THIRSTY FOR RESULTS: LESSONS LEARNED FROM THE DISTRICT OF COLUMBIA'S LEAD CONTAMINATION EXPERIENCE

HEARING

BEFORE THE

COMMITTEE ON GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED EIGHTH CONGRESS

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THIRSTY FOR RESULTS: LESSONS LEARNED FROM THE DISTRICT OF COLUMBIA'S LEAD CONTAMINATION EXPERIENCE

FRIDAY, MAY 21, 2004

HOUSE OF REPRESENTATIVES,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The committee met, pursuant to notice, at 10:02 a.m., in room 2154, Rayburn House Office Building, Hon. Tom Davis of Virginia (chairman of the committee) presiding.

Present: Representatives Tom Davis of Virginia, Cummings, Van Hollen, and Norton.

Staff present: David Marin, deputy staff director and director of communications; Keith Ausbrook, chief counsel; John Hunter, counsel; Robert Borden, counsel and parliamentarian; Drew Crockett, deputy director of communications; Teresa Austin, chief clerk; Brien Beattie, deputy clerk; Robert White, press secretary; Phil Barnett, minority staff director; Krista Boyd, Althea Gregory, and Rosalind Parker, minority counsels; Earley Green, minority chief clerk; Jean Gosa, minority assistant clerk; and Chris Hicks, counsel from Ms. Norton's staff.

Chairman TOM DAVIS. Good morning.

The Committee on Government Reform will come to order.

Welcome to today's hearing entitled, "Thirsty for Results: Lessons Learned from the District of Columbia's Lead Contamination Experience."

On March 5, 2004, the committee held a hearing to review the condition of lead contamination in the District of Columbia's water supply and examine Federal and local agencies' responsibilities for drinking water safety in D.C. and the surrounding jurisdictions. After the hearing, the committee requested additional information from the Environmental Protection Agency, the U.S. Army Corps of Engineers, Washington Aqueduct and the District of Columbia Water and Sewer Authority regarding specific actions taken by each agency to combat the elevated lead levels in the District's water system. These agencies have taken a number of steps to address this situation, including supplying water filters to affected District residents, additional testing of residences, schools and libraries, blood screening for affected children under 6 and pregnant and nursing women, and also expanded public outreach.

While each agency is taking additional steps to fix the problem, the committee will continue to consider how elevated lead levels in the District's drinking water could have been prevented and wheth-

er the current response adequately protects public health. There are still some unanswered questions. What caused the spike in lead levels in the D.C. area? Did the responsible agencies adequately consider research on the use of chloramines before introducing them into the water system? Is the lead testing protocol adequate? Is the current public information campaign effective? Has WASA complied with the EPA's request? Are those requests appropriate? Last, is there cause for more widespread concern in jurisdictions around the Nation?

Congresswoman Eleanor Holmes Norton recently introduced H.R. 4268, the Lead Free Drinking Water Act of 2004, which would amend the Safe Drinking Water Act intended to ensure that the District of Columbia and States provide a safe and lead-free supply of drinking water. The legislation attempts to address the concerns raised by the lead crisis in the Nation's Capital. This legislation would impose new responsibilities on the EPA and water utilities nationwide.

The purpose of today's hearing is two-fold. First, we intend to address the current status of the lead problem in the District, its causes and the governmental response, including reformulation of water, lead service line replacements and communications with the public. Second, we want to focus on whether the current Safe Drinking Water Program is adequate to assure safe drinking water for the consuming public, both in the District of Columbia and across the Nation, or whether additional measures, either legislative or regulatory, are necessary to accomplish these objectives.

I expect to explore whether the situation in the District of Columbia is indicative of water systems throughout the country or whether it is unique. That assessment will assist in determining whether the experience in the District justifies changes to the Safe Drinking Water Act. Part of this process necessarily includes an examination of the scope of the problem as suggested by the District's experience, the costs and benefits that additional requirements would impose on water systems across the country, and the possible tradeoffs between expenditures for lead-free drinking water and other programs to protect the public health, safety and welfare.

We have a distinguished panel of witnesses before us. We have gathered major players and advocates who are well versed on the lead issue. I look forward to hearing their testimony and how we can move forward and assure that all residents in the capital region and across the country have safe drinking water. Our witnesses will discuss Federal regulations concerning the monitoring of lead levels and drinking water, the status of the District's drinking water lead levels and remediation effects, and their assessments of the need for changes in the current Federal regulations of lead in the Nation's drinking water supply.

I would now recognize Ms. Norton for an opening statement.

[The prepared statement of Chairman Tom Davis follows:]

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"Thirsty for Results: Lessons Learned from the District of Columbia's Lead Contamination Experience"

Opening Statement of Chairman Tom Davis
Committee on Government Reform
2154 Rayburn House Office Building
Friday, May 21, 2004 at 10:00 am

Welcome to today's hearing entitled "Thirsty for Results: Lessons Learned from the District of Columbia's Lead Contamination Experience."

On March 5, 2004, this Committee held a hearing to review the condition of lead contamination in the District of Columbia water supply and to examine Federal and local governmental agencies' responsibilities for drinking water safety in the District of Columbia and surrounding jurisdictions.

After the hearing, the Committee requested additional information from the Environmental Protection Agency, the U.S. Army Corps of Engineers Washington Aqueduct, and the District of Columbia Water and Sewer Authority regarding specific actions taken by each agency to combat the elevated lead levels in the District water system. These agencies have taken a number of steps to address this situation, including supplying water filters to affected District residents, additional testing of residences, schools, and libraries, blood screening for affected children under six and pregnant and nursing women, and expanded public outreach. While each agency is taking additional steps to fix the problem, the Committee will continue to consider how elevated lead levels in the District's drinking water could have been prevented and whether the current response adequately protects public health.

There are still unanswered questions. What caused the spike in lead levels in the D.C. area? Did the responsible agencies adequately consider research on the use of chloramines before introducing them into the water system? Is the lead testing protocol adequate? Is the current public information campaign effective? Has WASA complied with EPA's requests? Are those requests appropriate? And lastly, is there cause for more widespread concern in jurisdictions around the nation?

Congresswoman Eleanor Holmes Norton recently introduced H.R.4268, the Lead-Free Drinking Water Act of 2004, which would amend the Safe Drinking Water Act intended to ensure that the District of Columbia and States provide a safe and lead free supply of drinking water. The legislation attempts to address the concerns that were raised by the lead crisis in the District of Columbia. This legislation would impose new responsibilities on EPA and water utilities nationwide.

The purpose of this hearing is twofold. First, we intend to address the current status of the lead problem in the District -- its causes and the governmental responses, including reformulation of the water, lead service line replacement, and communications with the public.

Second, we will focus on whether the current Safe Drinking Water program is adequate to assure safe drinking water for the consuming public both in the District of Columbia and across the nation, or whether additional measures, either legislative or regulatory, are necessary to accomplish that objective. I expect to explore whether the situation in the District of Columbia is indicative of water systems throughout the country or whether it is unique. That assessment will assist in determining whether the experience in the District of Columbia justifies changes to the Safe Drinking Water Act.

Part of this process necessarily includes an examination of the scope of the problem (as suggested by the District's experience), the costs and benefits that additional requirements would impose on water systems across the country, and the possible trade-offs between expenditures for lead-free drinking water and for other programs that protect the public health, safety, and welfare.

We have a distinguished panel of witnesses before us. We have gathered major players and advocates who are well versed on the lead issue. I look forward to hearing their testimony on how we can move forward to assure that all residents in the Capital region and across the country have safe drinking water.

