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S. HRG. 112–973

THE LATEST SCIENCE ON LEAD'S IMPACTS ON CHILDREN'S DEVELOPMENT AND PUBLIC HEALTH

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

JULY 12, 2012

Printed for the use of the Committee on Environment and Public Works

Available via the World Wide Web: http://www.fdsys.gov

U.S. GOVERNMENT PUBLISHING OFFICE

25–057 PDF WASHINGTON : 2017

For sale by the Superintendent of Documents, U.S. Government Publishing Office
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ONE HUNDRED TWELFTH CONGRESS
SECOND SESSION

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THE LATEST SCIENCE ON LEAD'S IMPACTS ON CHILDREN'S DEVELOPMENT AND PUBLIC HEALTH

THURSDAY, JULY 12, 2012

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The full Committee met, pursuant to notice, at 10 a.m. in room 406, Dirksen Senate Office Building, Hon. Barbara Boxer (Chairman of the full Committee) presiding.

Present: Senators Boxer, Lautenberg, Cardin, Whitehouse, and Udall.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. Welcome. Today's hearing on the threat posed by lead provides a clear example of just how important the EPA is to protecting public health and keeping our children and our families safe from dangerous pollutants. The hearing will show why those who question the need for EPA are ignoring the facts. EPA's mission is to reduce pollution in the air we breathe and the water we drink.

One of the most dangerous pollutants that EPA works to protect us from is lead. Lead is a toxic heavy metal that threatens people's health and affects almost every organ in the human body. Children are particularly vulnerable to lead exposure, because they are still growing and developing. Today we are going to review the latest scientific understanding about the threat posed by lead in the environment, especially to children.

Although great progress has been made in addressing lead in the environment and the serious threat it poses, guidelines released by the Centers for Disease Control and Prevention this year have cut in half the level of lead in children's blood that triggers action. That means that the number of children requiring attention in accordance with these guidelines is substantially greater.

The science now makes it clear that no level of lead, no level of lead in children's blood is safe, and even the smallest amount of lead exposure can be harmful to kids. Lead can damage the nervous system, including the brain, which can lower IQ scores and impede development of reading, writing, language, and social interaction skills. It can also harm the cardiovascular system, including the heart and organs that produce blood.

As we have learned more over time about the damage that this toxic contaminant can cause, the threshold of lead in children's blood that requires preventive measures, known as action level, has gradually been lowered. As I said, now the CDC says it should be 5, although the safe level—really there is no safe level, which is something I am going to talk to you about, because I am confused as to why they say it is 5, when the science says there is no safe level.

In the 1960s the best available science indicated that elevated lead levels in children's blood occurred at 16 micrograms per deciliter. The level was lowered to 40 in 1971, to 30 in 1978, to 25 in 1985 and to 10 in 1991. Over the decades, we have made progress in reducing levels of lead in children's blood. From 1976 to 1994 there was a steep decline in lead levels 10 or higher in children's blood, from 77 percent to 5 percent.

CDC is responsible for setting the blood lead level that triggers action to prevent further lead exposure in children. Unfortunately, just as the Federal Government is acknowledging that more children are at risk, the 2013 budget proposal effectively cuts funding for CDC programs that address indoor lead hazards. Despite what is known about the health risks and efforts to reduce lead exposure, industries are still releasing millions of pounds of this dangerous metal each year. According to the EPA, industry released 17.5 million pounds of lead into the environment in 2010. These ongoing releases continue to cause pollution.

Our knowledge about the dangers of lead exposure and other contaminants increases every day. I ask unanimous consent to submit for the record studies which show an array of damaging health effects at very low levels of lead exposure. We will put that into the record.

[The referenced information was not received at time of print.]

Senator BOXER. While we know we can't eliminate every risk, when science tells us that a substance, even at very low levels, can damage children's intellectual development and physical health, we have a clear responsibility to protect them. So today, the best available science tells that by limiting the use of lead, we can reduce levels of toxic pollution that harm public health and hurt our children. The serious threat posed by lead, even at low levels, makes it clear how essential it is for the health and safety of the American people that EPA take every opportunity to decrease exposure to this dangerous pollutant.

In our debates that we have in the Senate every day—and I see it over at the House—there is a huge move to say that EPA is a bureaucracy that is terrorizing the American people. The fact is, EPA is carrying out its role to protect the earth, to protect our water, to protect our children, to protect our families. And we will continue to make sure that we stand behind that effort. Because to walk away from it means that we are hurting our families, and we don't intend to do that.

It is my pleasure to call on someone who is taking the lead on getting toxins out of the environment, someone who is really just an amazing role model for every one of us, because the more he gets a couple more gray hairs—and he has a lot of hair—the more

passionate he becomes about these issues. So it is my pleasure to call on Senator Lautenberg.

OPENING STATEMENT OF HON. FRANK R. LAUTENBERG, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator LAUTENBERG. Thank you very much, Madam Chairman.

What exists here as a result of the exposure to lead is almost a national tragedy in terms of the result that we see with 500,000 children having dangerous levels of lead in their body. And it is incredible that we were unable to continue the funding that the Superfund, in its better days, brought, and then it took a newspaper story as well as CDC doing its regular, its normal work.

But here we are. Children exposed to lead, as we all know here, they can experience delays in their development, lower IQs, damage to their hearing and other harmful effects. The reality is that there is no safe level of lead for the body. As long as we fail to act, we are willingly sacrificing our children and our country's, many of our children's and our country's future. The reality is that there is no safe level of lead for the body. As long as we fail to act, we willingly participate in the program that exists in these households where these children are.

Recently, USA Today released a sobering report on lead contamination that puts this crisis in perspective. It showed that in one of the towns in my State, the town of Carteret, New Jersey, a lead smelting plant spewed toxic materials throughout the neighborhood, blanketed cars and homes, and contaminated the air and the ground. After the plant closed, in 1986, only its land was cleaned up. No attention was paid to the neighboring families whose homes were still contaminated and whose health remained at serious risk.

And a quarter-century later, soil samples in the neighboring community still contained dangerous levels of lead contamination. And it means that over multiple Administrations, under both parties, we failed to protect these families whose lives and futures have hung in the balance. And while many are to blame, the buck has to stop. This continual neglect is a moral outrage.

To make matters worse, Carteret is just one of 14 New Jersey communities and 230 across this country with old plants and lead contamination. Like Carteret, these neighborhoods throughout America fell victim to pollution, yet many were never cleaned up or even tested for unsafe levels of lead. Imagine generations of children growing up, playing in the shadows of these lead smelting plants and nobody taking the time to test for contamination until now.

Throughout the nation, the USA Today report shows that lead contamination has had a devastating impact. Far too many children have dangerously high levels of lead coursing through their veins, poisoned in their own play areas, set back intellectually before they even opened a book.

But I want to be clear. As the report shows, it is obvious that we could help fix this problem if the EPA had the resources it needs to fully test and clean up those contaminated areas. That is why I have introduced the Polluter Pays Restoration Act, to force polluting industries to foot the bill for cleaning up hazardous sites. We have to do more to address the problem of lead contamination.

We need more testing to find which communities are at risk and where neighborhoods are polluted; we have to clean them up quickly as we can physically, get on with it.

So thank you to the witnesses, Dr. Portier and Dr. Vandenberg, for being here today, coming to speak about the health effects of lead. I hope my colleagues will heed to the warnings and take actions for our families and children.

Once again, Madam Chairman, I thank you for bringing this subject to the forefront.

Senator BOXER. Thanks.

I want to say, Senator, that you are so right about the polluter pays; that is a Superfund bill that you have pending in the Finance Committee. Here is the thing that is so important about it. Hazardous waste and solvent recovery is the No. 1 cause of pollution from lead. So you have addressed the No. 1 cause. It is a huge problem. And No. 1.

So I think that bill is critical, that the polluter pay to clean up these hazardous waste sites.

I ask unanimous consent to enter into the record a letter from Senator Sherrod Brown on the health threats of lead and the need to address the serious public health problem of that. Without objection, we will do that.

[The referenced information was not received at time of print.]

Senator BOXER. I also ask to enter into the record a statement by Senator Jack Reed describing the latest science on lead's impact on the health and development of children and the need to continue working to eliminate children's exposure to lead.

[The referenced information was not received at time of print.]

