THE CHILD'S DWELLING FOR LEAD-BASED PAINT. IN TOO MANY INSTANCES WE FIND UNDER-TRAINED INSPECTORS USING OUTDATED INSPECTION TECHNIQUES FAILING TO IDENTIFY ALL LEAD-BASED PAINT HAZARDS.**
- **THE HEALTH DEPARTMENT WILL ORDER THE LANDLORD TO ABATE THE DETECTED "LEAD VIOLATIONS", BUT WILL NOT PROVIDE THOROUGH LEAD ABATEMENT GUIDELINES OR MONITOR THE ABATEMENT WORK.**
- **IF THE LANDLORD DOES NOT ACT THE HEALTH DEPARTMENT WILL CONTRACT THE ABATEMENT TO A FIRM, BUT WILL NOT REQUIRE THAT THE FIRM HAVE LEAD ABATEMENT TRAINING, PROPER EQUIPMENT, ADEQUATE WORKER SAFETY AND HEALTH PROGRAMS OR OCCUPANT PROTECTION PLANS, POST ABATEMENT CLEARANCE STANDARDS, OR OTHER COMPONENTS REQUIRED FOR EFFECTIVE ABATEMENT.**
- **MANY ABATEMENTS PERFORMED BY BOTH LANDLORDS AND AGENCY-CONTRACTED FIRMS OFTEN ARE DONE SO POORLY THAT LEAD HAZARDS ARE ACTUALLY EXACERBATED. IN SOME CASES DWELLINGS ARE APPROVED BY HEALTH DEPARTMENTS FOR OCCUPANCY FOLLOWING FAULTY ABATEMENTS, RESULTING IN CHILDREN BEING RE-EXPOSED TO LEAD.**

DIRECTORS OF LEAD POISONING PROGRAMS IN SOME OF NEW JERSEY'S URBAN AREAS BELIEVE THAT 50% OF THE LEAD POISONED CHILDREN IN THEIR CLINICS ARE RECURRENT CASES, THAT IS, CHILDREN WHO HAVE GONE THROUGH CHELATION THERAPY AND HAVE BEEN RE-POISONED BY LIVING IN IMPROPERLY ABATED DWELLINGS. THIS ANECDOTAL INFORMATION UNDERSCORES THE LACK OF CONFIDENCE DIRECTORS HAVE IN THE QUALITY OF ABATEMENTS BEING PERFORMED IN NEW JERSEY.

IN A SERIES OF DWELLINGS I INVESTIGATED FOLLOWING LEAD PAINT ABATEMENTS, I OBSERVED HAZARDOUS (CHIPPED, PEELING AND FLAKING) LEAD PAINT CONDITIONS REMAINING IN AREAS ACCESSIBLE TO CHILDREN. THESE PROBLEMS OCCUR ALONG NEW JERSEY'S ENTIRE SOCIOECONOMIC SCALE, FROM IMPOVERISHED TENEMENT SETTINGS TO SINGLE FAMILY HOMES IN AFFLUENT SUBURBAN AREAS.

I HAVE MEASURED SURFACE LEAD DUST LEVELS IN "ABATED" DWELLINGS AS MUCH AS 75 TIMES HIGHER THAN LEAD DUST LEVELS CONSIDERED ACCEPTABLE BY FEDERAL AUTHORITIES. IT IS DISTURBING BUT NOT SURPRISING TO FIND THAT CHILDREN ARE SOMETIMES PRESENT WHILE ABATEMENTS ARE BEING PERFORMED AND THAT THEIR BLOOD LEAD LEVELS DRAMATICALLY INCREASED.

[SLIDE SHOW]

THE HUD GUIDELINES - A STEP IN THE RIGHT DIRECTION

IN 1990 THE US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD) RELEASED GUIDELINES FOR IDENTIFYING AND ABATING LEAD-BASED PAINT HAZARDS IN FEDERALLY-FINANCED PUBLIC HOUSING AUTHORITIES. FIELD EXPERIENCE HAS DEMONSTRATED THAT CLOSE ADHERENCE TO THE HUD ABATEMENT PROTOCOL BY QUALIFIED CONTRACTORS PRODUCES LEAD-SAFE DWELLINGS.

THE NEXT STEPS IN PREVENTING LEAD POISONING

THE FOLLOWING ARE SOME RECOMMENDATIONS FOR BETTER ADDRESSING LEAD-BASED PAINT HAZARDS IN NEW JERSEY:

- **TRAINING AND CERTIFICATION.** STATE ACCREDITED TRAINING PROGRAMS FOR LEAD INSPECTORS AND DELEADING WORKERS MUST BE DEVELOPED. VALUABLE INSIGHT INTO NEW JERSEY'S TRAINING NEEDS HAS BEEN ACQUIRED AT THE UMDNJ-RWJ/RUTGERS TRAINING PROGRAM, AND THE US EPA IS DEVELOPING MODEL NATIONWIDE TRAINING CURRICULA. I BELIEVE AN EFFECTIVE TRAINING PROGRAM CAN BE DEVELOPED IN A VERY SHORT TIME AND WITH MINIMAL EXPENSE.

PUBLIC AND PRIVATE SECTOR LEAD INSPECTORS, AND DELEADING WORKERS SHOULD BE REQUIRED TO ATTEND ACCREDITED TRAINING COURSES AND DEMONSTRATE AT LEAST

MINIMUM COMPETENCY BY PARTICIPATING IN COURSE WORKSHOPS AND PASSING WRITTEN EXAMS.

- **REGISTRY OF QUALIFIED TESTING AND ABATEMENT FIRMS.** A REGISTRY OF LEAD INSPECTORS AND DELEADERS THAT HAVE COMPLETED TRAINING COURSES AND DEMONSTRATED COMPETENCY MUST BE MAINTAINED AND PROVIDED TO STATE RESIDENTS.
- **LEAD HAZARD ASSESSMENT MODELS.** IN ADDITION TO THE CURRENT PRACTICE OF TESTING DWELLINGS FOR THE PRESENCE OF LEAD-BASED PAINT, NEW TECHNIQUES MUST BE UTILIZED FOR ASSESSING LEAD HAZARDS INCLUDING DUST TESTING AND EVALUATING MAINTENANCE ACTIVITIES. BASED ON THE OUTCOME OF THE HAZARD ASSESSMENT, LESS EXPENSIVE "REPAIR AND MAINTENANCE" ACTIONS CAN FREQUENTLY BE IMPLEMENTED TO REDUCE LEAD HAZARDS WITHOUT TRIGGERING A FULL SCALE "HUD TYPE" ABATEMENT.

NEW JERSEY CAN IMPLEMENT RISK ASSESSMENT AND REPAIR AND MAINTENANCE STRATEGIES THAT HAVE ALREADY BEEN DEVELOPED, ON A SMALL SCALE DEMONSTRATION BASIS TO EVALUATE COSTS AND EFFICACY OF ALTERNATIVE APPROACHES. THESE DEMONSTRATION PROJECTS SHOULD BE CONSIDERED A PRE-REQUISITE TO PROMULGATION OF NEW ABATEMENT REGULATIONS.