Our witnesses will discuss federal regulations concerning the monitoring of lead levels in drinking water, the status of the District of Columbia's drinking water lead levels and remediation efforts, and their assessments of the need for changes in the current federal regulation of lead in the nation's drinking water supply.

Ms. NORTON. Thank you very much, Mr. Chairman.

I very much appreciate the attention Chairman Davis has given to the lead contamination water crisis in the District and region, unhesitatingly agreeing to our first hearing in March as well as to this hearing following the introduction of a bill I have co-sponsored with Senator Jim Jeffords to address the issues.

The city's residents, Mr. Chairman, I can convey to you have been particularly grateful for your oversight because two of the three agencies involved with our water are Federal agencies. It has brought some comfort to our residents to know that Congress, through your leadership, felt the city's water crisis and the health of its residents warranted congressional involvement.

I have only brief remarks this morning because we have heard from some of these witnesses before and the EPA, WASA and the Washington Aqueduct have begun to take some of the necessary actions which might have forestalled a crisis had these measures been standard operating procedures. This morning's report of the effect of chlorine in significantly reducing lead in our drinking water is a case in point. As our last hearing made clear, the Aqueduct switched from chlorine to chloramines, apparently elevating lead contamination without conducting a corrosion control study. Astonishingly, the EPA regulations still do not require such a study.

The bill Senator Jeffords and I introduced last month requires a corrosion control study within a year of any change in the chemicals used to treat drinking water. Nevertheless, I believe nothing is to be gained by rehashing the extensive evidence of this and similar deficiencies in the EPA regulations and WASA and Aqueduct practices. Our time is best served by trying to find a path toward remedy and correction today. Particularly now that the bill has been introduced, I am interested in learning from today's witnesses what actions Congress should take first to begin to be responsive to what all agree the District's experienced signals is the need for some changes.

Our bill is drawing directly from the serious lead contamination crisis still underway in the District. By now, there is little question that similar problems exist in similarly situated water systems operating under the same regulations and enforcement methods used in the District. Because the D.C. crisis was both deep and wide and exposed so many problems, our bill follows suit.

Senator Jeffords and I live in the real world of the Senate and the House and have no illusions about what may be possible. My goal now is to work with the EPA, WASA, the Aqueduct and this committee to make a good faith start on restoring confidence in the ability of the Federal Government and WASA to provide safe drinking water to the people of the United States and the District of Columbia. This hearing should be useful in deciding how to proceed. Our bill is geared far more toward rulemaking than prescription. It is the EPA that issued the current regulations in 1991 and it is the EPA that would engage in similar rulemaking under our bill. After nearly 15 years under the current rules and the problems that have been uncovered, it is time to review what we have learned from the D.C. crisis and from new developments in the basic science and to seek agreement on priorities for change.

Again, I very much appreciate this hearing, Mr. Chairman, and I express my appreciation as well to all of today's witnesses.

Mr. Chairman, may I also ask that the statement of Mr. Waxman, the ranking member of this committee, be entered into the record.

Chairman TOM DAVIS. Without objection, the statement will be in the record and the Members can have 5 legislative days to submit opening statements for the record.

[The prepared statement of Hon. Eleanor Holmes Norton follows:]

ELEANOR HOLMES NORTON
DISTRICT OF COLUMBIA

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Statement Of Congresswoman Eleanor Holmes Norton
Committee on Government Reform
"Thirsty for Results: Lessons Learned from the District of Columbia's Lead Contamination Experience"

May 21, 2004

I very much appreciate the attention Chairman Tom Davis has given to the lead contamination water crisis in the District and region, unhesitatingly agreeing to our first hearing in March, as well as to this hearing following the introduction of a bill I have co-sponsored with Senator Jim Jeffords to address the issues. The city's residents, Mr. Chairman, I can convey to you, have been particularly grateful for your oversight because two of the three agencies involved with our water are federal agencies. It has brought some comfort to our residents to know that Congress, through your leadership, felt the city's water crisis and the health of its residents warranted congressional involvement.

I have only brief remarks this morning because we have heard from some of these witnesses before, and EPA, WASA, and the Washington Aqueduct have begun to take some of the necessary actions which might have forestalled a crisis had these measures been standard operating procedures. This morning's report of the effect of chlorine in significantly reducing lead in our drinking water is a case in point. As our last hearing made clear, the Aqueduct switched from chlorine to chloramines, apparently elevating lead contamination, without conducting a corrosion control study, and astonishingly EPA regulations still do not require such a study. The bill Senator Jeffords and I introduced last month requires a corrosion control study within one year of any change in the chemicals used to treat drinking water. Nevertheless, I believe nothing is to be gained by rehashing the extensive evidence of this and similar deficiencies in EPA regulations and WASA and Aqueduct practices. Our time is best served by trying to find a path toward remedy and correction today. Particularly now that a bill has been introduced, I am interested in learning from today's witnesses what actions Congress should take first to begin to be responsive to what all agree the D.C. experience signals is the need for some changes.

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Our bill is drawn directly from the serious lead contamination crisis still underway in the District. By now there is little question that similar problems exist in similarly situated water systems operating under the same regulations and enforcement methods used in the District. Because the D.C. crisis was both deep and wide and exposed so many problems, our bill follows suit. Senator Jeffords and I, of course, live in the real world of the Senate and the House and have no illusions about what may be possible. My goal now is to work with the EPA, WASA, the Aqueduct and this Committee to make a good faith start on restoring confidence in the ability of the federal government and WASA ability to provide safe drinking water to the people of the United States and the District of Columbia..

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Again, I very much appreciate this hearing, Mr. Chairman, and I express my appreciation as well to all of today's witnesses.

Chairman TOM DAVIS. We also have written statements from D.C. Councilman Harold Brazil and Mike Keegan from the National Rural Water Association to be entered into the record.

I want to recognize our first panel. We have the Honorable Benjamin Grumbles, Acting Assistant Administrator for Water, U.S. EPA; Mr. Donald Welsh, Administrator, Region III, U.S. EPA; Mr. Thomas P. Jacobus, general manager, Washington Aqueduct, Baltimore District, U.S. Army Corps of Engineers; and Jerry N. Johnson, general manager, District of Columbia Water and Sewer Authority.

As I think you all know, it is the policy of the committee that all witnesses be sworn before testifying.

[Witnesses sworn.]

Chairman TOM DAVIS. Thank you.

We would like to keep your opening statements to 5 minutes. Your entire statements are in the record without objection. The questions will be based on the entire statement, but you are given 5 minutes to kind of put it together and sum up. Your light in front of you will be green when you start, it will be orange after 4 minutes and turn red at the end of 5 minutes.

We appreciate all of you being with us and look forward to your testimony and being able to ask questions.

Mr. Grumbles, we will start with you and move down the line. You have been here before. Thanks for coming back.

STATEMENTS OF BENJAMIN GRUMBLES, ACTING ASSISTANT ADMINISTRATOR FOR WATER, U.S. EPA; DONALD WELSH, ADMINISTRATOR, REGION III, U.S. EPA; THOMAS P. JACOBUS, GENERAL MANAGER, WASHINGTON AQUEDUCT, BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS; AND JERRY N. JOHNSON, GENERAL MANAGER, DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

Mr. GRUMBLES. Thank you, Mr. Chairman. Thank you, Congresswoman Norton for putting together what looks to be a very balanced and important hearing.