Senator BOXER. I was going to turn to our witnesses, but I see that Senator Cardin is here. It would be perfect if he would give a statement. And for a moment, I am going to hand the gavel to Senator Lautenberg, because I have a call I have to return. I will be right back.

Senator, you have 5, 6 minutes.

OPENING STATEMENT OF HON. BENJAMIN L. CARDIN, U.S. SENATOR FROM THE STATE OF MARYLAND

Senator CARDIN. Thank you very much. I am not going to take my time, I will put my statement in the record.

But let me first thank our witnesses for being here and thank the Chairman for conducting this hearing.

I represent the State of Maryland, and in the State of Maryland we have old, established communities where lead paint issues have been dominant for a long time, having the impact on particularly our children.

I have been involved in this issue for many years, when I was in the State legislature. We have done a lot of things in Maryland. We have passed some good laws. Our State has taken pretty aggressive action. We have worked very closely with the real estate industry, our University of Maryland Law School has been actively involved, the University of Maryland Hospital has been involved.

So we put together a pretty effective State program. But we need the information from the national partner. That is why I think this hearing is particularly important to get the best information we

have from the witnesses who are here in our oversight function, so that we can have effective programs.

There is no question that lead affects the ability of children to develop to their full potential. And the exposures are still in our community. It is our responsibility to do everything we can to protect our children. I hope this hearing will help advance those causes.

With that, Mr. Chairman, I would yield back the balance of my time.

[The prepared statement of Senator Cardin was not received at time of print.]

Senator LAUTENBERG [presiding]. Thank you very much, Senator Cardin.

And now, with our thanks, Dr. Vandenberg and Dr. Portier, we look forward to hearing your testimony. We can go left to right, which always seems to be the case.

Dr. Portier, thank you. Take 5 minutes, please.

STATEMENT OF CHRISTOPHER J. PORTIER, PH.D., DIRECTOR, NATIONAL CENTER FOR ENVIRONMENTAL HEALTH AND AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY, CENTERS FOR DISEASE CONTROL AND PREVENTION

Mr. PORTIER. Thank you very much, Chairman Boxer, Ranking Member Inhofe, Senator Lautenberg, Senator Cardin, and other distinguished members of the Committee. Thank you for the opportunity to be here today.

Since 1991 CDC has stated consistently that there is no safe blood lead level for children. In recent years, the science supporting this statement has strengthened substantially. Children are exposed to lead from a variety of sources. Some of the more common sources include lead-based paint in homes built before 1978, lead contaminated dust and soil, in plumbing, and items containing lead such as toys, candy, and other products.

Prevention is important to protect children. Because lead exposure often causes no symptoms, elevated blood lead levels frequently go unrecognized. Yet lead exposure can affect nearly every system in the body.

At very low levels, research has shown that the blood lead levels are associated with reductions in IQ. Children with blood levels near 5 micrograms per deciliter have a higher prevalence of poor academic achievement, a higher risk of poor impulse control, and higher risk of attention deficit disorder. Additionally, research suggests that blood lead levels in the range of 6 to 10 micrograms per deciliter are associated with signs of reduced post-natal growth, delayed puberty in girls, and decreased hearing and dental caries.

Because of this improved science, CDC requested the Advisory Committee for Childhood Lead Poisoning Prevention form a work group to evaluate CDC's traditional blood lead level of concern of 10 micrograms per deciliter. In January 2012 the Advisory Committee gave the following recommendations. No. 1, CDC should use the childhood blood lead level reference value based on the 97.5th percentile of the population blood lead level in children ages 1 to 5. This value is currently 5 micrograms per deciliter. The reference

value should be updated by CDC every 4 years based on the most recent population-based blood lead level surveys among children.

CDC agrees with these recommendations. Targeting the environments of children with the highest blood lead levels will prevent further exposure and save lives. The term "blood lead level of concern" will no longer be used, as it implies there is a blood lead level below which there is no concern. Instead, CDC will use "blood lead reference value" to indicate high exposure and a need for intervention to prevent additional exposure.

Currently, CDC estimates that over half a million children aged 1 to 5 have blood lead levels greater than 5 micrograms per deciliter. African-American children are three times more likely to have blood lead levels greater than 5 micrograms per deciliter than are white children, a significant disparity requiring continued attention.

CDC's environmental health programs help to save lives, protect people from harmful environmental exposures, and save money by preventing costly illnesses and disabilities. CDC's lead program accomplishes its mission by building strong partnerships with Federal, State, and local agencies and other organizations and by gathering essential data to inform the development of activities that help eliminate and control lead exposure.

CDC has funded State lead poisoning prevention programs into September 2012, using appropriated dollars from the fiscal year 2011 budget. In fiscal year 2012 CDC will maintain critical expertise and analysis at the national level as a resource for State and localities as mandated by Congress.

I will share one family's story. In 2011 a Connecticut family said that they were devastated and lost when they found that their little girl had elevated blood lead levels. Using funding in part from CDC, the State of Connecticut and local lead program were able to provide services to the family, hire a lead abatement contractor, and oversee a prompt and complete abatement project. The grateful parents wrote back and said, "Because of all of you, we were able to persevere and make our home safe for our children."

CDC remains committed to reaching the Healthy People 2020 goals of eliminating elevated blood lead levels in children. CDC continues to work with States and local communities and other Federal partners to maximize our nation's efforts to control lead sources. Together, we support physicians' and parents' access to resources they need to safeguard and promote their children's health and development.

Thank you for the opportunity to present this testimony to you today. I would be happy to answer any questions.

[The prepared statement of Mr. Portier follows:]

Testimony before the
Committee on Environment and Public Works
United States Senate

The Latest Science on Lead's Impacts on Children's Development and Public Health

Christopher Portier, Ph.D.
Director, National Center for Environmental Health
Centers for Disease Control and Prevention and Agency for Toxic Substances and Disease Registry
U.S. Department of Health and Human Services

For Release upon Delivery
Thursday, July 12, 2012
Expected at 10:00 a.m.
7/10/2012 11:26 AM

Good morning Chairman Boxer, Ranking Member Inhofe, and distinguished members of the Committee. Thank you for the opportunity to be here today. I am Dr. Christopher Portier, Director of the National Center for Environmental Health (NCEH) at the Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR). CDC works 24/7 to keep America safe from health threats of all kinds. Many of these health threats originate from our interactions with our environment. CDC's environmental health programs help to save lives, protect people from harmful environmental exposures, and save money by preventing costly illnesses and disabilities.

Today I will focus my remarks on CDC's Healthy Homes and Lead Poisoning Prevention Program, the state of the science regarding lead exposure and children's health, and the Advisory Committee on Childhood Lead Poisoning Prevention's (ACCLPP) *Recommendations to CDC/NCEH Regarding Blood Lead Level of Concern.*

No safe blood lead level for children has been identified.[1] For more than 30 years, CDC has protected children from environmental lead exposure. Children are exposed to lead from a variety of sources. Some of the more common sources include lead-based paint in homes built before 1978, lead-contaminated dust and soil, plumbing and items containing lead–such as toys, candy, and other products.

CDC's Healthy Homes and Lead Poisoning Prevention program accomplishes its mission by building strong partnerships with Federal, State, and local agencies and other

[1] CDC. Preventing lead poisoning in young children. Atlanta, GA: US Department of Health and Human Services, CDC; 2005. http://www.cdc.gov/nceh/lead/publications/PrevLeadPoisoning.pdf

organizations and gathering essential data to inform the development of preventive interventions and policies. Over the years, the number of children with elevated blood lead levels has declined due to population-wide strategies to protect children from lead exposure. Collaborative public health efforts by CDC, the U.S. Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), State and local health departments, and others drove these improvements. CDC's lead surveillance identifies children with high blood lead levels. CDC funds support development of model local building codes to prevent and mitigate exposures. CDC leverages interagency partnerships to target and remediate the homes where children with elevated blood lead levels live. Finally, CDC tracks exposed children to ensure that their blood lead levels fall. However, the best way to protect children from these harmful exposures is to prevent them in the first place.