- **CULTIVATION OF AN EFFECTIVE TESTING AND ABATEMENT INDUSTRY.** THE NATIONAL LEAD ABATEMENT COUNCIL (NLAC) IS A NON-PROFIT TRADE ORGANIZATION HEADQUARTERED IN NEW JERSEY AND IS COMMITTED TO HELPING CULTIVATE OUR NATIONS LEAD TESTING AND ABATEMENT INDUSTRY. NLAC STANDS READY TO ASSIST NEW JERSEY AND OTHER STATES IN THEIR REGULATORY DEVELOPMENT BY FOSTERING CONTACT AND INFORMATION EXCHANGE BETWEEN REGULATORS AND THE AFFECTED INDUSTRY.

I THANK YOU FOR AN OPPORTUNITY TO SPEAK ON THIS IMPORTANT MATTER.

Before the
New Jersey Senate Health and Human Services Committee

Legislative Office Building, Room 7
135 West Hanover Street
Trenton, New Jersey

IN RE PUBLIC HEARING ON:

The Prevention and Treatment of)
Lead Poisoning in Children)

TESTIMONY OF THE NATIONAL PAINT & COATINGS ASSOCIATION

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April 29, 1992

Good morning. My name is Stephen Sides, and I am Director of Health, Safety & Environmental Affairs at the National Paint and Coatings Association in Washington, D.C. I am accompanied by Allen Irish, who is involved in environmental legislation and other issues in our Federal Affairs Division. I have 15 years of experience in occupational and public health issues, and have been with NPCA for 7 years. During that time, I have worked extensively in lead exposure issues, and I am currently a member of an ad hoc committee of the President's Council on Environmental Quality dealing with childhood lead poisoning.

The National Paint and Coatings Association, Inc. (NPCA) is a voluntary non-profit industry association, organized in 1888 and comprising today some 600 members who are engaged in the manufacture and distribution of paint, varnish, lacquer and allied products or of the component materials used in such manufacture. The membership collectively produces some 80 per cent of the total national volume of paint and allied products. The paint industry and NPCA have been involved in legislative and regulatory activities pertaining to lead exposure issues for over 35 years.

PREVENTING CHILDHOOD LEAD EXPOSURE: *Putting the Issues in Perspective*

Childhood lead poisoning has been portrayed as a problem involving only the inner-city poor living in substandard housing with deteriorating old lead-based paint.

Recently, however, the press has embraced new claims by childhood lead poisoning advocates, and is now depicting the issue as a continuing epidemic affecting not only the inner city poor but potentially millions of children throughout the United States. In the aftermath of these sometimes sensational reports, the public has become confused and alarmed.

On any given day, deteriorating lead-based paint¹, soil contaminated by automobile exhaust emissions², lead emissions from industrial facilities³, drinking water contaminated by lead solder, pipe and fittings⁴, pottery glazes, dishware, and crystal

¹ S. Waldman, "Lead and Your Kids", Newsweek; July 15, 1991.

² K. Bruno, "Not Getting the Lead Out," Greenpeace, Eighteen, Oct/Nov/Dec, 1991.

³ M. Jaffe, "The Lethal Legacy of Lead Poisoning," Washington Post, May 28, 1991.

⁴ F. Allen, "Battling Lead Poisoning on Different Fronts," Wall Street Journal, Dec. 30, 1991.

containing lead⁵, and lead in such diverse products as fishing weights and wine bottle capsules⁶ might be the subject of stories heralding the dangers of lead and childhood lead poisoning. Clearly this reporting has heightened public concern. What the public needs, however, is the perspective to discriminate between the relative *risks* associated with these differing hazards.

The fact is, lead and its compounds are ubiquitous in the environment. Lead is derived from ores mined from the ground and has a natural presence in the soil. Human exposure to lead can result from a variety of sources in the environment including food and water, dust and soil, leaded gasoline, industrial emissions, as well as old lead-based paint⁷. But all of these sources of lead exposure do not pose equal health risks. Lead compounds have different degrees of toxicity, depending on how readily the body assimilates the lead once exposed. For example, prior to the 1940s, the paint industry used the readily assimilable (or "bio-available") lead carbonate (also known as "white lead") as the primary pigment in products now referred to as "lead-based" paint. Other lead compounds used historically in paint, which are *not* readily assimilated, such as lead chromate pigments, do not pose the same threat.

Differentiating between the relative health risks associated with environmental exposures to the various lead compounds has become an issue for residents living near Smuggler Mountain in Aspen, Colorado. There, the U.S. Environmental Protection Agency (EPA), using its own risk assessment methods, found that massive amounts of lead (in this case an insoluble lead compound) in the soil – *levels far in excess of those which would trigger mandatory remedial action under the Superfund program* – posed no health threat to residents of the community⁸. Despite the absence of a health threat, residents of Smuggler Mountain are being forced to pay for cleanup of lead in their yards as a matter of precedent. Actions like these are not only not uncommon, but they also hamper efforts to address true health risks associated with lead.

Once lead is taken into the body, it persists, primarily in the bone. The presence of lead in the bloodstream has been established as a reliable indicator of exposure to lead and the potential for adverse health effects. Over-exposure to lead has long been associated with numerous adverse health effects including brain and nervous system damage, kidney

⁵ R. Reinhold, "California Moves to Limit Lead in Tableware," New York Times, November 13, 1991.

⁶ C. Sugarman, "Getting the Lead Out of Wine," Washington Post, August 1, 1991.

⁷ Neurotoxicity, "Identifying and Controlling Poisons of the Nervous System," Congress of the United States, Office of Technology Assessment, April 1990.

⁸ Superfund Report, "Colorado Site Calls into Question EPA Policy on Lead Cleanups", January 15, 1992.

damage, cardiovascular effects, anemia, and gastrointestinal and digestive problems. Young children are believed to be particularly susceptible to the adverse effects of lead because they more readily absorb the material once exposed, and because their nervous systems are just developing and more vulnerable. Research also indicates that adverse impacts on the nervous system may also be associated with chronic, low-level exposure⁹.

Some reports have indicated that individuals who suffered lead poisoning as children may have adverse health effects attributable to their early exposure¹⁰. Although behavioral problems and reduced mental capacity have been observed in adolescents who experienced childhood lead poisoning, on closer examination these effects might be related to other lifestyle and socioeconomic factors¹¹. More recent studies have shown that adverse effects observed in lead poisoned children are temporary, once they are treated and removed from exposure¹².

While new health studies are shedding some light on the problem of childhood lead poisoning, other activities continue to confuse the health community. For example, the frequently cited "epidemic of childhood lead poisoning" has been, as even its proponents concede, arbitrarily *created* by "the stroke of a pen."¹³ The Centers for Disease Control (CDC) recently revised its guidelines for preventing childhood lead poisoning¹⁴, citing the need to reduce the level of lead in children's blood to less than 10 micrograms per deciliter ($\mu\text{g}/\text{dl}$, down from $25\text{ }\mu\text{g}/\text{dl}$, the level established in 1985).