I am appearing with Don Welsh, Regional Administrator for Region III. What I would like to do is touch briefly upon the lessons learned and also I would say you have billed the hearing as lessons learned and I would say it should also be lessons learning. Clearly all of us are still learning as aggressively as we can trying to get to the bottom of the situation here in the District and importantly, reach conclusions about national implications and steps forward.

The first thing I would like to say is that the EPA continues to place a very high priority and take extremely seriously lead in drinking water. This is an important threat and one that we believe merits the highest degree of attention. I also want to emphasize that I am not here to define the status quo or even to defend the rule that is 13 years old. I am here to tell you that we are looking at the situation with an open mind and look forward to working with you closely in giving a hard, honest look at the existing guidance as well as the regulations and make sure that lessons are learned not just at the Federal level but at all levels involved in protecting the Nation's drinking water.

One of the important first steps that we took after the discovery of the incident in the District of Columbia was the formation of the Technical Expert Working Group and also to establish an independent peer review of that group recognizing how important it is and how critical the science, the chemistry, the corrosion and all the roles they play in this situation. We are currently working along those lines with the Technical Expert Working Group and the independent peer review panel.

I would also like to briefly describe three of the things we are doing at the national level. The first is that we are aggressively pursuing a national review of compliance and enforcement of the 1991 lead and copper rule. I have written to all of the regions to work with the States to get as much data as we possibly can about the state of compliance with the lead and copper rule. The data we have indicates that the lead in drinking water is not a national problem, it is not a systemic, pervasive problem. It is a serious problem, a manageable problem in some areas of the country.

The data we have gathered also indicates that since 2000, there are 22 systems serving populations greater than 50,000 that have exceeded the action level. The most recent data of 2003 indicates that eight of those systems have exceeded the action level. We should never diminish the importance of any one exceedence but it is also important to indicate that the data we have from the States is that this is not a pervasive national problem. This is a national opportunity to look very seriously at our existing guidance and regulations and learn lessons from the experience in the District of Columbia.

One of the other things we are doing in addition to the national compliance review is to aggressively review existing guidance that the EPA has and the regulation and to gather lists of ideas to possibly revise or improve upon existing guidance and the regulation. We have held several expert workshops. We just recently held two in St. Louis earlier in the month and the first was on the simultaneous compliance which is a critically important issue. It is not easy to be a utility manager and continue to provide safe drinking water to the public. There are lots of balances, lots of important decisions to be made and simultaneous compliance. The expert workshop we had, we think is a very important step forward.

The other one we held was on sampling and monitoring protocols, another important aspect of the whole experience in the District of Columbia, making sure we have accurate, timely and uniform protocols for monitoring to check the quality of the drinking water.

Mr. Chairman, we plan to hold more workshops. We think now is the best time to have a vigorous and robust debate with the scientific community and the public and public water suppliers on ways to improve upon the existing guidance or possibly the regulation. We think these workshops are key in that. One of the workshops will involve lead in schools.

That is the last point I want to make. We all recognize the importance of protecting school children and kids at day care facilities and that is why we are systematically reviewing the policies and programs of the States throughout the country to ensure that action levels are not exceeded in schools.

The last point I would make, Mr. Chairman, I recognize my time has expired, but I may just make a point about the proposed legislation that Delegate Norton and Senator Jeffords have introduced. I recognize that a lot of thought has been put into this legislation. It is a very good road map for all of us to discuss, to review the various range of policy issues. I personally continue to believe that comprehensive national legislation at this point is premature but I would commend the drafters of the legislation for raising these many different issues and aspects. I think it is worthy of debate and discussion within the context of our existing guidance and our rulemaking. We look forward to that.

The last point is in terms of lessons learned, I think the key lesson we are learning is the critical importance of communication on drinking water quality and lead in drinking water, accurate, timely, relevant and useful information is critically important and I think all of this discussion is going to help the country as a whole in being better prepared with potential lead and drinking water issues throughout the country.

Thank you.

[The prepared statement of Mr. Grumbles follows:]

STATEMENT OF
BENJAMIN GRUMBLES
ACTING ASSISTANT ADMINISTRATOR FOR WATER
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
GOVERNMENT REFORM COMMITTEE
UNITED STATES HOUSE OF REPRESENTATIVES
May 21, 2004

Good morning, Mr. Chairman and Members of the Committee. I am Benjamin Grumbles, Acting Assistant Administrator for Water at the United States Environmental Protection Agency (EPA). I welcome this opportunity to return to the Committee to further discuss the issue of lead in drinking water and update the Committee on actions that EPA has been taking at the national level to address the matter. Regional Administrator Welsh will update you on activities underway to address the specific situation related to elevated lead levels in the District of Columbia's (D.C.'s) drinking water.

Lead as a Public Health Concern

As I noted at the March 5 hearing, EPA places a high priority on reducing exposure to lead. This contaminant has been found to have serious health effects, particularly for children. Health effects may include delays in normal physical and mental development in infants and young children; slight deficits in the attention span hearing, and learning abilities of children; and, high blood pressure in some adults (which may lead to kidney disease and increased chance of stroke). But pregnant women and children are our primary concern. The Centers for Disease Control and Prevention (CDC) has identified a blood lead level of 10 micrograms per deciliter as the

level of concern for lead in children. Approximately 2% of children between the ages of 1 to 5 were estimated to have blood levels that exceeded the level of concern for the period 1999-2000, a significant decrease from the 88% estimated to exceed that level for the period between 1976 to 1980. [Surveillance for Elevated Blood Lead Levels Among Children – United States, 1997–2001. Centers for Disease Control and Prevention. Surveillance Summaries, September 12, 2003. MMWR 2003:52 (No. SS-10)].

The most common source of lead exposure for children today is lead in paint in older housing and the contaminated dust and soil it generates. [see Risk Analysis to Support Standards for Lead in Paint, Dust and Soil (EPA 747-R-97-006, June 1998] This is primarily from housing built in the 1950s and homes with pre-1978 paint. Several Federal programs and surveillance and prevention programs at the State and local level continue to work towards reducing exposure to lead. In addition, EPA works with Federal agencies through the President's Task Force on Environmental Health Risks and Safety Risks to Children – on implementing a federal strategy to virtually eliminate childhood lead poisoning.

Lead in Drinking Water

Although the greatest risks are related to paint, lead in drinking water can also pose a risk to human health. To reduce potential exposure to lead, EPA has set a maximum contaminant level goal of zero for lead in drinking water and has taken several actions over the last 20 years to reduce lead in drinking water. The 1986

Amendments to the Safe Drinking Water Act (SDWA) effectively banned the new use of lead solder, and leaded pipes from public water supply systems and plumbing, and limited faucets and other brass plumbing components to no more than 8% lead. To address lead in schools, the Lead Contamination Control Act (LCCA) of 1988 recalled drinking water coolers with lead-lined water reservoir tanks, and banned new drinking water coolers with lead parts. The 1986 SDWA Amendments also directed EPA to revise its regulations for lead and copper in drinking water.

An interim standard for lead in drinking water of 50 micrograms per liter, or parts per billion (ppb), had been established in 1975. Sampling of customer taps was not required to demonstrate compliance with this standard. In 1988, the Agency proposed revisions to the standard and issued a final standard in 1991. The revised standard significantly changed the regulatory framework. Unlike most contaminants, lead is not generally introduced to drinking water supplies from the source water. The primary sources of lead in drinking water are from lead pipe, lead-based solder used to connect pipe in plumbing systems, and brass plumbing fixtures that contain lead. Setting a standard for water leaving the treatment plant fails to capture the extent of lead leaching in the distribution system and household plumbing.