The Congressional FY 2012 appropriation for the CDC's Lead Poisoning Prevention Program reduced program funding to $2 million from the FY 2011 funding level of $29.2 million. The appropriation requires CDC to maintain technical field expertise as allowed with the resources provided. CDC has funded state lead poisoning prevention programs into September 2012 using appropriated dollars from the FY 2011 budget.
In FY 2012, CDC will maintain critical expertise and analysis at the national level as a resource for states and localities. This resource will include software and technical assistance support of the surveillance system that tracks lead exposures in children, staff that can provide expertise and epidemiological support in response to a lead poisoning outbreak, continued support of the Advisory Committee on Childhood Lead Poisoning

Prevention, and work with Federal partners to collaborate on evidence-based healthy homes policies.

State and local health departments use CDC funding to implement childhood lead poisoning prevention programs that identify children who are most at risk and link their families with timely and appropriate interventions. CDC's healthy homes and lead surveillance system identifies areas where many children have high blood lead levels, and triggers wide-spread actions to control lead hazards before more children in these areas are exposed. CDC works with HUD to identify and remedy repeat properties, those which have multiple cases of children with elevated blood lead levels. CDC has also provided information to Federal agencies, including the Department of Justice (DOJ) and EPA, to target enforcement actions that protect children. By 2009, property owners had made more than 186,000 targeted properties lead-safe because of consent agreements reached as a result of enforcement actions informed by CDC data. State and local childhood lead poisoning prevention programs that CDC supports also provided information to health care providers and educators. This information guides treatment and prevention of harmful lead exposure in children and informs and empowers parents to protect their children from lead exposure.

The President's budget for FY 2013 continues to support the prevention of childhood lead exposure through the Healthy Home and Community Environments program. This program proposes to mitigate health hazards in homes such as lead exposure, secondhand smoke, asthma triggers, radon, and others. Findings indicate that multi-component, multi-trigger home based environmental interventions that include the prevention of childhood lead exposure improve overall quality of life, reduce health care costs, and improve productivity.

Let me share one family's story. In 2011, a Connecticut family reported being "devastated and lost" when they found that their little girl had an elevated blood lead level. Using funding in part from CDC, the State of Connecticut and a local lead program were able to provide services to the family, hire a lead abatement contractor, and oversee a prompt and complete lead abatement project. The parents expressed their gratitude by saying, "Because of all of you, we were able to persevere and make our house safe. You were our guidance, our support, and we cannot thank you all enough." This story is repeated across the country as Federal, State, and local resources are used to control lead hazards and make housing lead-safe.

Prevention is important to protect children. Elevated blood lead levels frequently go unrecognized, because they often occur with no obvious symptoms. Lead exposure can affect nearly every system in the body. Left unchecked, lead exposure harms children in many ways. Lead exposure can result in brain and nervous system damage, and stunt growth[2]. The behavioral and learning problems associated with lead exposure include attention-deficit/hyperactivity disorder, juvenile delinquency, and criminal behavior.[3] When blood lead levels increase, so do adverse health effects. No safe blood lead level for children has been identified. Research has shown that blood lead levels are associated with measurable reductions in IQ, even at very low levels.[4] Research[5] suggests that

[2] Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Lead *(Update)*. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

[3] Mason J, Brown MJ. Estimates of cost for housing-related interventions to prevent specific illnesses and deaths. J Public Health Manag Pract. 2010; 16(5S):S79–S89.

[4] Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention Report of the Advisory Committee on Childhood Lead Poisoning Prevention *of the Centers for Disease Control and Prevention.* 2012. http://www.cdc.gov/nceh/lead/ACCLPP/Final_Document_030712.pdf

children with blood lead levels near the reference value may have a higher prevalence of poor academic achievement, a higher risk of poor impulse control, and a higher risk of attention deficit disorder. Furthermore, research[6] suggests that at blood lead levels in the range of 6-10 µg/dL there may be signs of reduced postnatal growth, delayed puberty in girls, decreased hearing acuity, and dental caries.

The United States has made substantial improvements in reducing lead in the environment. The decrease in childhood lead exposure is one of the greatest public health achievements of the last 30 years. Between 1976 and 2008, the percentage of children aged 1 to 5 years with blood lead levels greater than 10 µg/dL declined steeply, from 88.2 to 0.9 percent. CDC-led efforts to increase the number of children tested have shown success. In 2009, approximately 66 percent of children from families with low incomes were tested for lead, compared to 21 percent in 1997.

However, it is still much too early to claim a public health victory on lead. Even though the nation succeeded in eliminating many of the worst exposures, lead hazards in residences and public buildings continue to contribute to children's blood lead levels.

CDC estimates more than 500,000 children ages 1-5 have blood lead levels greater than 5 µg/dL, and 150,000 children have blood lead levels greater than 10 µg/dL.[7] African-

[5] National Toxicology Program. Pre-publication copy of NTP Monograph on Health Effects of Low-level Lead. Washington, DC: U.S. Department of Health and Human Services, June 13, 2012. http://ntp.niehs.nih.gov/NTP/ohat/Lead/Final/MonographHealthEffectsLowLevelLead_prepublication_508.pdf

[6] National Toxicology Program. Pre-publication copy of NTP Monograph on Health Effects of Low-level Lead. Washington, DC: U.S. Department of Health and Human Services, June 13, 2012. http://ntp.niehs.nih.gov/NTP/ohat/Lead/Final/MonographHealthEffectsLowLevelLead_prepublication_508.pdf

[7] National Health and Nutrition Examination Survey (NHANES) 2007-2010 using 2010 census population data. http://www.cdc.gov/nchs/nhanes.htm

American children are three times more likely than white children to have blood lead levels greater than 5 μg/dL[8] – a significant disparity requiring continued attention.

Since 1991, CDC has stated consistently that there is no safe blood lead level threshold for children. CDC emphasizes the importance of having children tested for lead exposure at ages 1 and 2. Because of this danger, CDC, along with other federal agencies, emphasize the importance of primary prevention of lead exposure – through interventions that control or eliminate lead hazards before children are exposed.

Previously, CDC identified 10 μg/dL as a blood lead level of concern and recommended action to mitigate the child's exposure and monitor the child's health. Over the last several years, however, a growing body of scientific evidence documents adverse effects in children with blood lead levels below 10 μg/dL. Thus, in late 2010, CDC requested that the Advisory Committee for Childhood Lead Poisoning Prevention form a workgroup to evaluate CDC's blood lead level of concern and recommend changes if necessary.

In January 2012, the advisory committee recommended that:

> CDC should use a childhood blood lead level reference value based on the 97.5th percentile of the population blood lead level in children ages 1-5 (currently 5 μg/dL) to identify children and environments associated with lead-exposure hazards. The reference value should be updated by CDC every four years based on the most recent population based blood lead surveys among children.

[8] Jones D, Homa D, Meyer P, et. al. Trends in Blood Lead Levels and Blood Lead Testing Among US Children Aged 1 to 5 Years, 1988–2004. Pediatrics. 2009; 123 (3): e376-385. http://pediatrics.aappublications.org/content/123/3/e376.abstract

CDC responded to the recommendations on May 16, 2012, agreeing with the recommendations and providing potential strategies that are achievable within the FY2012 and proposed FY2013 resources. The response also highlights additional strategies with proven effectiveness.

The recommendations reiterate CDC's longstanding message that primary prevention is the key to protecting children from lead exposure. CDC emphasizes that the best way to end childhood lead exposure is to control or eliminate exposures. Targeting the environments of children with the highest blood lead levels is part of our strategy moving forward. The term "blood lead level of concern" will no longer be used as it implies a level below which there is no concern. Instead, CDC will be using "blood lead reference value" to indicate high exposure and a need for intervention to prevent additional exposure. Interventions that control or eliminate lead sources before children are exposed have demonstrated success in reducing the risk of elevated blood lead levels.[9,10,11]

CDC remains committed to reaching the Healthy People 2020 goals of eliminating blood lead levels above 10 µg/dL and the disparity in risk based on race and social class. CDC continues to work with state and local communities, and other federal partners including EPA and HUD to maximize our nation's efforts to control lead sources so children are not exposed to lead. In addition, CDC will continue to work with these partners to support

[9] Yeoh B, Woolfenden S, Wheeler D, Alperstein G, Lanphear B. Household interventions for prevention of domestic lead exposure in children. Cochrane Database of Systematic Reviews 2008, http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD006047.pub3/abstract

[10] Brown MJ, Gardner J, Sargent J, Swartz K, Hu H, and Timperi R. Effectiveness of Housing Policies to Reduce Children's Lead Exposure. American Journal of Public Health, 2001;91:621-624. http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.91.4.621

[11] Brown MJ. Costs and Benefits of Enforcing Housing Policies to Prevent Childhood Lead Poisoning. Medical Decision Making, 2002;22:482-492. http://mdm.sagepub.com/content/22/6/482.abstract

physicians and parents so that they have access to the resources they need to safeguard and promote children's health and development.