⁹ "DRAFT Toxicological Profile for Lead", U.S. Dept. of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, October 1991.

¹⁰ H.L., Needleman, A. Schell, D. Bellinger, A. Leviton, The Long-Term Effects of Exposure to Low Doses of Lead in Childhood, "New England Journal of Medicine, Vol. 322, pp. 83-88.

¹¹ J. Palca, "Get-the-Lead-Out Guru Challenged," Science, Vol. 253; August 23, 1991.

¹² R. Shukla, K. Dietrich, R. Bornschein, O. Berger, P. Hammond, "Lead Exposure and Growth in the Early Preschool Child: A Follow-up Report from the Cincinnati Lead Study," Pediatrics, Vol. 88, No. 5, November 1991.

¹³ Remarks made at the 1990 American Industrial Hygiene Conference by Dr. Ellen Silbergeld, University of Baltimore.

¹⁴ "Preventing Lead Poisoning in Young Children," A Statement by the Center for Disease Control, October, 1991

Based on national health statistics, only 200,000 children in the United States had elevated blood lead levels using the existing guideline of 25µg/dl¹⁵. Revision of the guideline to 10µg/dl has led one environmental group to claim that as many as 7 million children are at risk of lead poisoning¹⁶. Taking this one step further, on average, the majority of pre-school children prior to 1978 would have been classified as "lead poisoned" using the current guideline¹⁷. Moreover, virtually all of those who are now adults would also have been classified "lead poisoned" as children. Clearly such a phenomenal statistic calls for careful consideration of the underlying health claims, especially since they may result in ill-conceived legislative and regulatory action.

Adding to the controversy, the CDC also admits that the 10µg/dl blood lead level cannot be detected using currently available screening tests, and current medical treatment methods are not suitable to bring elevated blood levels below the guideline. Instead, the CDC advocates that changes in children's blood lead levels be pursued through reducing exposure to sources of lead, an effort they call *primary prevention*.

The Relative Contribution of Identified Sources of Lead Exposure

Studies published in the 1950s traced incidents of acute lead poisoning in children to the ingestion of paint chips from deteriorated old lead-based paint¹⁸. Potential health hazards were identified in older residential structures shown to have deteriorated (chipping and peeling) paint which contained extremely high concentrations (greater than 50 per cent) of lead carbonate or "white lead" as its primary pigment, (hence the term "lead-based paint").

As a result of these early studies, public health agencies initiated health awareness programs to alert property owners and tenants to the potential dangers of lead-based paint. The paint manufacturing industry, which by the 1950s had long ceased manufacturing such lead-based products, supported these efforts with the development of educational materials, aimed at parents of young children, stressing the need for health

¹⁵ "Toxicological Profile for Lead (Draft)" ATSDR, at 173.

¹⁶ "Legacy of Lead: America's Continuing Epidemic of Childhood Lead Poisoning," Environmental Defense Fund, Washington, DC, March, 1990.

¹⁷ Neurotoxicity, OTA, April 1990, p. 275.

¹⁸ J. Chisholm Jr., H.E. Harrison, "The Exposure of Children to Lead," Pediatrics, 18: 943-958, 1956.

screening and control of exposure¹⁹. Such initial efforts were most evident in large metropolitan areas where the age and deteriorated condition of the housing stock contributed greatly to the potential risk. Lead poisoning prevention programs focused on identifying "at risk" children and securing necessary medical treatment, controlling "hand to mouth" behavior as a means of reducing exposure, and covering or removing accessible lead-based paint as a more permanent solution. These early endeavors were clearly effective in dealing with the problem as it was then understood.

While the manufacture of lead-based paint was largely eliminated nearly fifty years ago²⁰, lead has continued to be introduced into our environment over that same period²¹, from diverse sources such as plumbing pipe, solder, smelting and industrial emissions, and perhaps most significantly, lead-based gasoline additives. In addition, even though, restrictions on lead in gasoline were initiated in 1973, its use continued throughout the 70s and early 80s and continues to this day in many parts of the US.

The initial benefit of taking the lead out of gasoline has been thoroughly studied by government agencies. An EPA study reveals an astonishing correlation between reductions in use of leaded gasoline and changes in the blood lead levels in the general population²². While changes in exposure observed in this study can be attributed to the decline in airborne lead from exhaust emissions, lead emissions from vehicular traffic, have accumulated in the soil year after year. These dirty residues of our environment continue as a readily available source of exposure to children. Lead contaminated soils and residues are found in playgrounds, streets and yards and are continually blown or

¹⁹ NPCA Publication, "Dear Mom and Dad", 1956.

²⁰ In the early 1920s, lithophone (zinc sulfate and barium sulfate) exceeded the use of lead in interior paint as the primary pigment. By the early 1940s, other pigments, such as lithophone and titanium dioxide (TiO₂), which were better and less costly, accounted for more than 80 per cent of the pigment used by the paint industry. In the early 1940s the paint industry's use of lead was eclipsed by dramatic increases in the use of lead in gasoline, a trend which continued through each ensuing decade. In contrast, by 1953, industry consensus standards limited lead use in house paints to no more than 1.0%, later revised to no more than 0.5% in 1962. In 1972, the Consumer Product Safety Commission (CPSC) issued its first regulations limiting the lead content in consumer paints to no more than 0.5%. In 1978, the CPSC banned lead use in consumer paints altogether, an action not opposed by the paint industry which had years before moved to safe and more effective substitutes.

²¹ R. Elias, "Lead Exposures in the Human Environment," Dietary and Environmental Lead: Human Health Effects, U.S. EPA, 600/D-86/185, 1985.

²² J. Schwartz, H. Pitcher, R. Levin et. al., "Costs and Benefits of Reducing Lead in Gasoline; Final Regulatory Analyses". EPA 230-05-85-006, Washington, DC, 1985.

tracked into houses, both new and old, contributing greatly to the presence of lead in house dust²³.

The Extent of Lead-Based Paint in Residences

In 1990, a report from the U.S. Department of Housing and Urban Development (HUD) estimated that as many as 57 million (private sector) American houses and apartments may still contain lead-based paint²⁴. Some 3.8 million of these homes that are occupied by families with young children are also thought to have deteriorated lead-based paint.

The paint industry's experience raises significant questions about these estimates of housing with lead-based paint. Since they are inconsistent with known formulations produced over the years, the paint industry believes they stem, in large part, from faulty sampling and analytical procedures used to determine the lead content of paint films. Lead-based paints (those formulated with lead carbonate) have not been manufactured since the 1940s, but are known to contain in excess of 50 per cent lead (dry weight). Other historical uses of lead in paint included colored pigments (lead chromates) at concentrations of 5 to 7 percent (dry weight), lead driers and catalysts (napthenates and litharge) at concentrations of less than 0.5 percent.