EPA requires public water suppliers to meet the regulations governing treated water quality distributed via the public water system. The regulations do not require homeowners to replace their plumbing systems if they contain lead. To reduce consumers' lead exposure from tap water, EPA used its available authorities to require public water suppliers to treat their water to make it as non-corrosive as possible to

metals in their customers' plumbing systems. These treatment requirements were issued in EPA's Lead and Copper Rule (LCR) on June 7, 1991.

The rule requires systems to optimize corrosion control to prevent lead and copper from leaching into drinking water. Large systems serving more than 50,000 people were required to conduct studies of corrosion control and to install the State-approved optimal corrosion control treatment by January 1, 1997. Small and medium sized systems are required to optimize corrosion control when monitoring at the consumer taps shows action is necessary.

To assure corrosion control treatment technique requirements are effective in protecting public health, the rule also established an Action Level (AL) of 15 ppb for lead in drinking water. Systems are required to monitor a specific number of customer taps, according to the size of the system, with a focus on sites that have lead service lines or lead-based solder in their plumbing systems. If lead concentrations exceed 15 ppb in more than 10% of the taps sampled, the system must undertake a number of additional actions to control corrosion and to inform the public about steps they should take to protect their health. If a water system, after installing and optimizing corrosion control treatment, continues to fail to meet the lead action level, it must begin replacing the lead service lines under its ownership. The rule was subsequently revised in 2000 to modify monitoring, reporting and public education requirements, but the basic framework, including the action level, was not changed.

Actions Undertaken by EPA Headquarters to Address the D.C. Situation

As Regional Administrator Welsh will describe, EPA has been working with WASA and the Washington Aqueduct, managed by the U.S. Army Corps of Engineers, which supplies water to WASA, to identify a treatment solution to reduce levels of lead from customer taps in many Washington, D.C. homes.

I fully understand the concerns that Congressional Members and Committees and City Leaders have regarding timely and effective public notification. EPA is reviewing the actions taken by all parties to ensure that we use the lessons learned to prevent such an event from taking place in the future – here in D.C. and in other communities across the nation. While the situation in D.C. appears to be unique, we are continuing to investigate the matter. However, in surveying States and regions, we have not identified a systemic problem of increasing lead concentrations in tap monitoring conducted by public water systems.

Staff from my program and EPA's Office of Research and Development have been working closely with the Region to provide technical assistance and are participating on the Technical Expert Working Group (TEWG) evaluating potential technical solutions to elevated lead levels. My staff convened a peer review panel to carry out an independent review of the TEWG's Action Plan. The input of the peer reviewers facilitated an acceleration of the technical solution to the problem that Regional Administrator Welsh will discuss.

National Actions to Evaluate Lead in Drinking Water

As head of the national water program, I have directed my staff to undertake a number of actions to address the specific issue of lead in drinking water from a national perspective.

National Review of Compliance and Implementation of the Lead & Copper Rule

My staff are working with our enforcement and regional drinking water program managers to embark on a thorough review of compliance with, and implementation of, the LCR. Our review will answer three questions:

1. Is there a national problem? Does a significant percentage of the population receive water that exceeds the lead action level? Do a significant percentage of systems fail to meet the lead action level?
2. How well has the rule worked to reduce lead levels in systems over the past 12 years, particularly in systems that had demonstrated high lead levels in the initial rounds of sampling?
3. Is the rule being effectively implemented today, particularly with respect to monitoring and public education requirements?

Our initial focus is to ensure that EPA has complete and accurate information on the LCR in its Safe Drinking Water Information System (SDWIS). States were required to report specific results of monitoring (i.e., 90th percentile lead levels) to EPA for systems serving populations greater than 3,300 people beginning in 2002. At the March 5 hearing, using the incomplete information we had at that time, I reported that EPA had identified 4 systems serving more than 50,000 that had exceeded the action

level. Following that hearing, I sent a memorandum to Regional Administrators asking them to work with the States to ensure that all available information is loaded into the data system by the end of June.

As of April 28, 2004, states had submitted information to SDWIS for 85% of the 838 active systems in the country that serve more than 50,000 people. A summary of those data were made available to the public on May 3, 2004. We found that 22 of the 714 systems for which we have data exceeded the lead action level during one or more monitoring periods since 2000. Only eight of the systems, one of which is D.C., exceeded the action level during a monitoring period in 2003.

Although we are currently seeing problems in the District, it appears that the 1991 regulation, which required systems serving more than 50,000 to install corrosion control has been effective in reducing the public's exposure to lead in drinking water. However, even though we have had success in reducing exposure, we must remain vigilant to ensure that treatment continues to control corrosion and that information on potential risks is communicated to the public. EPA continues to collect data for other size systems and will release interim reports as results become available.

We are working to carry out a review of the systems that exceeded the action level in the initial rounds of sampling. We will work with our regional staff and states to better understand the actions taken by those systems to address elevated levels of lead and whether those actions have been effective in lowering lead levels. Later this year we will embark upon a review of state programs to determine if the rule is being

effectively implemented by those systems that have recently exceeded the action level.

Expert Workshops

Another component of EPA's national efforts include a review of the existing requirements of the rule and associated guidance to determine if changes need to be made to help utilities and states better implement the rule. The provision of safe drinking water is not an easy task. Treatment processes must be balanced to address multiple risks. EPA has developed guidance to assist systems in selecting among corrosion control treatment options and in balancing treatment processes when working to achieve simultaneous compliance with different standards. EPA has also released guidance to help utilities carry out effective public education and monitoring programs.

To help the Agency obtain additional information from experts, EPA is holding workshops on several components of the LCR Rule. The first two workshops were held in St. Louis, Missouri during the week of May 10. Thirty experts in corrosion control, water treatment, sampling and laboratory analysis participated in one or both of the workshops, and more than twenty observers attended. The first addressed utility experiences in managing simultaneous compliance with multiple drinking water rules and the second addressed sampling protocols for the rule. The experts noted that additional Agency guidance is needed to aid water systems in evaluating treatment changes, including disinfection changes and changes to coagulation processes, and the effectiveness of different corrosion inhibitors. The experts also identified concerns with distribution system maintenance and impacts of household plumbing on a system's

ability to comply with the rule. Participants suggested that EPA review sampling provisions including the tiering criteria that identify households for sampling and also suggested additional guidance on what monitoring is appropriate to evaluate the effects of treatment changes.

Experts in both workshops also identified issues that they believe warrant expert discussion in future workshops. These issues include small system issues, health effects of lead and risk communication, lead service line replacement requirements, monitoring for lead in schools, and seeking to completely remove lead from brass alloys used in plumbing fixtures and other devices. EPA is planning to schedule workshops on additional subjects such as public education later in the year.

Monitoring for Lead in School Drinking Water

As I noted in my March 5 testimony, all of us want to ensure that the nation's school children are not exposed to elevated lead levels in their drinking water. While States and schools took action in the late 1980's and early 1990's to remove harmful lead-lined coolers in accordance with the 1988 Lead Contamination Control Act (LCCA), lead solder and plumbing fixtures can still contain low levels of lead. States and schools should continue to monitor their water outlets to ensure that children are protected using EPA's recommended protocol for testing water in schools for lead. In March, I sent letters to State Directors of Health and Environmental Agencies seeking their help in better understanding State and local efforts to monitor for lead in school drinking water.

To date, we have heard from almost all states. We are reviewing their responses and will release a summary in the near future. Generally, states responded that they implemented the requirements associated with the LCCA and continue to focus on ensuring that schools with their own water system are in compliance with the LCR. However, it does not appear that many states have specific programs focused on preventing exposure to lead in drinking water in schools and day care facilities that receive water from a water system. We will use the information provided by states to determine if updated or additional guidance should be developed to help States and local governments conduct more comprehensive monitoring in schools and day care facilities.