Thank you for the opportunity to present this testimony to you today. I would be happy to answer any questions.

Senator BOXER [presiding]. Dr. Vandenberg.

STATEMENT OF JOHN VANDENBERG, DIRECTOR, NATIONAL CENTER FOR ENVIRONMENTAL ASSESSMENT, OFFICE OF RESEARCH AND DEVELOPMENT, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. VANDENBERG. Madam Chairman, Ranking Member Inhofe, and distinguished members of the Committee, thank you for the opportunity to testify about the latest science on the impact of lead on children's development and public health. My name is John Vandenberg, I am the Division Director in EPA's National Center for Environmental Assessment in the Office of Research and Development. My division is responsible for identifying and evaluating the world's scientific literature to create the integrated science assessment, which I will refer to as the ISA.

The ISA serves as the scientific foundation for decisions by the Administrator on retaining or revising the National Ambient Air Quality Standards for lead. My testimony today will include a brief review of data on the trends of lead in the air and in human blood and draft conclusions regarding the health effects of exposure to lead that EPA has developed in the most recent draft ISA for lead.

Lead is one of six pollutants for which a National Ambient Air Quality Standard has been established under the Clean Air Act. Emissions of lead to the air historically resulted from the use of lead additives in gasoline. Following the phase-out of lead additives for on-road gasoline and tightened industrial standards, emissions of lead to ambient air have declined by more than two orders of magnitude over the period from 1970 to 2008.

Ambient air concentrations of lead have shown a similar decline, as have levels of lead in the blood of children and adults. In 2008 the air quality standard for lead was strengthened. The level of the standard was lowered by 10-fold from the 1978 level of 1.5 micrograms per cubic meter to .15 micrograms per cubic meter. EPA's decision on the standard was based on the much expanded health evidence for the effects of lead on learning on children. The revised standard was established lead-related health effects, including IQ loss in children.

The current review of the air quality criteria for lead as required every 5 years under the Clean Air Act was initiated in February 2010 with a call for information and subsequent development of a draft ISA. The current draft of the ISA was released for public comment and for review by the Clean Air Scientific Advisory Committee, an independent panel of experts in February of this year, and we expect to receive their comments soon. Revisions based on the peer review panel and public comments will be incorporated into the next draft, and we anticipate a final document next spring.

Over 2,900 scientific studies were included in the draft ISA, demonstrating the large body of evidence available on issues related to lead emissions, ambient concentrations, exposures, biomarkers, and health and environmental effects. In the latest draft of the ISA, the EPA conclusions were that human exposure to lead involves multiple pathways, including hand to mouth contact or inhalation of lead dust, eating paint chips, drinking water conveyed through lead

pipes, and exposure to soil which can act as a reservoir for the positive lead emissions.

The draft ISA organizes, presents and integrates evidence that is generally consistent with the previous science assessment that we completed in 2006. Based heavily on effects on learning and memory in children, the collective body of evidence continues to provide support for a causal relationship between lead exposures and effects on the nervous system. Epidemiologic and toxicological evidence also demonstrate lead associated increases in behavioral problems, in particular inattention and impulsivity in children. The biological plausibility of effects on cognitive function and behavior as provided by evidence characterizing underlying mechanisms, including lead induced effects on the developing nervous system.

Building on the strong body of evidence reviewed in the previous science assessment, recent studies provide evidence of an association between long-term lead exposures and cardiovascular effects in adults. The largest body of evidence is for associations of lead with increased blood pressure and hypertension. Other health effects in children are also reviewed in the draft ISA. For example, the evidence supports an association of blood lead level with delayed onset of puberty in both males and females, with asthma and allergy related immune effects, and with effects on heme synthesis and red blood cell function in children.

Lead emissions to the air have declined substantially since 1970, with commensurate declines in the concentration of lead in air and in human blood. Collectively, the substantial body of evidence reviewed in the draft ISA highlights what we know about the relationship between lead exposure and effects on the nervous system, cardiovascular system, as well as red blood cell function. There is also evidence that lead exposure is associated with immune, reproductive, developmental, and renal effects. Research suggests that many of these effects of lead, including effects on learning and memory, are found in populations of young children at very low blood lead levels.

Thank you for the opportunity to testify today. I am happy to answer any questions that you may have at this time.

[The prepared statement of Mr. Vandenberg follows:]

TESTIMONY OF
JOHN VANDENBERG
NATIONAL CENTER FOR ENVIRONMENTAL ASSESSMENT
OFFICE OF RESEARCH AND DEVELOPMENT
U.S. ENVIRONMENTAL PROTECTION AGENCY

BEFORE THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

JULY 12, 2012

Madam Chairman, Ranking Member Inhofe, and Members of the Committee, thank you for the opportunity to testify about the latest science on lead's impact on children's development and public health.

My name is John Vandenberg, and I am the Director of the Research Triangle Park, North Carolina Division of EPA's National Center for Environmental Assessment in the Office of Research and Development. My division is responsible for identifying and evaluating the world's scientific literature to create the Integrated Science Assessment (which I will refer to as the "ISA") that serves as the scientific foundation for decisions by the EPA Administrator on retaining or revising the National Ambient Air Quality Standards for Lead. My testimony today will include a brief review of data on the trends of lead in the air and in human blood, and the draft conclusions regarding the health effects of exposure to lead that EPA has developed in the most recent draft ISA for Lead.

Lead is one of six pollutants for which a National Ambient Air Quality Standard (referred to as "NAAQS") has been established under the Clean Air Act. Emissions of lead to the air

historically resulted from the use of lead additives in gasoline. Following the phase-out of lead additives for on-road gasoline and tightened industrial standards, emissions of lead to ambient air have declined by more than two orders of magnitude over the period 1970 to 2008. Ambient air concentrations of lead have shown a similar dramatic decline as have levels of lead in the blood of children and adults.

In 2008 the NAAQS for lead was strengthened; the level of the standard was lowered from the 1978 level of 1.5 $\mu g/m^3$ to a level of 0.15 $\mu g/m^3$ (a ten-fold reduction). EPA's decision on the standard was based on the much-expanded health effects evidence for the effects of lead on learning in children. The revised standard was established to protect against Pb-related health effects, including IQ loss, in children.

The current review of the air quality criteria for lead was initiated in February of 2010 with a call for information and subsequent development of a draft ISA for Lead. The Integrated Science Assessment is a synthesis and evaluation of the most policy-relevant science that forms the scientific foundation for the review of the NAAQS for Lead. The second draft of this assessment was released for public comment and for review by the Clean Air Scientific Advisory Committee, or CASAC, an independent panel of experts, in February 2012. The CASAC Lead Panel reviewed the second draft in April 2012 and we expect to receive final comments on this draft soon. Revisions based on CASAC and public comments will be incorporated into a third draft ISA, which is targeted for release in the fall of 2012, for public comment and peer review by the CASAC.

Over 2900 scientific studies were included in the second draft ISA, demonstrating the large body of evidence available on issues related to lead emissions, ambient concentrations, exposures, biomarkers, and health and environmental effects. In the latest draft of the Lead ISA the EPA's draft conclusions were that human exposure to lead involves multiple pathways including hand to mouth contact or inhalation of lead dust, eating peeling paint chips, drinking water conveyed through lead pipes, and exposure to soil, which can act as a reservoir for deposited lead emissions.

The second draft Lead ISA organizes, presents and integrates evidence that is generally consistent with the previous science assessment, completed in 2006. Based heavily on effects on learning and memory in children, the collective body of evidence presented in the science continues to provide support for a causal relationship between lead exposure and effects on the nervous system. Epidemiologic and toxicological evidence also demonstrate lead-associated increases in behavioral problems, in particular, inattention and impulsivity in children. The biological plausibility for epidemiologic and toxicological findings for effects on cognitive function and behavior is provided by evidence characterizing underlying mechanisms, including lead-induced effects on the developing nervous system. Of particular interest for lead is the shape of the concentration-response curve at the low end (<10 μg/dL) of current blood lead concentrations observed in the U.S. population. In addition to effects on learning and behavior, at very high levels, Pb poisoning can lead to seizures, coma, and even death.