HUD's procedures for determining "lead-based" paint have been mandated by federal statute, and are based on two different sampling and analytical methods with dramatically different errors and biases. The first, measurements for lead in a paint film using an x-ray fluorescence instrument (or XRF), defines "lead-based" paint as having a film concentration of greater than 12 per cent lead (1.0 milligrams per square centimeter for a single film containing lead), a definition which would only encompass paints formulated before the early 1940s. The second, paint "chip" sampling and laboratory analyses using atomic absorption spectroscopy (or AAS), defines "lead-based" paint as having greater than 0.5 per cent lead, a far more restrictive standard that still would not include typical paint products formulated since the early 1950s.

In spite of its inherent inaccuracies, the XRF instrument has and continues to be used almost exclusively for lead paint detection solely for expedience. The XRF instrument is portable and provides immediate results, thus enabling a single operator to sample many residences in a single day. Ironically, all of the data developed in the 1990 HUD report on lead-based paint in housing was obtained using the XRF instrument. Not a single

²³ H.W. Mielke, et al., "Lead Concentrations in Inner-City Soils as a Factor in the Child Lead Problem," American Journal of Public Health, 73:1366-1369, 1983.

²⁴ U.S. Department of Housing and Urban Development, Report to Congress, "Comprehensive and Workable Plan for Abatement of Lead-Based Paint in Privately Owned Housing," December, 1990.

sample was confirmed using the more accurate laboratory methods. At the current HUD definition for lead-based paint of 1.0 milligrams per square centimeter (12 per cent lead), the typical XRF instrument has an estimated precision of ± 60 per cent of the true value. Field determinations made on a known 12 per cent lead (paint) sample will typically give results between 0 per cent lead and 30 per cent lead by weight²⁵. This huge, uncertain variability, which does not take into account sampling biases and operator dependent errors, is more than sufficient to cast doubt on the data used to derive HUD's estimate of housing containing lead-based paint. The paint industry continues to advocate the use of the more definitive AAS analysis of paint "chip" samples as a means of detecting lead in paint. Using the more accurate analyses, the industry believes, will lead to drastic reductions in the estimated extent of lead-based paint in the nation's housing stock, eliminating from consideration the millions of homes constructed since the late 1940s which do not contain lead-based paint.

The Lessons Learned from Prior "Abatement" Efforts

HUD has estimated the cost of removing lead-based paint (also known as abatement) in a typical home to range from \$2,000 to \$20,000²⁶. If widespread abatement activities sought to address all 57 million "suspect housing" units (those HUD estimates contain lead-based paint), the total national abatement burden would exceed \$500 billion. Focusing on the estimated 3.8 million housing units thought to have deteriorating old lead-based paint and adolescent occupants reduces that burden to some \$99 billion²⁷. These staggering cost estimates have resulted in a high level of concern among legislators, regulators, and the public.

Public health agencies clearly face a dilemma. On one hand there are known to be extreme high costs associated with massive primary prevention efforts such as lead-based paint abatement. On the other, there are unknown costs which will result from continued inaction on what may be a potential public health problem. Unfortunately the issue is not simply determining the costs involved, or even who pays for it. The plain truth is that there is little agreement as to what safe, effective abatement means.

²⁵ E. Lagergren, "Methods for Measuring Lead Concentrations in Paint Films", U.S. Dept. of Commerce, National Institute of Standards and Technology, December 1989.

²⁶ U.S. Department of Housing and Urban Development, "Lead-Based Paint, Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing," April 1, 1990.

²⁷ HUD, Report to Congress, p. 4-20.

When a building has been found to contain accessible, old, deteriorating (peeling) lead-based paint, a potential hazard exists. Removal or enclosure of these lead-painted surfaces is a job for properly trained workers observing strict rules to make sure they are protected, and that no hazardous residues remain²⁸.

Once housing authorities have dealt with the obvious high hazard buildings, they are left with a number of questions. The most pressing is the fact that deteriorating lead-based paint is not the only source of lead in the residence. Lead found in everyday household dust is now known to be a major source of exposure²⁹. In contrast, intact lead-based paint, despite enormous media coverage, has yet to be substantiated as a source of exposure.

Numerous research efforts have established that the presence of lead-based paint in residences is not associated with the existence of a lead-dust hazard³⁰.

In its recent Report to Congress, HUD emphasizes that of the homes with interior lead-based-paint, less than 6 out of 100 have been found to have elevated dust lead levels. Even more revealing is the fact that 4 out of 100 homes with no lead-based paint still have elevated dust lead levels, strong evidence that sources of lead other than paint are prevalent³¹.

The clear evidence that lead in household dust arises from sources other than paint supports the fact that widespread abatement of intact lead-based paint is ill-advised, and an inappropriate means for preventing childhood lead poisoning.

Similar findings emerged after years of efforts to abate another perceived environmental hazard - asbestos. Building owners were compelled to remove asbestos from ceilings and pipes at tremendous costs, only to find that well-intended abatement activities produced more exposures (to workers and occupants) than maintaining the asbestos in-place.

²⁸ "Lead Poisoning: What It Is and What You Can Do About It," Legal Services of New Jersey, 1991.

²⁹ S. Que Hee, et. al, "Evolution of Efficient Methods to Sample Lead Sources, Such as House Dust and Hand Dust in Homes of Children," "Environmental Research," 38, 77-95, 1985

³⁰ Clark, C.S., et.al., "Pathways to Elevated Blood Lead and Their Importance in Control Strategy Development", International Conference on Heavy Metals, Vol. 1, pp. 159-161, 1987.

³¹ HUD, Report to Congress, p. xvi.

Clearly, prudent public policy on lead poisoning prevention should seek to avoid the same ill-founded, reactionary efforts undertaken for asbestos.

The Inherent Problems of Current Legislative and Regulatory Initiatives

While government agencies wrestle with public-policy aspects of the problem, reports are alarming parents and homeowners with horror stories of children facing permanent damage from lead (almost always attributed to lead from paint)³². These reports are contributing to growing public frustration, fear, and demands for immediate action, even though that action may not help the situation and may in fact exacerbate it, for example, if paint removal and cleanup are done inexpertly or incompletely³³.

It is critical that public agencies recognize and deal responsibly with all likely sources of lead in the environment. Soil contaminated with lead from gasoline is a very real source of lead exposure for children, and may, in many instances, be the primary source of lead in household dust. Lead-contaminated water has also been shown to contribute substantially to children's exposure³⁴. The paint industry continues to support efforts already underway at the federal level³⁵ to properly characterize the hazards associated with all sources of lead and develop feasible, effective and affordable abatement solutions. EPA, HUD and the Centers for Disease Control (CDC) are well aware that paint is not the sole source of lead in the environment and, in many cases is not be the primary source of exposure. The public must be provided with this same knowledge.

Current federal and state legislative efforts to assist lead poisoning prevention programs may in fact hinder them if they focus on the wrong sources of lead, impose restrictions on lead use in beneficial products, or seek action to "abate" those sources of lead shown to present no unreasonable risk. Beneficial legislation must acknowledge the difficulties and uncertainties involved in lead poisoning prevention efforts, and establish research and development programs aimed at identifying true health risks and appropriate control technologies.