Committee Questions and the Lead-Free Drinking Water Act of 2004

Your invitation letter asked whether I believe the current drinking water program is adequate. The answer is yes. However, while I do not believe the current structure of the safe drinking water program needs to be reformed to ensure that the public consumes safe drinking water, I do believe that we need to be vigilant in ensuring that the protections we have in place through law and regulation are carried out by states and water utilities.

You also asked me to address H.R. 4268, which would overhaul provisions of the Safe Drinking Water Act related to lead. I welcome discussion with members of Congress on this important matter and fully understand that we have questions to answer as a result of the situation in D.C. While there are elements of the legislation

that I find interesting, I believe that comprehensive legislation is premature at this time. It is critical that we have an understanding of the national scope of the problem before we move to make legislative changes that would affect all states and water systems. As to whether the bill would have prevented the situation in D.C., EPA is still working to determine the specific causes for elevated levels of lead. It would appear that the situation may have been caused by a combination of unique circumstances that would not necessarily have been prevented by the legislation. Any law or regulation is only as good as its' implementation. As we have noted in prior testimony, the monitoring required under the regulation identified that a problem existed, however, the reaction to the problem and associated public education efforts were inadequate. This was not a failure of the Act or of EPA's regulation, but of proper implementation and vigorous oversight.

Conclusion

Mr. Chairman, this reminds us all of the importance of communication – especially with the public. To maintain public health and confidence, information communicated to the public must not only be accurate, but timely, relevant and understandable. While I believe that communication efforts on the part of the Region, the District's Department of Health and WASA have improved, there is still much to be done to ensure that the city's residents are aware of the steps they can take to protect their health.

The review of compliance and implementation, expert workshops and other efforts underway will help the Agency to determine whether it is appropriate to develop additional training or guidance or make changes as part of our review of existing regulations. Our immediate goal is to ensure that the residents and D.C. receive safe water and, more generally, that systems and States have the information they need today to fully and effectively implement the rule and minimize risks to public health.

We will continue to work closely with the Region, our public service partners and concerned citizens to investigate the situation in D.C. and to review implementation of the rule nationwide. EPA wants to ensure that citizens across the country are confident in the safety of their drinking water.

Thank you for the opportunity to testify this morning. I am pleased to answer any questions you may have.

* * *

Chairman TOM DAVIS. Thank you very much.

Mr. Welsh.

Mr. WELSH. Good morning. I am Don Welsh, Regional Administrator for Region III of the U.S. EPA. Thank you for the opportunity to appear before you today to comment on H.R. 4268, the Lead Free Drinking Water Act and to provide a full update on the important issue of lead in tap water of the D.C. residents and the steps the EPA and other agencies are taking to resolve the problem.

Let me begin by updating the committee on the latest developments in the District of Columbia. There is no higher priority for my office than to continue to work with the city and other partners to protect those who live and work in the District and to identify and correct the cause of elevated lead in the water. Since I last appeared before this committee, significant progress has been made in both areas.

Regarding actions to reduce the elevated lead levels, the EPA has authorized interim water treatment changes recommended by a Technical Expert Working Group. The partial system application of zinc orthophosphate, a corrosion inhibitor, will begin on or around June 1 in an area of northwest Washington. The anticipated timetable for full introduction of the proposed remedy has been accelerated to mid-July depending on the results of the more limited application.

The working group's efforts are being reviewed at key points by an independent peer panel which includes four corrosion control experts from around the country. The EPA will continue to work with its partners to ensure that the public is well informed of the treatment changes and the temporary effects on water quality that may occur. Customers will be reminded that reduction in lead levels will not likely occur for at least 6 months after the treatment changes begin. Customers need to follow the flushing guidance and utilize water filters where supplied to ensure particularly that children under 6 years of age, pregnant women and nursing mothers are protected from elevated lead levels.

The District of Columbia Water and Sewer Authority and the city government continue to move ahead on a series of actions directed by the EPA to address the immediate public health threat posed by lead in drinking water. We stand ready to use our enforcement authorities if necessary to compel further action and to ensure consumers are protected and properly informed.

To date, WASA has delivered over 29,000 certified water filters and consumer instructions to occupants in homes with lead service lines as well as others. Water filters continue to be sent out automatically along with a referral to the Department of Health when tap water test results indicate elevated lead levels. Additional tap water sampling in buildings not served by lead service lines is continuing. A representative sampling of buildings citywide was required by the EPA to include schools, day care centers, businesses and other facilities. An additional round of sampling for 130 DC public schools was completed using an EPA-approved protocol. This sampling round involves close to 2,000 samples in areas of the schools where the vulnerable population of children under six and pregnant could be drinking. The city took immediate action to re-

move from service any water outlet testing higher than the school's action level of 20 ppb. WASA has committed to an accelerated schedule for physically replacing lead service lines in the District. The construction method for service line replacement has been modified to ensure that they do not pose an undue risk to health in the days or weeks following the replacement while ensuring compliance with the lead and copper regulations. WASA is expediting notification to customers of the results of water sampling at their residences committing to providing results in 30 days or less.

The EPA is completing a detailed compliance audit of WASA's lead service line program, public education and compliance sampling actions. Based on preliminary results of our initial compliance audit, the EPA asserted instances in which requirements may not have been met. As part of the enforcement process, the EPA required WASA to provide information to the EPA responding to those findings. Nearly 6,000 pages of documents and voluminous electronic files are under review by the EPA as part of our compliance audit. Once we have completed our review, we will make a final determination as to whether violations have occurred and we will take appropriate action authorized under the Safe Drinking Water Act.

In a separate initiative, an internal EPA team completed its review of WASA's prior education and outreach efforts. The report identified a number of steps WASA can take to achieve more effective public education and outreach regarding lead and drinking water. In addition to following mandatory requirements and making use of extensive EPA guidance, the report recommends that WASA use consultants to assist in assessing the audience to be reached, securing feedback on its efforts and in making recommendations for design and content of materials as well as delivery methods.

Major issues identified by the reviewers were the lack of a sense of urgency in outreach efforts, failure to adequately convey information to the intended audience, insufficient opportunity for involvement by the public in the development of a communication strategy and lack of tracking measures to determine the success of outreach activities. The recommendations were designed as key input to WASA's continuing efforts to plan and carry out enhancements to drinking water education efforts both for regulatory compliance and also beyond compliance efforts.

The report also includes recommendations for the EPA Region III to improve our oversight of WASA's public education program. We have revised our standard operating procedures in part to assure that shortcomings in public outreach and identification are identified earlier and corrected and that proper expertise in risk communication is utilized in the process.

Other changes in procedure will ensure that no fewer than four EPA Drinking Water staff members, two of them managers, see each compliance report filed by WASA and the Washington Aqueduct. In addition to our collaborative efforts with the city, the EPA has taken a number of actions to provide information to residents and others on the issue of lead in the District's drinking water. These actions include a new program, Lead Safe D.C., to bring lead education information, home visits and blood level testing to Dis-

trict neighborhoods. Regular updates of our Web site, telephone hotline information, dispatch of community outreach specialists to the District, radio outreach in English and in Spanish, participation in 10 public meetings and regular contact with the Coalition of Environmental and Consumer Groups.

On the issue of primacy for drinking water responsibility and enforcement in the District of Columbia, the intent of the Safe Drinking Water Act is for the States, and the District is included within that definition, to have jurisdiction over the program. If the District seeks such status, we would entertain an application and work with the District to consider the issues involved.