Building on the strong body of evidence reviewed in the previous science assessment, recent epidemiologic and toxicological studies reviewed in the second draft science assessment

provides evidence of an association between long-term lead exposure and cardiovascular effects in adults. The largest body of evidence is for associations of lead with increased blood pressure and hypertension.

Other health effects are also reviewed in the second draft ISA. For example, the evidence consistently supports a relationship between lead and decreased kidney function in non-occupationally-exposed adults. The evidence also supports a potential association of blood lead levels with delayed onset of puberty in both males and females, detrimental effects on sperm and semen quality in occupationally-exposed males and, asthma and allergy-related immune effects in children. Recent epidemiologic and toxicological studies also support findings from the previous assessment that lead exposure in children and occupationally-exposed adults is associated with effects on developing red blood cells and constituents involved in oxygen binding and transport.

Many associations with red blood cell function, cardiovascular, renal, reproductive and developmental effects have been observed in populations with mean blood lead levels less than 10 μg/dL; however, there is uncertainty about the patterns of lead exposure contributing to the associations that we observe in populations of older children and adults who are likely to have had higher past than recent exposure.

Lead emissions to the air have declined substantially since 1970, with commensurate declines in the concentration of lead in the air and in human blood. A review of the scientific evidence related to the health and environmental effects of lead exposure is now underway, to inform

decisions by the EPA Administrator on the National Ambient Air Quality Standards for Lead. Collectively, the substantial body of evidence reviewed in the second draft ISA, and summarized above, highlights what we know about the relationship between lead exposure and effects on the nervous system, cardiovascular system, as well as red blood cell function. There is also evidence that lead exposure is associated with renal, immune, reproductive and developmental effects. Research suggests that many of these effects of lead, including effects on learning and memory are found in populations of young children at very low blood lead concentrations.

Thank you for the opportunity to testify before you today. I am happy to answer any questions you may have at this time.

Senator BOXER. Thank you both.

You both agree now that there is no safe level for lead in blood, is that correct?

Mr. PORTIER. Correct.

Mr. VANDENBERG. Yes. There is no evidence of a threshold for effects of lead.

Senator BOXER. So there is no safe level, no matter what it is? If there is some lead in the blood, it is not a good thing. Is that right?

Mr. VANDENBERG. I believe that is correct.

Senator BOXER. Yes.

Well, I mean, I think that is huge news for us. I know that the science has sort of been leading in that direction since the 1990s, but I really appreciate your saying this. And anyone who gets up on the Senate floor and tries to repeal laws that protect our kids and stop the EPA and the CDC from doing their work have to know that is not a benign act. That is making sure that our kids are in danger. So we know that there's no safe level.

Now, we also know from what I have learned that you can't reverse some of these problems once they have taken place. Is that correct, doctors, that you can't really reverse issues that emerge from lead exposure? Is that correct?

Mr. PORTIER. Some of the issues, some of the health impacts from exposure to lead, especially early in life, are not reversible, others are.

Senator BOXER. OK, so tell me what is not reversible.

Mr. PORTIER. The changes in IQ appear to travel with you throughout life. Some of the changes you see related to decreased academic achievement and increased attention related issues tend to track with life as well. Then some of the early exposures, while they don't show problems associated with problem behaviors right away, later in life they do appear to show a linkage to problem behaviors.

Senator BOXER. OK.

Do you agree with that, Dr. Vandenberg? So just to sum it up, once a child has been exposed to lead—and we don't know exactly the level, because now we are saying there is no safe level—if they suffer a problem with IQ, diminishment, decreased academic performance, attention deficit disorder, and behavioral problems, those things are not reversible.

So that leads me, because I am always trying to get ahead of a problem, we are behind on this problem, why wouldn't we say—and I am not asking you that the Government should say this, but I am asking you your opinion as doctors—that every child should be tested when they go get a blood test, that they ought to run a test on the exposure to lead? Would that be something that is smart? I am not asking you if we should write a law about it. I am just saying, if I am a grandma or a parent and I have a beloved kid, why wouldn't I want to know that information?

Mr. PORTIER. That is indeed CDC's recommendation. Every child of the age 1 or 2, we feel, should be tested for lead in their blood at that age range. If the quantities are found that are of concern, there is an instrument issue about how long you can measure, that that child should be followed, that lead in their homes should be

looked for, sources should be identified and potentially remediated as best as possible.

Senator BOXER. Well, I have to tell you, that is important for every single parent to understand. Because I know someone who just had a sense that her son should have been tested. Nobody suggested it but she said, please test. And found very high level. It turned out it was dishes in the home. Dishes in the home.

And I think, I wonder, do you have any notion about how many parents or pediatricians do routinely test for lead in the blood?

Mr. PORTIER. Yes. I am going to get the number not exactly right, but somewhere around 65 percent of children in the United States age 1 to 2 are indeed tested for blood lead levels.

Senator BOXER. Sixty percent are tested.

Mr. PORTIER. Greater than 50 percent.

Senator BOXER. I thought you said 60. Fifty?

Mr. PORTIER. Sixty-five percent is my recollection of the number.

Senator BOXER. Are being tested?

Mr. PORTIER. Are being tested.

Senator BOXER. Between the ages of 1 and 2?

Mr. PORTIER. Under the age of 6, let's say. There is some range there.

Senator BOXER. And is this happening because the doctors are getting more in tune with this problem? Or is it happening because the parents are demanding it? What is your sense of that?

Mr. PORTIER. Most of it happens because State health departments are pushing for this.

Senator BOXER. Good.

Mr. PORTIER. A lot of it happens because CMS is doing this now, routinely, especially in areas where we know there are lead exposures of concern.

Senator BOXER. Let me just say, I know California's environmental protection agency is very concerned about this. But it seems to me, colleagues, that if a doctor's note and an exam is required for school, this is something the States should take up, that they ought to routinely test for lead. Is that an expensive test, Doctors? Is that an expensive test to test? If you are running a test, to test for lead in the blood?

Mr. VANDENBERG. I don't know.

Mr. PORTIER. I honestly don't know.

Senator BOXER. Any of my staff know?

All right. If you don't mind getting back to us on that, I think it is very important.

I will withhold my other questions and turn to Senator Lautenberg.

Senator LAUTENBERG. Thank you both for the information you bring here. But it strikes me, and I listened to the Chairman's questioning, it strikes me that this menace has existed for so many years now, and the result of the impairing a child's ability to learn, to study, is part of a national catastrophe. It is a terrible thing when you think about it. The old adage, out of sight, out of mind, is really unfortunately a play on words, a nuance that is not pleasant to hear.

Now, USA Today really sounded the alarm. They found that more than 230 lead smelter sites had previously been unidentified.

And I had mentioned the one in Carteret, New Jersey. Soil testing in a community near the Carteret smelter showed levels more than double that.

Dr. Portier, you suggested even lower levels of lead exposure are dangerous. Unfortunately, these are lasting effects. This isn't like something you can treat medically and say, OK, that is the end of that.

So soil testing, again, more than double what EPA considers hazardous for children. How quickly—and this should be addressed to Dr. Vandenberg—how quickly can EPA put an end to the poisoning that has been happening in a particular neighborhood?

Mr. VANDENBERG. Thank you for your question, Senator Lautenberg. I can say that EPA is aware of these issues and our discussions are ongoing. I think it is very important to recognize that EPA takes the issues very seriously. Public health concerns are very much part of our mission. So we are taking this seriously, and we are under discussions to try to develop programs to address these concerns.

Senator LAUTENBERG. CDC and EPA play important roles in protecting the public's right to know about environmental toxins. Yet it took an investigative report to make the alarm loud enough on contamination near former lead smelters. What would you say the principal actions your agencies are taking to identify other contaminated sites and to spread the word to local residents about what they can do, what they ought to get going on to protect their children from this terrible contamination?

Mr. VANDENBERG. Senator, EPA and CDC are currently coordinating and collaborating significantly on these issues. We are meeting, we are discussing, and we are developing plans. This is related to our missions. So EPA's mission is one of protecting public health and the environment. And again, CDC and EPA are coordinating this.