Addressing the Issues

³² Good Morning America, May 1, 1991, 7:40am, EDT.

³³ HUD, Report to Congress, p. xvi.

³⁴ M. Shannon, J. Graef, "Lead Intoxication from Lead-Contaminated Water Used to Reconstitute Infant Formula," Clinical Pediatrics, Vol. 28, No. 8, 1989.

³⁵ EPA\CERCLA Soil Lead Study (due to be released August, 1992).

The paint industry believes the following technical efforts must be undertaken to provide a definitive basis for risk assessment that will lead to effective reduction in lead exposure in sensitive populations (e.g., children).

- **Establish Accurate, Uniform Guidelines for Evaluating Environmental Lead Hazards**

It is critical to establish the most reliable methods for detecting the presence of lead in soil, surface dust, paint and other sources of lead exposure in the typical residence. Portable direct reading instruments of questionable accuracy such as the x-ray fluorescence spectrometer (XRF) are being used to find lead in the environment. Confirmation analyses of paint "chip", soil, and household dust samples (by reference methods using atomic absorption spectroscopy) must be undertaken before any lead abatement activity begins. Chemical "spot tests" for lead-based paint should also be properly evaluated and utilized, as they have been shown to be as high as 90 per cent effective³⁶. Furthermore, it is essential that competent health professionals be utilized in the efforts to recognize, evaluate and control exposure to lead.

- **Undertake Clear and Responsible Risk Communication to Alert the Public.**

Effective primary intervention programs need to identify all potential sources of lead exposure in the child's environment (including soil, paint, water and household wares such as dishes and pottery), and determine their relative contribution to exposure. Lead-based paint's contribution to the overall exposure encountered in residences has been shown only when it has deteriorated over time or through poorly executed renovation activities. Lead-contaminated soil, unless removed or covered, will continually be in the child's environment, providing direct exposure or recontamination of residences.

- **Support Effective and Practical Solutions for Controlling Lead Exposure.**

There is a growing body of evidence on the effectiveness of managing intact lead-based paint "in place" as opposed to unproven abatement technologies executed by untrained workers. To ignore the obvious solution of "in-place management" where no hazard exists is a waste of precious resources, and needlessly subjects homeowners, workers and most importantly children to continued exposure to lead from ill-conceived and uncontrolled abatement activities. Part of this effort

³⁶ NIST, "Methods for Measuring Lead Concentration Paint Films," December 1989.

should include an analysis of the effectiveness of coatings as a barrier over surfaces containing old lead-based paint.

Recently, federal, state and local agencies have requested industry's support to put the problem of lead-based paint into perspective and develop cost-effective solutions for in-place management.

The paint industry stands ready to respond to these requests and support emerging lead poisoning prevention programs by assisting in information and community outreach efforts. Our consumer information brochure, recently revised and updated, has been widely distributed by public health agencies at the state and local level as part of an ongoing proactive effort to have the paint industry be a part of the solution for childhood lead poisoning.

Finally, the paint industry continues to stress that childhood lead poisoning is preventable only by using all our available information and resources. To this end we look forward to working with like-minded federal, state, and local officials on this most important public health initiative.



ASSOCIATION FOR
CHILDREN OF NEW JERSEY

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**TO: The Honorable C. Louis Bassano, Chairman
Members, Senate Health and Human Services Committee**

**FROM: Cecilia Zalkind, Assistant Director
Reginald S. Dorsey, Policy Analyst
Association for Children of New Jersey (ACNJ)**

DATE: April 29, 1992

**RE: TESTIMONY FOR THE PUBLIC HEARING ON THE PREVENTION AND
TREATMENT OF LEAD POISONING IN CHILDREN**

The Association for Children of New Jersey (ACNJ) has advocated for the children of New Jersey for over 140 years. Originally founded as the Newark Orphan Asylum in 1847, ACNJ has become the major independent child advocacy organization in New Jersey. Our Board, staff and members work on a broad range of issues affecting children including child abuse, foster care, adoption, child care, education, mental health, juvenile justice, homelessness and legal rights for children.

Our purpose today is to impress upon the Legislature and the members of this Committee the threat that lead poison poses for the children and future of our state. The Association's involvement in lead poison prevention stems back to 1985 when we participated on the Governor's Committee On Children's Services Planning. Its report, *New Jersey's Action Plan For Children*, identified lead poisoning as a major health problem for New Jersey's children. Lead poisoning is not a new issue, nor is the urgency for action to ameliorate its threat to our children. If anything, the need for action is more pronounced as we see the results of lead poisoned and exposed children.

THE IMPACT OF LEAD POISON AND EXPOSURE ON OUR CHILDREN

- There are 5 million tons of lead in household paint in the United States, and 3/4 of all private housing built before 1980 contains some lead paint.
- Despite the banning of leaded gasoline, between 4 to 5 million metric tons of lead from gasoline remain in U.S. soil.

100X

A Voice for New Jersey's Children and their Families

Lead poisoning is the presence of too much lead in the body. The body has no use for any lead at all; therefore, any amount is too much. Children and unborn babies are especially at risk from lead poisoning since their bodies and nervous systems are still growing. The threshold for safe lead levels in children has recently been lowered based on studies that have shown that tiny amounts of lead can be harmful.

A child can become severely lead poisoned by ingesting one milligram of lead-paint dust, which is equivalent to about 3 granules of sugar, each day during childhood. To achieve blood lead levels of more than 3 times the level currently regarded as harmful, a child would have to eat the equivalent of just one granule of sugar a day. Childhood lead poisoning is more prevalent than viral meningitis, mumps, whooping cough, and measles. Estimates in 1991, indicate that nationally 1 of every 6-9 children under age 6 had high enough blood lead levels to cause concern. In inner city neighborhoods, this estimate increases to one of every 2 children.

A person is usually poisoned by eating lead or breathing lead dust. Children become lead poisoned by eating paint chips, or chewing on window sills, breathing air or handling household items with lead dust, playing in dirt where paint has been chipped into or gasoline fumes have left lead particles, drinking water from lead pipes, as well as from food cans and painted toys. Children may come in contact with lead sources not only in the home, but also at schools, child care centers and other places where they spend a lot of time.

Studies have shown that lead poison can reduce children's intelligence, cause mental retardation and neurological deficits, lead to behavior and discipline problems, harm physical growth and in serious cases, cause lack of muscle control, vomiting, convulsions, coma and even death. Unfortunately, most of the effects of lead poisoning cannot be cured although steps can be taken to remove the lead and prevent future poisoning. Probably the most disturbing fact about lead poisoning and its threat to our children is that, *it is completely preventable, yet once damage has occurred, it is irreversible!*

A COMPREHENSIVE APPROACH TO LEAD POISONING PREVENTION AND TREATMENT

Lead poisoning is not easily identifiable. It is possible to have lead in your body and not even know it. Lead can hurt you without making you feel or look sick. When symptoms do appear, they often are similar to those of a common cold such as headaches, tiredness, lack of appetite, and stomachaches. Because of this, parents and doctors may not consider the possibility that a child may be lead poisoned. Once symptoms caused by lead poisoning appear, some brain damage may already have occurred.