Working closely with the District of Columbia, our public service partners and concerned citizens, we will continue to aggressively act to protect residents and resolve the lead problem. We are taking action to hasten the day when the citizens of the District of Columbia can once again be confident in the safety of their drinking water. Thank you for the opportunity to present this information and I look forward to your questions.

[The prepared statement of Mr. Welsh follows:]

Written Testimony of
Donald S. Welsh
Administrator, Region III
U.S. Environmental Protection Agency
Before the
Committee on Government Reform
U.S. House of Representatives
May 21, 2004

Good morning, Mr. Chairman and Members of the Subcommittee. I am Donald Welsh, Regional Administrator for Region III of the United States Environmental Protection Agency (EPA). Thank you for the opportunity to appear before you today to comment on H.R. 4268, the Lead Free Drinking Water Act, and to provide a full update on the important issue of lead in the tap water of District of Columbia residents and the steps EPA and other agencies are taking to resolve the problem.

Let me begin by updating the committee with the latest developments in the District of Columbia. There is no higher priority for my office than to continue to work with the city and other partners to protect those who live and work in the District and to identify and correct the cause of elevated lead in the water. Since I last appeared before this committee on March 5, 2004, significant progress has been made in both areas.

EPA has authorized interim water treatment changes recommended by a Technical Expert Working Group to reduce the elevated lead levels in the tap water. The anticipated timetable for full introduction of the proposed remedy has been accelerated to mid-July, depending on the results of a more limited application scheduled to commence on or about June 1. These efforts will be detailed later in my testimony.

My remarks also will outline the steps being taken by, and at the direction of, EPA and

the District of Columbia to ensure residents have access to safe drinking water and proper precautionary guidance.

History and Extent of the Problem in D.C.

In prior testimony before this committee, the history and extent of the problem of lead in tap water in the District of Columbia was detailed. Briefly, in D.C., implementation of the regulatory framework established in EPA's 1991 Lead and Copper Rule (LCR) did not achieve key aspects of the Rule's intended objectives. The LCR requires systems to optimize corrosion control to prevent lead and copper from leaching into drinking water. To assure corrosion control is effective, the rule establishes an action level of 15 parts per billion for lead. If lead concentrations exceed 15 parts per billion in more than 10 percent of the taps sampled, the system must intensify tap water sampling and undertake a number of additional actions, including educating the public about steps they should take to protect their health. If the problem is not abated, the system must also begin a lead service line replacement program.

Within the last couple of years in the District of Columbia, lead concentrations in tap water in many homes increased well above the 15 parts per billion action level. In addition, public education efforts taken by the local utility were ineffective.

D.C. exceeded the 15 ppb action level during three reporting periods between 1992 and 1994 before it installed corrosion control treatment. The pH adjustment treatment implemented by the U.S. Army Corps of Engineers Washington Aqueduct, and given interim approval by EPA Region III in 1997 and final approval in 2000, appeared to be effective in minimizing lead levels until the reporting period between July 1, 2001 and June 30, 2002. EPA received a final report

from the District of Columbia Water and Sewer Authority (WASA) on August 27, 2002 indicating that the 90th percentile value had increased to 75 ppb during that period. The high level required that WASA conduct more frequent monitoring every six months. The lead action level was also exceeded for subsequent monitoring periods in 2003, with 90th percentile values of 40 ppb (January 1 to June 30, 2003) and 63 ppb (July 1 to December 31, 2003).

Starting in March 2003, WASA began a lead service line sampling program to evaluate the lead concentrations leached into water from lead service lines using a protocol that differs from that used for required tap monitoring. The Region received detailed sampling results from this program on October 27, 2003. The information was reviewed by our technical staff with an eye towards determining whether WASA met first-year goals for physical lead service line replacement or effectively "replaced" lines based on sampling results, as well as understanding the underlying cause of the corrosion problem. The report indicated that roughly two thirds of the 4,613 lead service lines tested through September 30, 2003 had lead levels that exceeded the lead action level. In many cases, lead levels from customer taps served by lead service lines were very high, with nearly three percent of the samples above 300 ppb and 18.5 percent above 100 ppb.

Frequently, several months passed between the time a sample was collected by WASA and information was provided to homeowners who participated in the expanded sampling program. In addition, the notifications were not fully effective in relaying to the customers the significance of the problem.

Actions to Identify and Correct Source of Elevated Lead Levels

Significant work is being done to identify and correct the cause of elevated lead levels in

D.C. tap water.

In mid-April, the Technical Expert Working Group finalized its recommendations for water treatment changes to reduce corrosion while maintaining the optimum protection against other harmful contaminants that can be found in drinking water.

The Working Group, which was convened by EPA and includes representatives from the public and private sectors, recommended that the corrosion inhibitor, zinc orthophosphate, be added to the finished drinking water. Recognizing the critical importance of the treatment decision to reduce lead levels at the quickest feasible pace, and the delicate balance of water chemistry involved in this matter, the group's work is being reviewed at key points by an Independent Peer Review Panel formed by EPA. The formation of the Peer Review Panel, consisting of four corrosion control experts from around the country representing different sectors, helps ensure that the changes being made are informed with the best available science, that independent analysis is applied to the decision, and that all available options to solve this problem quickly are considered.

EPA, along with the Working Group, conducted two public meetings during the last week of April to update community members about the proposed change and to address questions. A fact sheet was distributed at the meetings and will continue to be shared via Web sites and through direct mailings to residences. Additional public meetings are planned as well.

On April 30, EPA issued a letter to the Washington Aqueduct and the District of Columbia Water and Sewer Authority authorizing the interim changes in the optimal corrosion control treatment and the partial system application of the zinc orthophosphate, and a monitoring plan to closely evaluate system changes.

The treatment changes will begin on or around June 1 in the area known as the 4th High Pressure Zone in Northwest Washington and will be closely monitored using water quality parameters defined in an EPA action letter. The specific start date will be determined by the necessary procurement of equipment and flushing of mains in the target area.

Based on the results of the partial system application, a separate decision point will be used in early July 2004 to determine if full system application of the treatment may proceed. The broader action is planned to start on or about July 15 if no major issues present themselves during the partial test.

EPA will continue to work with its partners to assure that the public is well informed of the treatment changes and the temporary effects on water quality that may occur. Customers will be reminded that reduction in lead levels will not likely occur for at least six months after the treatment changes begin. Customers need to follow the flushing guidance and utilize water filters where supplied to ensure particularly that children under 6 years of age, pregnant women and nursing mothers are protected from elevated lead levels.

Finally, EPA has initiated an analysis through a contractor to evaluate potential impacts on wastewater treatment and to evaluate any impacts on local water bodies. The report is due to EPA by mid-June and will be factored into the full system treatment decision in early July.

Interim Steps to Protect Residents

WASA and the District of Columbia government continue to move ahead on a series of actions directed by EPA to address the immediate public health threat posed by lead in drinking water. We stand ready to use our enforcement authorities if necessary to compel further action

and to ensure consumers are protected and properly informed.

On March 4, 2004, EPA Region III issued a letter to the District of Columbia government listing 10 actions that the Region believed were necessary to reduce the public's risk of lead exposure, increase the knowledge base on lead levels in tap water by conducting widespread testing, and improve the effectiveness of public education. The District's City Administrator's Office transmitted a letter to WASA on March 5 ordering that these 10 actions be met and requiring that WASA submit plans to address each of the areas.