One of EPA's key public health priorities is to protect public health. We are continuing to strengthen our relationships with State and local agencies as well, which is a key aspect of how lead in communities can be addressed. So thank you for your question.

Senator LAUTENBERG. Dr. Portier.

Mr. PORTIER. In addition to working with EPA on this issue, we are also working with a number of other partners. We still continue to work with the State, although our funding to the States will end at the end of this fiscal year. We continue to work with them and strive to make sure that they keep whatever they can of the lead poisoning prevention programs that we have put in place into the next fiscal year, so that we can continue to provide maps across the United States of where we see blood lead levels greater than 5 micrograms per deciliter, and look for areas where we can focus our efforts.

In addition, the Agency for Toxic Substances and Disease Registry, ATSDR, supports Pediatric Environmental Health Specialty Units (PEHSUs), 10 of them around the United States, who provide expertise for pediatricians who are faced with a case of an environmental exposure in a child and don't know what to do. They routinely contact our PEHSUs. These PEHSUs, the pediatric specialty units, also provide medical education throughout the nation

on environmental health issues. And they will be following up on our change to lead standards and try to incorporate that into some of the work they do.

We have a number of other partners, non-governmental organizations, that help us a great deal in getting the word out on lead.

And if I might take 1 second to correct a statement I made earlier to Chairman Boxer, it is 60 percent to 65 percent of children on Medicaid are tested for lead. I do not know the national number. I would have to get back to you on that.

Senator LAUTENBERG. Just one last thing, Madam Chairman, if I might. An observation about, here we stand. This, I will call it a fire, is smoldering. We stopped the collection of revenues in 1995, such a long time ago, and here we do know that there is smoke and danger coming out of these places. And it took this kind of an exciting piece of news coming in, the press, to get us activated, as we are now. And I thank each of you and the agencies that we represent. We just have to give them more firepower.

Thank you very much.

Senator BOXER. Thank you, Senator.

Senator Cardin, followed by Senators Udall and Whitehouse.

Senator CARDIN. Thank you, Madam Chairman, again, I thank our witnesses for being here.

I share the concern of Chairman Boxer and Senator Lautenberg as to the urgency of this issue. We have been talking about it for a long time, and it is somewhat disturbing that we still don't quite have a handle on a national policy to deal with ending lead poisoning in our children.

I am particularly concerned about the fact, Dr. Portier, in your statement, that African-American children are three times more at risk than the general population. I think it reflects the fact that this is not a problem that has been identified in one discipline. It is not just a health or environmental issue, it is a housing problem, it is a social problem, it is an educational problem, it is really a combination of a lot of different factors that go into trying to have an effective strategy to deal with it.

Is lead-based paint, or houses painted before—I think 1978 was the cutoff year—is that still the largest source of the problem today?

Mr. PORTIER. For children who are below the age of 6 and have higher blood lead levels, greater than 5 micrograms per deciliter, predominantly, the No. 1 source of exposure is lead paint.

Senator CARDIN. And I know that there are different strategies on remedial actions for homes that do have lead-based paint. Obviously the flaking of the paint, the window sills are the greatest dangers to children, who tend to put their mouths on the window sills. Is that still the strategy, is to do remedial work in the most vulnerable areas, either flaking paint or where children can get direct sources, rather than trying to remove all the lead-based paint?

Mr. PORTIER. We have an excellent partner in HUD looking at this issue. Where possible, we work very closely with HUD to actually remediate and remove the lead paint in the first place, when possible. When those don't happen, then there are a number of things that we tell parents that they can do to help reduce the threat to their children. Obviously remove the flakes, make sure

you sweep constantly, you remove it from the floor. Better yet, use a HEPA filter. Keep your shoes outside, if at all possible, if you are bringing it in from outside the yard.

Get your child tested, get the paint on your walls—if you have a pre-1978 home and you do not know—then get the paint tested. Some of the environmental programs in States around the nation will actually do that for you. So there are a number of things we have available on our Web site that are things to help a parent.

In addition, many of the State programs will make recommendations for lead abatement as to where the parents might find competent help to come in and remove the lead in their homes.

Senator CARDIN. As I said, there are a lot of different aspects to the problem. There are a lot of families that think they are safe, and they are not safe. Do we have good information as to how effective that type of remedial action that doesn't completely remove the lead-based paint but uses the more pragmatic approach to deal with the sweeping and the flaking issue, rather than the complete removal, how effective that is? Do we have any studies that have been done in that regard?

Mr. PORTIER. There are studies that have been done on that. I would like to get back to you with a more detailed answer to your question, so I can compare effectively for you abatement versus prevention of exposure.

Senator CARDIN. I wish you would, because, Madam Chairman, we have been talking about these issues now for the last, actively, for the last 30 years. We still have a huge problem that is out there. I think most people figured we would just wait until the houses sort of fell down and we didn't have the problem anymore. Obviously, children are still at great risk.

I know that there is an economic issue on the remedial programs. I understand that. I understand the tradeoffs. I have talked to a lot of property owners, and I know that there are issues that have to be addressed here. But we have to get our children safe. We have been talking about this for a long time. I would hope we could come up with a more consistent national strategy for what is expected of parents today to make sure their children are living in a safe environment and then having the governmental programs and oversight to make sure that those options are available to parents today, based upon their economic needs and based upon the liability issues.

Thank you, Madam Chairman.

Senator BOXER. Thank you so much.

Senator Whitehouse.

Senator WHITEHOUSE. Thank you very much.

Let me first thank my colleague, Senator Udall from New Mexico. I am a little pressed for time, and he has let me skip ahead of him in order, which is a generous courtesy, but one very consistent with the way he treats his colleagues. Thank you, Senator Udall.

As the safe level for lead paint in children's blood declines now to zero, it means that there are more kids that require attention for having dangerous lead exposure levels. At the same time, this will create increased demand for all the various abatement and

treatment programs that are out there. We are looking at cutting funding to CDC's lead prevention programs.

Have you done any analysis as to how much of an increase in the prevention budget might be necessary, basically to stay even from a public health perspective, now that we know that the risk is great down to very, very small levels of lead in the blood? If you don't add money at this point, then clearly you are going to leave some lead poisoned kids off the table. Because there are going to be a lot more of them, you have to reach out to that. Presumably the numbers should be going up.

What is the process that is taking place within the Administration for identifying what the correct number is to stay at the existing public health level, given this new data?

Mr. PORTIER. Senator Whitehouse, that is a question we are indeed exploring very carefully right now and looking into. There are a number of aspects associated with lead poisoning prevention: surveillance, training, screening, and then patient follow up, patient care, and intervention. We are looking at all of those, again, with our partners at EPA and HUD predominantly, to think about how we move forward, given our joint resources, to do this effectively.

Senator WHITEHOUSE. I think the program is called Healthy Homes that has come to Rhode Island. I was with them in the Olneyville neighborhood of Providence a while ago, and they try to make sure that when they go into say, improve energy efficiency in homes, they are also looking at lead and mold, other issues, so that you kind of—it is efficient to do it at once rather than go back first to re-do the windows for lead, then to re-do the same windows for energy efficiency and so forth. So I would commend you to think about that program.

I will take the last of my time to make a comment, which is, this is an issue that I have been fighting for a long time, I was the attorney general who sued the lead paint industry for the damage that they were doing to Rhode Island children, and literally thousands being poisoned. Through the course of it, I have paid a lot of attention to this issue. One of the things that has stood out has been the amount of phony science generated by the industry with the desire and purpose to dissemble, to delay, to deny, to mislead.

It is significant that we are here at this hearing finding out that there is in fact no safe level of lead in blood for children. But it does recall the many, many, many years chronicled in books like Denial and Deceit and Merchants of Doubt that industry scientists have been basically doing their best to mislead the American public about this danger and others. A lot of the same people, a lot of the same organizations were behind trying to convince people that they shouldn't have to worry about health effects of cigarettes. A lot of the same organizations and the same scientists are behind trying to convince people they don't have to worry about the effects of climate change and carbon pollution.