A comprehensive approach to childhood lead poisoning must begin with prevention efforts. Presently there is no primary prevention program addressing lead poison in the United States. Children are first identified as lead poisoned, then the environmental source of lead is sought and removed, and finally, the child undergoes a series of treatments to remove lead from the body. Prevention education must be directed toward parents as well as pediatricians, and all adults.

Education should at least begin with pregnant women or potential mothers. Low levels of lead during pregnancy can affect the baby. Bad effects of lead during pregnancy have been found in babies as early as a year after they are born. Parents must also be taught that lead may be in their plumbing, to have their drinking water tested, that various items around the house contain lead, and that foods with iron and calcium keep the body from absorbing more lead. Finally, pediatricians should provide lead poison prevention information to parents and know when to suspect lead poisoning when children possess certain symptoms.

Screening is a necessary prerequisite for the treatment of lead poisoning. As mentioned above, symptoms of lead poisoning are generally not apparent until significant damage has been caused, and thus screening children at risk for lead poisoning is of the utmost importance. Yet testing children for lead poisoning lags behind the need. As of 1990, only about 1/3 of those children the Department of Health considered high risk in New Jersey were screened for lead poisoning and few pediatricians routinely screen suburban children even though it is well documented that lead poisoning does not discriminate.

Finding the source of lead and removing it is an important part of treatment. Eating foods that have iron and calcium helps to keep the body from absorbing more lead. In more serious cases, the child must receive a potentially painful chelation therapy, which assists in removing lead from the body. However, chelation is not a cure for lead poison, it prevents bad effects from getting worse, but it cannot undo the damage that has already been done.

ENSURING A COMPREHENSIVE APPROACH IN NEW JERSEY

ACNJ offers the following recommendations to ensure that a comprehensive approach to lead poisoning prevention and treatment is undertaken in New Jersey:

1) Making a Commitment to Primary Prevention

Any approach which focuses solely on screening, abatement and enforcement comes too late. In fashioning a legislative response, it is critical to focus on primary prevention. A major public education campaign should be required to publicize the dangers of lead exposure and the importance of early screening. This should be followed up by aggressive outreach to families in high risk communities.

Lead prevention should be made an important part of state health programs for children, such as Health Start and EPSDT. Nutrition programs, such as WIC and the school breakfast and lunch programs, which can make children less vulnerable to lead exposure, should be expanded.

Abatement can also be addressed in a more preventive mode. Mandated, regular testing for lead can result in the removal of lead before a child is permanently harmed. Testing can be required as part of periodic inspections of multiple dwellings and when homes are sold.

2) Expanding and Improving Screening Efforts

Testing is currently required in New Jersey for children between the ages of 1 and 5 and who are considered at high risk of lead poisoning. Recent research has indicated that screening would be important for children under the age of 1 and over the age of 6 as well as pregnant women, since there is evidence that exposure to lead can impact on the developing fetus. Expanding screening to a broader age group of children and to pregnant woman could be one legislative response.

These suggestions, however, continue to target lead screening at pre-defined high risk groups. A more comprehensive approach could be to require screening at periodic intervals for all children age 6 and under. Private physicians as well as health care facilities could be required to screen. To ensure that the screening takes place, enrollment in school, preschool or child care centers could also be dependent on proof of lead screening, just as records of immunizations are now required.

3) Ensuring Effective Enforcement

Although state law is clear on the Department of Human Services' responsibility to order owners to abate the lead exposure if a child has been found to have high blood levels or to undertake the abatement itself if the owner does not comply, the law is rarely enforced. Issues of cost and concern about potential loss of housing are just two reasons why enforcement has not been aggressively pursued.

Any legislative response to this issue must address more effective enforcement. The fines and penalties for non-compliance could be increased. A more positive approach could be to provide some incentives to landlords/homeowners who follow through on abatement. Some states have trust funds, established by inspection fees or fines levied against companies who have contributed to lead contamination, to assist landlords/homeowners with low-interest loans for lead abatement. Tax credits could be another incentive.

Additionally, mechanisms should be put in place to provide temporary housing to families while the source of lead is abated. This would be critical to ensure that families are not permanently displaced while abatement occurs.

4) Ensuring a Coordinated Approach

A comprehensive approach to addressing the problem of lead poisoning cannot be dependent on one entity or agency. A coordinated approach is necessary. Communication and cooperation must occur across divisional and departmental lines. Coordination must also occur among different levels of government. Lead prevention and treatment is not just a state problem but also requires the commitment of county and local government. Any legislative response must require a coordinated approach.

ACNJ CONTINUES ITS COMMITMENT

ACNJ applauds Senator Bassano and this Committee for their willingness to examine a problem that affects thousands of New Jersey children each year. We are encouraged and appreciative of your interest and are willing to assist the Committee in any future direction it plans to take.

**TESTIMONY FOR THE
SENATE HEALTH AND HUMAN SERVICES COMMITTEE**

**PATRICIA GRIFFITHS
APRIL 29, 1992**

My name is Pat Griffiths. I am a Registered Professional Nurse. Unfortunately, my education in lead poisoning mainly came not in nursing school, but in the damaged lives of my children.

I am divorced, the single parent of six children. My two girls and four boys range in age from four to nineteen years. Though I have recently taken steps to return to work, I have not been employed as a nurse for many years - in part because of the very substantial time I must spend to counter the effects of lead on my children. My monthly income, which includes Social Security Disability payments from my ex-husband's disability and food stamps, totals less than \$1,000.00 each month.

I have always believed that education provides the key to unlocking our children's future. My oldest child, Kristin, is a sophomore at Douglass College in New Brunswick; Jennifer, 12½ years old, is doing well at Far Brook School in Short Hills on a full scholarship. Matthew, nearly 10 years old, is an Honor Roll student at Central Elementary School in Orange. Lead poisoning has badly damaged my three youngest sons. Though we didn't know it at the time, we moved into leaded housing in Newark when Justin was seventeen months old. Now 8½, Justin has had elevated lead levels for the past six years. He is classified for special education in a neurologically impaired class. He suffered a

severe speech disorder and has been in speech therapy for the past six years. Kevin, age seven, suffered the highest lead levels of my children. His blood lead levels peaked at 85 ug/dL during an abatement. He was then hospitalized and went through painful chelation which perhaps saved his future; though his leads were higher, their duration was considerably shorter. He suffers no apparent learning disabilities, and after five years of speech therapy - currently four times a week, has made a remarkable progress in correcting a severe speech disorder.