Subsequently:

- WASA has delivered over 29,000 NSF International-certified water filters and consumer instructions to occupants in homes and buildings with lead service lines as well as others. Periodic replacement of the filters according to manufacturer's instructions has also been ensured. Water filters continue to be sent out automatically, along with a referral to the D.C. Department of Health, when tap water test results indicate elevated lead levels.
- WASA has sent postcards to the 21,000 customers in its database that have service lines of unknown materials requesting participation in a broader sampling program. To date, WASA has received approximately 7,000 responses from customers requesting the sampling. Results of the sampling will be available by July 1 and will be factored into an update to the service line inventory due to EPA in August.
- Additional tap water sampling in buildings not served by lead service lines is continuing. A representative sampling of buildings city-wide was required by EPA to include schools, day care centers, businesses and other facilities. WASA estimates that, through April 2004, it had obtained sampling results from more than 4,800 residences throughout the

District that have copper, brass, and to a lesser extent, wrought iron and galvanized steel service lines. More than 90% of the samples taken from homes with confirmed copper and brass lines tested below the action level.

- An additional round of schools sampling for 130 D.C. public schools was completed using an EPA-approved protocol. The results were announced on April 29. This sampling round involved close to 2,000 samples focused on areas of the schools where the vulnerable population of children under 6 and pregnant women could be drinking. Tests showed that 101 schools had non detectable lead or lead levels below the EPA's recommended level of 20 parts per billion (ppb) for schools. The city took immediate action to remove 43 sinks and water fountains in 28 schools and one administrative building that tested higher than 20 ppb from service.
- WASA has committed to an accelerated schedule for physically replacing lead service lines in the District. WASA has agreed to complete 1,615 physical service line replacements during the compliance period that ends September 30 - a far greater pace than was met during the prior compliance period. We have also directed WASA to update its material inventory of service lines for purposes of determining the proper replacement pace for 2005 and beyond, and have received a health-based prioritization plan for replacements underway this year.
- The construction methods for service line replacement have been modified to ensure they do not pose an undue risk to health in the days or weeks following the replacement, while ensuring compliance with the lead and copper regulation.
- WASA is expediting notification to customers of the results of water sampling at their

residences, committing to providing results in 30 days or less. WASA has stated that residents now receive a letter that provides more detail about their sampling results, and those with high lead levels are referred to the D.C. Department of Health.

- WASA, the District and EPA have expanded outreach efforts to provide important information to consumers. WASA has made several modifications to its public education plans and is providing draft information products for EPA review in advance of issuance to satisfy a directive that communications on the lead issue convey the proper sense of urgency and concern for public health. The goal is to reach all sectors of the population in an effective way. WASA already has committed to a series of activities to broaden and improve its communications with the public.

EPA is completing a detailed compliance audit of WASA's lead service line program, public education, and compliance sampling actions. In letters to WASA dated March 31, based on the preliminary results of our initial compliance audit, EPA asserted instances in which requirements may not have been met. As part of the enforcement process, EPA required WASA to provide information and documentation to EPA responding to those findings. Nearly 6,000 pages of documents and voluminous electronic files submitted by WASA are under review by EPA as part of our compliance audit. EPA personnel have participated in two meetings in which representatives of WASA have presented information and explanation related to the alleged violations. Once EPA has completed its review of all of the relevant information, EPA will make a final determination as to whether violations have occurred and will take appropriate action authorized under the Safe Drinking Water Act.

In a separate initiative, an internal EPA team completed its review of WASA's prior

education and outreach efforts - a process that involved a review of materials, interviews with residents and public officials, and a survey of best practices from public water systems around the country. The report was transmitted to WASA on May 6 and made available to the public through the Region's Web site.

It is clear that WASA was ineffective in informing the public of the magnitude of the problem of lead in drinking water and in conveying the steps families and individuals should take to protect themselves. The spirit of the LCR encourages robust communication focused on the public's right to know. Mass media tools, including direct contact with media representatives, as is recommended in EPA guidance, were not used effectively.

The report identifies a number of steps WASA can take to achieve more effective public education and outreach regarding lead in drinking water. In addition to following mandatory requirements and making use of EPA *Lead in Drinking Water Regulation: Public Education Guidance*, the report recommends that WASA use consultants to assist in assessing the audience to be reached, securing feedback on its efforts, and in making recommendations for design and content of materials as well as delivery methods.

Major issues identified by the reviewers were the lack of a sense of urgency in outreach efforts, failure to adequately convey information to the intended audience, insufficient opportunity for involvement by the affected public in development of a communications strategy, and lack of tracking measures to determine the success of outreach activities.

The recommendations were designed as key input to WASA's continuing efforts to plan and carry out enhancements to drinking water education efforts both for regulatory compliance and "beyond compliance" efforts.

The report also includes recommendations for EPA Region III to improve its oversight of WASA's public education program. We have revised our standard operating procedures, in part, to assure that any shortcomings in public outreach are identified early and corrected, and that proper expertise in risk communication is utilized in the process. We are more closely monitoring WASA's activities to ensure that system-wide notices effectively inform customers about the lead risk and we will ensure that information provided in WASA's next Consumer Confidence Report to customers is clear with respect to information about lead levels in drinking water.

In addition to our collaborative efforts with the city, EPA has taken a number of actions to provide information to residents and others on the issue of lead in the District's drinking water:

- The Region has created a new program with the National Nursing Centers Consortium, called Lead Safe D.C., at an initial cost of $100,000, to bring lead education information, home visits and blood level testing to District neighborhoods. The consortium is the nation's only network of nurse-managed community healthcare centers, and has enjoyed great success with a similar lead information program with EPA in the City of Philadelphia. A public event highlighting the new program is scheduled for later today.
- The Region continues to add to its comprehensive Web site that includes advice for consumers, frequently asked questions, health effects information, links to informational hotlines, WASA and the D.C. government, and key communications between EPA and other parties. It can be accessed at www.epa.gov/dclead. Information is also available through EPA's National Safe Drinking Water Hotline.

- EPA dispatched community outreach specialists to provide information and get input on the lead issue from community groups and individual residents in the District.
- The Region is proactively providing consumer information in English and Spanish to radio stations for use in the District. Nearly a dozen Regional employees have volunteered to assist with translation to Spanish of written and broadcast materials.
- We have also held or participated in 10 public meetings since early February. In addition, we have been meeting regularly with a coalition of environmental and consumer groups - the Lead Emergency Action for the District (LEAD) - to both hear their concerns and to identify how to better communicate with the general public.

With regard to H.R. 4268, my colleague, Acting Assistant Administrator Benjamin Grumbles of the Office on Water, is addressing EPA's perspective on the legislation in his committee testimony.

On the issue of primacy for drinking water responsibility and enforcement in the District of Columbia, the intent of the Safe Drinking Water Act is for the states (the District is included within the definition of state) to have jurisdiction over the program. If the District seeks such status, we would entertain an application and work with the District to consider the issues involved.

Conclusion

In conclusion, working closely with the District of Columbia, our public service partners and concerned citizens, we will continue to aggressively act to protect residents and resolve the lead problem. We are taking action to hasten the day when the citizens of the District of

Columbia can once again be confident in the safety of their drinking water. We are committed to bringing sound solutions to this difficult problem as soon as possible, and we are committed to keeping the public fully informed along the way.

Thank you for the opportunity to present this information this morning. I am pleased to answer any questions you may have.

Chairman TOM DAVIS. Thank you.

Mr. Jacobus.

Mr. JACOBUS. Good morning, Chairman Davis and members of the committee.