And it is worth pointing out that once again, the industry funded phony science has now been completely debunked. But in the generation that it took to get there, there have been innumerable children who were poisoned. And the drag and the delay that the industry caused by not kind of participating in a helpful way in these issues and instead, just trying to deny and delay and continue to

sell their product and avoid liability as long as possible has had some really unfortunate consequences.

But it is a recurring theme that is worth noting. When you get into these public health issues, whether it is carbon pollution or lead pollution or tobacco, health consequences that virtually every time you see many of the same people, always the same strategies of phony science thrown up to deny, delay, to create just that aliquot of doubt that will enable the political arm to prevent thing from happening. There is a correlation between the scientist trying to create that level of doubt—however phony it may be—so that that empowers the political delay apparatus to prevent things from being done to protect, in this case, the health of tiny children. It is a regrettable fact of American life right now that this is a recurring phenomenon. But it is kind of a noteworthy moment to call it out, now that we have officially decided that there is no safe level of lead in the blood of children.

I thank the Chairman very much for holding this hearing. I think it is important. I think it is unfortunate that we don't seem to have any participation from the Republican side, because it is everybody's children who are at risk from lead poisoning.

Senator BOXER. May I take this opportunity, as my friend leaves for another meeting, to say this, you are a leader. You are proven leader. President Obama also has worked very hard to get lead away from kids.

And here is your point that there is a disinformation campaign. The really tragic consequences of that is that we have learned today unequivocally that the worst of the impacts of exposure cannot be reversed. So all of these lies that have been coming out of industry that this is not a problem have had terrible impact on so many. At some point we will quantify just how many.

But I want to thank you for coming today, and also your colleague put a very good statement in the record, Senator, your colleague, Senator Reed.

I would like to call on Senator Udall.

Senator UDALL. Thank you, Chairman Boxer. And thank you for focusing in on this. I think this is a tremendously important issue.

I want to follow up a little bit with what she just talked about, the no way to reverse it, and maybe just ask the question in a little different way.

If we know that a child—you do this blood test, you find that a child has elevated blood levels, is here anything that can be done at that point to try to purge the body of the lead that is in it? Is there research going on in that area? Is this something that has been looked into?

Mr. PORTIER. Clinical intervention, there are clinical interventions for lead poisoning. But those clinical interventions carry risks as well. So they are only used in the situation where the child's life is truly at stake.

Senator UDALL. What are we talking about, Doctor?

Mr. PORTIER. Above 45 micrograms per deciliter is the recommended level at which you begin chelation therapy in children. I am pretty sure there is additional research on this area. But I will have to check for you to answer that question at lower levels.

If the source of the lead is the child's home, and it is the paint in the home, removing the paint stops that exposure. And the child's blood lead level then naturally goes down with time. And that is the benefit to the child, because they are no longer increasing their blood lead level. So it is sort of like a vaccination at that point for the lead in the child's body, and that is the best solution. Prevent the exposure in the first place. Barring that, stop the exposure when you find it.

Senator UDALL. But I would assume the sooner you get it out of the body, the better off you are.

Dr. Vandenberg, did you want to comment on that?

Mr. VANDENBERG. No, I would agree. I think that the key is to avoid exposure in the first place, and then as a child grows, the blood levels actually come down. But stopping the exposure is clearly the key factor there.

Senator UDALL. The chelation therapy you are talking about, you are giving them a chemical or something that helps the body purge it? Is that what you are suggesting?

Mr. PORTIER. Exactly. That is indeed what it is.

Senator UDALL. What do you give to do that?

Mr. PORTIER. I used to know. I can get that.

Senator UDALL. We will put it in for the record, please. Let's assume that you are doing that.

You are saying the research shows that only at this highest level do you do that. But is the research being done when we find a child with all different levels, if this chelation therapy might not work? And if you don't know, we can get that information in the record. I am just interested in, we have these situations, you find a child with a high level, and if there is anything we can do to bring that level down so that we get ourselves in a better situation for the child and for the family.

Mr. PORTIER. I will get back to you on the answer to that question.

[The information was not received at time of print.]

Senator UDALL. OK, thank you very much.

Dr. Vandenberg, in your testimony you said in 2008 the EPA lowered the level of the standard, the level of the standard 10-fold from 1978. So the 30-year period, 1978 to 2008, was there no conclusive evidence to lower the standard sooner? How did the evidence accumulate over time, over the 30-year period?

Mr. VANDENBERG. Thank you for your question. There were other evaluations that occurred during that interim period. And part of that work led to continued work with CDC and others to look at the implementation of the lead removal from paint, for example. So there was an advancement of science, but there was not a decision to change the standard until 2008. And as you know, at that time the standard was changed by an order of magnitude, very substantially.

That is the standard that is in the ambient air. And it was based on an evaluation of learning in children, i.e. detriments, trying to avoid, from our science advisors, a certain amount of IQ detriment. So it was based on a significant body of science, a very substantial and important review by our scientific advisory committee, and

then the Administrator's decision led to that change by an order of magnitude in 2008.

Senator UDALL. Yes. Now, Dr. Vandenberg, you mentioned the pathways for this coming into the body in your testimony. You talk about hand to mouth contact, inhalation of lead dust, eating peeling paint chips, drinking water conveyed through lead pipes and exposure to soil, which can act as a reservoir for deposited lead emissions.

Is there one that is more prevalent in terms of getting the lead into the body, or does it depend on the situation at the particular household? And then what is the question to the CDC, what do you do in your prevention campaigns in order to let people know, based on these pathways, what they should be doing looking for, anyway?

Mr. VANDENBERG. Thank you, Senator. To the first part of your question, for homes that have lead-based paint in them, it clearly is the ingestion of lead dust, either paint chips or dust that is in the home site that is the major source of the exposure to the children in such homes. In other communities, it may be different. It is a bit site specific, depending in the location and the community and the household setting. But generally if there is lead paint in the home, that typically is the dominant source of lead exposure.

Senator UDALL. And obviously the question, a follow up question to the CDC, what do you do in terms of the prevention side of this to let families know what they should be looking for in terms of lead-based paint and those kinds of situations?

Mr. PORTIER. Again, we have lots of recommendations along these lines with our partners at EPA and HUD. On pre-1978 housing, we strongly encourage homeowners to check their paint for lead. There are tests that can be done. They are not, from my understanding, very expensive. And that at least tells you whether you have a problem to start with.

And then we have guidance for how to, if you are going to leave the paint there, what you should be doing to minimize the exposure.

Senator UDALL. When you say pre-1978 housing, does the CDC or anyone else go in, try to go into housing and actually put flyers out or something and say, you are living in pre-1978 housing, you should get a test, this if the way to do it, if you need additional information, call us?

Mr. PORTIER. In select communities where we believe there was a high—where we believe there was a high threat based upon observing many children with high blood lead levels, we have gone door to door and notified people that they might want to get their child tested for high blood lead levels. We have come in with our partners and the State and done some of those tests.

Senator UDALL. Thank you very much, and thank you for your dedication to the safety of our children. I really appreciate your work, both at the CDC and the EPA. Thank you.

Senator BOXER. Thank you very much, Senator.

I would ask unanimous consent to place in the record studies that examine lead's impacts on human behavior. One of them is Understanding International Crime Trends: the Legacy of Pre-School Lead Exposure. The other is Early Exposure to Lead in Juvenile Delinquency. The other is Lifetime Low Level Exposure to

Environmental Lead in Children's Emotional and Behavioral Development, Ages 11 to 13. And the last one here is Early Exposure to Lead in Neuropsychological Outcomes in Adolescents. These are all authored by prominent scientists and physicians.

And then I ask unanimous consent to enter into the record a letter sent to myself and Senator Inhofe from the American Academy of Pediatrics, stating there is no safe level of lead, saying that we need support for funding for lead prevention programs. I think this is a very important letter.

[The referenced information was not received at time of print.]

Senator BOXER. I have to say, the press is always here when we are having a battle royale. Not too many press are here. But if the press wants to do a good job, if they want to go back to the days when we had journalism that really helped people, they ought to let everybody know that there is no safe level of lead, and that to play it safe, have your kid tested.

Because we learned something today very clearly. It is not complicated. It is not even debatable. And what we learned is, A, there is no safe level of lead, and that the impacts fall hardest on our children, and that not near enough kids are being tested for this. There are still 40 percent of Medicaid kids who aren't being tested, and we don't even know today, but we are going to find out the rest of the population.