My youngest, Brian, almost 4½, has not been so fortunate. Brian had a lead level at birth of less than 5 ug/dL. After living the first six months of his life in what Newark considered abated housing, his lead was 58 ug/dL. Just last month, after four years of levels generally above 30 ug/dL, Brian's lead has dropped to an encouraging but still unsafe 21 ug/dL. Brian also suffers from speech problems and has received speech therapy for 2½ years. He appears to have learning disabilities as well and is classified for special education in a pre-school handicapped class and attends Head Start.

My family's devastation by lead poisoning was caused by leaded paint, but our horror stories with lead rise from inept and incompetent inspections and Marx Brother type abatements. We have lived through four abatements. The contractors doing the

abatements ranged from shoe salesmen to a drama teacher, and included a chef, painter, and part-time jewelry salesman. These workers knew nothing about paint removal and less about lead.

In the last seven years, we have lived in Newark, East Orange and Orange. In Newark, we were threatened with being cited for obstruction for trying to halt the machine sanding of leaded paint. We were evicted from our home in Newark specifically because of the lead paint. Though the landlord stated in court that he would personally occupy the house, the house today stands vacant as it has since we were forced out in 1988. Kevin's chelation following his dangerously high 85 ug/dL came directly from the sanding in that house.

When we were forced out of our home, we checked with the East Orange Lead Program before signing a lease for a home there. We were told that the house was free of lead hazards - it had been inspected by the Program the previous summer. Unfortunately, after moving in and doing some renovations, we and the East Orange Lead Program learned that the previous inspection was flawed.

A year later when a child living in the first floor apartment of our house showed elevated lead levels, we met the shoe salesmen when they arrived to perform that abatement. The abatements in East Orange dragged on spreading lead dust for

several months. The final "contractor" there was a jack-of-all-trades who arrived every day on a bicycle - all of his equipment in a back pack.

Though the children were away from home while the actual work went on, there was no attempt or interest in containing the debris. The children's lead remained elevated.

We moved to Orange when the East Orange house was put up for sale.

In Orange we tried to avoid the Health Department, fearing another abatement. Brian's lead levels triggered an inspection which lead to another abatement. Prior to the abatement, only Brian's lead remained elevated - the abatement which dragged on for more than five months was accompanied by increases in Justin's, Kevin's and Brian's lead levels. Although by the time of the Orange abatement, Chapter 13 included Standards for the Safe Removal of Lead Paint, the Orange Health Department was unaware of these standards and therefore could not provide them to the owner, or workers, or expect them to be followed.

None of my landlords agreed to or carried out an abatement without court action. Even with court involvement, the work was done in a dangerous and incomplete manner and took from five months to two years to complete.

I am a member of the Essex County Childhood Lead Poisoning Prevention Coalition. We are a group of Public Health people, concerned professionals and citizens attempting to address the causes and consequences of lead poisoning. One of our goals is to provide a lead-free safe house in which families can live while their residences are abated. This will only be practical if some mechanism is in place to insure a prompt, safe abatement and cleanup. Dust samples after abatement and cleanup are essential to demonstrate the adequacy and effectiveness of the abatement.

Just last week I witnessed and agonized yet another abatement. I noticed chipping peeling paint falling from the windows in the 79-year-old Central Elementary School where Kevin and Matthew are students. The dust on the windowsills was thick enough to write in. Paint chips piled in the window wells. Concerned, I wrote to the Board of Education, stressing the need to identify whether a lead hazard indeed existed and the equally urgent need to proceed with great caution if indeed lead were found. I also contacted the Health Department. On April 2, 1992, an inspection determined that an immediate lead paint hazard did indeed exist at Central School. The Orange Health Department did not provide the Board of Ed with safety standards for lead abatement. In their zeal to be rid of the problem, the

Board of Ed hired a carpet and wall cleaning company with no knowledge, training or experience in lead paint abatement. With the children out of school on spring break, the workers, with practically no effort to minimize, or contain debris, first scraped and then hydroblasted the windows on the exterior. Water and dust rushed into the classrooms. Inside, no effort was made to cover or move desks, books or supplies. Interior leaded paint was covered with a fresh coat of latex, hiding chipped areas but only slightly diminishing the risk.

Monday morning when school reopened, Health Department and school officials happily paraded through, pleased by their efforts. I was not pleased. Kevin's classroom was supposedly given special attention because of my complaints, yet when Kevin sat down at his desk, there were chips of paint visible on the desk top. There were obvious paint chips, dust and water marks from the hydroblasting which sent jets of contaminated water deep into the classroom. After I pointed out some of the problems, Kevin's class was evacuated to another room so more cleanup could be done in Classroom 6. Other classrooms, I'm told, were in similar or worse condition. Neither parents nor teachers in the school have been alerted nor given any advice concerning precautions they can and should take to minimize the hazard. Children who have pre-existing lead burdens - and I am aware of

several in the school - are particularly at risk. No child will get "sick" this week, or next week. Lead poisoning is acquired slowly - and there is, remember, NO CURE. Damage to our children may well have been caused by this so-called abatement, but the damage will most likely be subtle, and dismissed with "Johnnie's just a little slow" without realizing that it need not be so.

My experiences with lead paint hazards and their abatement are unfortunately not unique. Unless inspectors are adequately trained to identify and evaluate lead hazards, and workers are trained and properly supervised in lead hazard abatement, this entirely preventable, largely silent problem of lead poisoning will continue to steal the future from large numbers of our children.

SENATE HEALTH & HUMAN SERVICE COMMITTEE

THE IMPACT OF LEAD POISONING ON ADULTS

APRIL 29, 1992

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Author of Poison in the Pot: The Legacy of Lead (1984), co-editor Toxic Circles: Workplace to Community (Rutgers University Press, In press.) and over forty papers on lead as a cause of hypertension and kidney disease in adults.

Lead poisoning, even at relatively low-levels of exposure, is now widely recognized as a clear and present danger to children. It is far less widely understood that it is also hazardous to adults. The danger to adults is found primarily in three groups. First, as lead-exposed children grow up they have lower IQ scores, impaired intellectual development and increased anti-social behavior. These children often become dysfunctional young adults exhibiting disruptive behavior and having more frequent encounters with the judicial system than their peers. Second, excessive lead absorption in childhood causes kidney disease and high blood pressure later in life. Third, occupational exposure to lead in adults contributes to neurologic, reproductive and

1

cardiovascular-renal disease in the older population. Lead poisoning is particularly common among construction and lead abatement workers in New Jersey. Exposure in adults is superimposed on the background of childhood and general environmental exposure.

The more subtle, delayed effects of long-term, cumulative lead absorption from deteriorating leaded paint, improperly glazed ceramics, and ubiquitous contamination of food, air and water has not been brought under control. Accidental exposure from dust generated by leaded paint chips has not been eliminated. The toxic effects of excessive lead absorption may only be evident decades after exposure actually began. The readily identified symptoms of acute poisoning may never occur. The danger from lead is therefore not limited to children with pica. Lead has serious adverse effects on young adults from all walks of life. Continuous exposure may occur over many years in both children and adults who get tiny flakes of lead paint dust on their hands, in the food and water, and in the air. Normal hand-to-mouth activity in adults as well as in children results in increasing lead stores in the body over many decades. Such exposure may contribute to the development of reproductive dysfunction, neurobehavioral disorders, saturnine (lead-induced) gout, hypertension, stroke, heart disease and end-stage kidney disease

after 20 or 30 years. The causal relationship is often obscure because neither the victims nor their physicians recognize the many sources of exposure encountered over a life-time. In addition, the long delay in appearance of symptoms, the fact that these diseases are generally associated with the aging process itself, and the multiple sources of lead exposure in the environment serve to obscure the role of cumulative lead absorption in the production of disease.