And we also know that most of the horrible impacts cannot be reversed. And the only solution is to stop the exposure if you can. If it is in the home, you have a better chance at it. If it is in the toys, if it is in the dishes, if it is in the paint, there is a chance. But we don't know. Because I have the list, we have the list of where the most lead is. The first one is hazardous waste solvent recovery, primary metals, coal mining, stone clay in glass, fabricated metals, chemicals. It goes on and on. Computers, electronic products, paper, plastic and rubber. And a lot of this is going into the air, is that right, Dr. Vandenberg?

Mr. VANDENBERG. Some of that certainly is.

Senator BOXER. And a lot of it could be in the soil, is that right, Dr. Portier? Dr. Vandenberg, both?

Mr. PORTIER. Yes.

Mr. VANDENBERG. Yes.

Senator BOXER. So you agree with that. So the air, the soil, what about the water?

Mr. PORTIER. To some degree, but a lesser extent.

Senator BOXER. Do you agree with that?

And in these products, so here is the situation. People don't know this. And we all talk about why are we having a problem with attention deficit disorder. Maybe the answer is in front of our face. And at the same time, we look at the House, and they are cutting the EPA budget to the bone, with talk about how the EPA is a terrible agency. They have a war against the Environmental Protection Agency. Seventy-five of the people disagree with them, but that doesn't stop them.

And so I want to thank you, from the bottom of my heart. Because I have learned a tremendous amount today. I am proud of the work that is being done in California. But I have to tell you,

this is a national problem. And we do have a President who really took a big lead when he was on this Committee on this issue.

So let's let the word go out from here, not from elected officials, but from the doctors that there is no safe level of lead, that there are terrible problems associated with any level of exposure, that those problems are very hard to reverse, and we need to prevent this problem in the first place. And the best way to do that is to test your child for exposure to lead, see if there is anything in the home that is leading to this problem, and for the rest of us, we have to work outside the home to make sure that we clean up hazardous waste sites, Superfund sites, and get rid of this stuff.

I guess I have one question. If an adult is exposed, you touched on it briefly, but I want to go back to that. And let's say they didn't have exposure as a kid but if an adult now is exposed, what are the problems? Either of you can answer or both of you can answer.

Mr. VANDENBERG. There is evidence that increased lead is associated with changes in blood pressure and hypertension in adults.

Senator BOXER. Anything else, Dr. Portier?

Mr. PORTIER. There is some indication of an increase in essential tremors in adults as well. And in adult men, adverse changes in sperm parameters and increased time to pregnancy.

Senator BOXER. What about time to pregnancy?

Mr. PORTIER. Increased time to pregnancy in adult men. And then in adult women, reduced fetal growth.

Senator BOXER. OK, so what we have now is additional information that for adults, there are serious problems, that include high blood pressure, tremors, problems with reproductive health. Now, USA Today—when did this run? In May, ran a story that said that old closed factories that emitted lead that have not been adequately tested, located all over the United States, could be a source of exposure. So these are the kinds of things we need to deal with.

But right now, I say take it one step at a time. Test those children and adults should be tested as well. We have an epidemic of high blood pressure. It is millions of people, is it not, Dr. Portier, that have high blood pressure? And if it is something that they are exposed to in the home as well, this could change things. Am I right, Dr. Vandenberg? If you reduce the exposure?

Mr. VANDENBERG. Again, the increase in lead is associated with higher blood pressure, hypertension, as well as renal effects that I might mention as well.

Senator BOXER. Renal effects. Can that be reversed if the source is done away with? Or is that going to be with you the rest of your life?

Mr. VANDENBERG. There are a lot of factors that influence those outcomes. So it could be affected by other factors, such as nutrition.

Senator BOXER. No, I wasn't asking that. If you took away, if it was caused by the lead exposure and you took away that exposure, it was something in the home for an adult, would that have a good impact or not necessarily on the blood?

Mr. VANDENBERG. I can't really say; I am not sure.

Senator BOXER. All right. Lead is bad. And we need to do everything in our power to protect people in this country from it. And let the word go out to those who would print lies and disinformation that this Committee is going to stand very tall on

this one, and we are not going to allow that disinformation to influence the people of this country who are very smart, and they believe the doctors. And we are going to make sure of that.

I want to thank both of you. You are doing a great job. Your testimony was clear, unequivocal and it means a lot to those of us on this Committee.

We stand adjourned. Thank you.

[Whereupon, at 11:20 a.m., the Committee was adjourned.]

[An additional statement submitted for the record follows:]

STATEMENT OF HON. JAMES M. INHOFE,
U.S. SENATOR FROM THE STATE OF OKLAHOMA

I understand that we are having a hearing today about one of the things that I think all Members of Congress agree on: lead exposure in children is harmful. I appreciate the opportunity to hear from both the CDC and EPA about their ongoing scientific understanding of how lead impacts human health.

Before we get started, I hope we take a minute to discuss the very important public health success story we have regarding reducing lead exposure in children. Since 1976 average blood lead levels in children have been reduced nearly 10-fold, from 15 micrograms per deciliter in 1976 to 1.5 micrograms per deciliter in 2008. The number of children tested each year has increased while the blood lead level of those tested continues to decrease. In most States, CDC's old blood lead level of concern of 10 micrograms per deciliter or greater is found in less than 1 percent of children tested. We have accomplished this by focusing on those sources of lead exposure that had a significant impact on blood lead levels. The United States has some of the lowest lead paint limits and limits on the lead content of toys in the entire world. We have minimized or eliminated hazardous amounts of lead in consumer products, gasoline, and the environment, resulting in a dramatic decrease in blood lead levels across the entire nation.

We here in Congress continue to take steps toward further reducing lead exposure. Last Congress, Senator Boxer and I were successful in updating the definition of "lead free" in the Safe Drinking Water Act—through the Reduction of Lead in Drinking Water Act—which tightened the legal definition of "lead free" for pipes and fixtures from 8 percent to 0.25 percent lead in the whetted surfaces of pipes. Additionally, as part of the FAA Modernization and Reform Act this year, we authorized the FAA Administrator to continue the important work on research and development for a safe transition to unleaded aircraft fuel.

As we continue to take additional steps toward further reducing childhood lead exposure, I would encourage my colleagues to focus on ensuring that we are proposing achievable, common sense responses to the problem that will provide actual health benefits to children. Our approach toward reducing toxicologically significant blood lead levels must be based on a scientific approach and not precautionary paranoia. And we need robust oversight to ensure that the programs we have in place are effective.

I am disappointed that we as a Committee are missing a real opportunity to get feedback on EPA's current regulatory efforts to reduce childhood lead exposure. I am pleased that Dr. Vandenberg is here to discuss EPA's NAAQS revisions on lead, and I'm sure he would agree with me that a major success of the Clean Air Act and EPA's regulatory efforts is the removal of lead from motor vehicle gasoline. This has had a dramatic effect of lowering levels of lead in the air. They decreased by 94 percent between 1980 and 1999. Unfortunately, it does not appear we have anyone present who can update us on the implementation of the Reduction of Lead in Drinking Water Act, either from the regulator or regulated community, or to update us about other EPA programs.

I am very concerned that EPA's current efforts to further reduce lead exposures are not achieving their full potential. EPA's Lead Renovation, Repair and Painting rule's implementation has been inconsistent and confusing, and I am very concerned that the benefits of this rule are not being fully realized. When we have exercised oversight, positive changes have been made. Last Congress, the Senate overwhelmingly approved the Collins amendment to H.R. 4899, which resulted in EPA extending the compliance deadline for taking lead safe training courses. Since then, there have continued to be issues with the program's execution and poor enforcement that I believe require additional oversight in order to ensure that the program actually achieves its health goals: protecting children from lead dust exposure. Madam Chairman, I would remind you that last year the Republicans on this Committee

requested an oversight hearing on this rule, and we have yet to have one. I know there are still many concerns and confusion from the regulated community and the public health community about how EPA is enforcing and educating the public, and I hope that we can address them at a future hearing.

Each year we get closer to reducing the blood lead levels of the population of this nation to that of the background exposure level of the ambient environment. I hope that as we move forward from this hearing toward developing policies that help further address lead exposure, we focus on science-based, common sense approaches that will provide achievable and meaningful health benefits.