About 1% of the American population is probably at risk of excessive lead absorption. Elevated blood lead levels are particularly common among young African-American males. It is just this group that is most heavily over-represented in the end-stage renal disease programs where black males are found six-fold in excess of their presence in the population. Hypertension is a major cause of renal failure in these African-American men in chronic hemodialysis programs. The contribution of lead to this excess of hypertensive-renal disease has never been determined.

The hazard of lead absorption in children is carried over to the next generation. The developing fetus is particularly vulnerable to its mothers past lead absorption because it accumulates lead directly from the pregnant mother's blood. In 1984 it was estimated that over 400,000 pregnancies placed the fetus at risk

because of maternal blood level concentrations in excess of 10 ug/dl.

Much of the danger of lead poisoning in adults arises from the accumulation of lead in the body over many years with gradual release from storage sites into the blood stream and the potential damage to the nervous, reproductive, and cardiovascular-renal systems that results. Over 95% of the body lead stores are retained in bone. In contrast to blood lead which turns over in weeks, bone lead persists for decades. There is compelling evidence that lead in bone offers the best measure of the lead absorbed over a lifetime. Lead in blood has a biological half-life of only a few weeks and therefore, reflects recent, rather than cumulative, lead absorption. The biological half-life of lead in bone, on the other hand, approximates 20 years.

A better understanding of the impact of lead bone stores on the health of children and adults is expected to come from a new technique under investigation at the New Jersey Medical School in Newark for measuring lead in bone safely and non-invasively. This new approach developed in my laboratory is called in vivo tibial x-ray fluorescence (XRF). It was developed in collaboration with scientists at the Brookhaven National

Laboratory in Long Island, and the New Jersey Institute of Technology in Newark. In vivo tibial XRF measurement of bone lead is currently undergoing testing at UMDNJ - New Jersey Medical School, University of Cincinnati and Harvard Medical School, the University of Birmingham, England, and the University of California, San Francisco. The University of Maryland, McMaster University, Canada, and the Mt. Sinai Medical School hope shortly to be undertaking similar clinical studies.



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**Testimony by William Lewis, Associate Director,
Government Relations, on the issue of prevention and
treatment of lead poisoning in children before the Senate
Health and Human Services Committee on April 29, 1992 in
Room 7, Legislative Office Building.**

Good morning. I am Bill Lewis, Associate
Director of Government Relations for the New
Jersey Education Association. Our organization
represents more than 135,000 active and retired
school employees and county college staff.

Mr. Chairman, thank you for the opportunity
to express our views on the number one
environmental threat to the health of our
nation's children.

On November 10, 1990, our policy making
body -- the NJEA Delegate Assembly -- directed
the Youth Services Committee to investigate the
issue of lead poisoning in children. I want to
share with you excerpts of that committee's
final report and its recommendations.

Lead Poisoning in Children Testimony
Senate Health and Human Services Committee
April 29, 1992

According to the Federal Centers for Disease Control, lead poisoning is the most common environmental disease of young children. In fact, it is more prevalent than most serious infectious diseases and is now considered the worst environmental health hazard threatening America's young.

The National Health/Education Consortium, a coalition of some 50 groups, found that one child in six suffers toxic lead levels, and that minority children in inner cities are disproportionately affected. It is estimated that more than half of the nation's poor black children are included in the statistics. However, the disease hits children of every socioeconomic status.

Lead can be toxic to anybody who ingests it or breathes air contaminated with it. But young children are especially at risk because they are affected by lower levels of lead exposure than adolescents and adults. They are more likely to ingest it, their bodies tend to absorb more of the lead consumed, and their developing nervous systems are more vulnerable to it.

Lead Poisoning in Children Testimony
Senate Health and Human Services Committee
April 29, 1992

New studies indicate that levels once considered safe can produce subtle damage to a child's nervous system. These lower levels of exposure have been found to lead to irreversible reductions in intelligence, developmental disabilities, behavioral disturbances, and blood disorders. The health effects of elevated levels of lead in the blood include irreversible brain damage, coma, infertility, convulsions, mental retardation, and death.

In a study printed by the New England Journal of Medicine it was reported that teens who were exposed to high levels of lead as first and second graders, were seven times as likely to be school dropouts as teens who were not exposed, and they were six times as likely to have reading disabilities.

Some experts speculate that exposure to lead may be at least partially to blame for the widespread reading and writing deficiencies among America's school children.

Lead Poisoning in Children Testimony
Senate Health and Human Services Committee
April 29, 1992

In a longitudinal study which began in 1979, even children who showed no symptoms of lead exposure had high levels in their teeth. These children had lower than average test scores, poor speech and language processing skills and classroom behavior problems. When the same children were reevaluated in fifth grade, they had an above average need for special services such as speech therapy, remedial reading, and behavioral counseling.

Lead poisoning has existed for centuries and it is relatively easy to detect, evaluate and treat. The best treatment is prevention of exposure.

Head Start, in their continuing commitment to prevent lead poisoning, screens **all** children enrolled in the program for lead poisoning each year. Unfortunately, only one-fifth of all children who are eligible for Head Start are enrolled annually, leaving four-fifths of that high risk population untested.

Lead Poisoning in Children Testimony
Senate Health and Human Services Committee
April 29, 1992

In Paterson, concerned parents for Head Start supported an ordinance that assures all home buyers that their homes are lead free. In addition, they supported legislative efforts to expand lead screening for children.

Prevention efforts **must** require the removal of lead, and today's prevention efforts must also educate women to avoid lead in their lives, particularly during pregnancy. Lead crosses the placenta, placing the unborn at risk. Approximately 400,000 babies are born with lead poisoning in the United States each year.

Lead poisoning robs children of their ability to succeed in school and lead healthy, productive lives. Lead has been around a very long time as a poison to the human population. It is imperative that exposure be brought under control. While New Jersey has made tremendous efforts in this area the problem continues to exist.

NJEA's members and the students they serve are adversely affected by this silent epidemic. Even children with moderate lead levels in their blood systems are six times more likely to have substantial reading disabilities.

Lead Poisoning in Children Testimony
Senate Health and Human Services Committee
April 29, 1992

NJEA supports legislation that:

- provides for the screening of preschool youth for environmentally produced toxic materials, such as, but not limited to, lead and mercury;
- calls for the development of educational programs to prevent diseases caused by environmentally produced toxic materials; and
- aids communities in ridding their environments of lead.