I am Tom Jacobus, general manager, Washington Aqueduct. We appreciate the opportunity to return and update the committee on the actions we have taken to reduce the elevated concentrations of lead in the drinking water found in some homes in the District of Columbia.

Since February 2, 2004, our highest priority has been to reevaluate the corrosion control treatment in use and to develop a treatment modification to make the water less corrosive. We are presently installing equipment that will be used to modify the corrosion control treatment. As Mr. Welsh just said, a partial system application is scheduled to begin on June 1 in a small portion of the District of Columbia's service area. Later this summer, we will begin a full system application that will include the remainder of the District of Columbia and the Arlington County and the city of Falls Church distribution systems in Virginia.

We are approaching it in two steps to be able to carefully control and evaluate the initial application to ensure that the program dose of the inhibitor we are going to use, the zinc orthophosphate, does not generate any unexpected secondary effects. One known possible effect of the application of the corrosion inhibitor may be the localized release of rust from iron pipes. This would result in discolored water delivered to the customer on a temporary basis but it would be short term and could be managed by flushing.

When arriving at this treatment change, we have had access to the Nation's very best scientific and technical talent in this field. We appreciate the resources the Environmental Protection Agency has expended to assist not only us but also to look at the larger aspects of this issue. While the level of activity certain has been higher than normal, we have operated within the current program established by Congress in the Safe Drinking Water Act and implemented by the Environmental Protection Agency. I believe the program has worked well and that each of us has had the opportunity to collaborate effectively on both the nature of the problem and its solution while maintaining our independent responsibilities.

The current regulations and relationships have served us well in addressing corrective actions to modify our optimal corrosion control treatment. I believe the current business arrangement whereby Washington Aqueduct is the wholesale provider to the District of Columbia Water and Sewer Authority, Arlington County and the city of Falls Church is sound. We work effectively with Region 3 of the Environmental Protection Agency as the primary agency responsible for drinking water and we have effective contact with agencies within the District of Columbia Government, including the District's Department of Health.

This concludes my testimony. I will be happy to respond to any questions.

[The prepared statement of Mr. Jacobus follows:]

Testimony of
Thomas P. Jacobus
General Manager, Washington Aqueduct
Baltimore District, U.S. Army Corps of Engineers
Before the
Committee on Government Reform
U.S. House of Representatives

May 21, 2004

Good Morning, Chairman Davis and Members of the Committee. I am Tom Jacobus, the General Manager of Washington Aqueduct.

We appreciate the opportunity to return to update this Committee on the actions we have taken since your March 5, 2004 hearing to reduce the elevated concentrations of lead in the drinking water found in some homes in the District of Columbia.

Since February 2, 2004, our highest priority has been to reevaluate the corrosion control treatment we use to protect the end users of the drinking water in the District of Columbia and Northern Virginia from the naturally corrosive effects of the water and to develop a treatment modification to make the water less corrosive.

We have begun to install equipment that will be used to modify the corrosion control treatment in a way that we believe will reduce the concentrations of lead in drinking water that remains in contact with lead pipes, lead solder joints and fixtures. A partial system application is scheduled to begin on June 1 in a small portion of the District of Columbia's service area. Later this summer we will commence with a full system application that will include not only

the District of Columbia but the Arlington County and the City of Falls Church distribution systems in Virginia as well. We are approaching it in two steps to be able to carefully control and evaluate the initial application to ensure that the programmed dose of the inhibitor does not generate any unexpected secondary effects. One known possible effect of the application of the corrosion inhibitor may be the localized release of rust from iron pipes. This would result in discolored water delivered to the consumer, but it will be short-term phenomena and can be managed by flushing.

In arriving at this treatment change we have had access to the nation's very best scientific and technical talent in this field. We appreciate the resources that the Environmental Protection Agency has expended to assist not only us but also to look at the larger aspects of this issue.

In the process of doing this we have worked closely with our wholesale customers in the District of Columbia and Virginia, our colleagues in the departments of health in the District of Columbia and Virginia, and the United States Environmental Protection Agency. While the level of activity has certainly been higher than normal, we have operated within the current program established by Congress in the Safe Drinking Water Act and implemented by the Environmental Protection Agency.

I believe that the program has worked well and that each of us has had the opportunity to effectively collaborate on both the nature of the problem and its solution while maintaining our independent responsibilities. I also believe that the current safe drinking water program is adequate to meet the expectations of the public to consume safe water.

In dealing with the current problem, we have also taken the opportunity to evaluate our organization and our procedures and make adjustments. I would like to report on some of our conclusions and actions.

The Technical Committee of the Washington Aqueduct Wholesale Customer Board meets at least quarterly. It currently makes a detailed review of filtered water turbidity, Total Coliform Rule compliance, and Disinfection Byproduct Rule compliance. The committee has met several times since February 1, 2004, to focus on corrosion control. We have now incorporated corrosion control treatment as a specific agenda item for all future meetings of the Technical Committee. By doing this, we will have a procedure in place for the Washington Aqueduct customers to share lead and copper data and for us to collectively evaluate corrosion control treatment.

Additionally, Washington Aqueduct is taking two other actions. First we are adjusting the structure of our organization to integrate an existing water quality office and the capability of our plant operations branch, including our water quality laboratory. This change will give us greater depth and remove any ambiguity for responsibility to track water quality parameters and to coordinate with our customers. Second, we are asking our customers to participate in more frequent and more structured meetings that we expect will improve an ongoing information loop involving them with our water quality office. These meetings will be at the scientist level and will be in addition to the Technical Committee, which has an operational and engineering focus. I believe these two structural changes, in conjunction with a more robust information flow, will better position the Washington Aqueduct and its wholesale customers to effectively ensure water quality.

We do not specifically know why the optimal corrosion control treatment being used by Washington Aqueduct was not adequate to prevent the increased concentrations of lead in some drinking water in the District of Columbia. Therefore, I cannot say with specificity if the provisions proposed in HR 4268 might have been effective in preventing the current situation. The current regulations and relationships have served us well in addressing corrective

actions to modify the chemistry to reduce leaching from service lines and plumbing.

Although the question of who should be responsible for the District of Columbia's drinking water and enforcing compliance with federal standards is a matter of legislative interpretation and policy, I believe that the current business arrangement whereby the Washington Aqueduct is the wholesale provider to the District of Columbia Water and Sewer Authority, Arlington County and the City of Falls Church is sound. We work effectively with Region 3 of the Environmental Protection Agency as the primacy agency responsible for drinking water, and we have effective contact with agencies within the District of Columbia government, including, of course, the District's Department of Health.

This concludes my testimony. I will be happy to respond to any questions.

Chairman TOM DAVIS. Thank you very much.

Mr. Johnson.

Mr. JOHNSON. Good morning, Mr. Chairman and members of the committee.

I am Jerry Johnson, general manager of the District of Columbia Water and Sewer Authority. I am pleased to represent the Authority before the committee this morning.

As you know, the District of Columbia and the Water and Sewer Authority have been the focus of great attention in the past few weeks. We appreciate this new opportunity to appear before the committee to discuss these issues and explain what has been happening and to talk about what we have learned in response to your questions.

The Authority continues to work with the EPA on our obligations under the Safe Drinking Water Act and the lead and copper rule including the recent submission of an updated action plan. The Authority is continuing a water sampling and testing program and we are distributing filters to targeted residents and we continue to support the District of Columbia's Health Department, and we have contacted each one of the households by mail that is believed to have a lead service line or does not have a record of service pipe type material. Each household has been strongly encouraged to participate in the leading sampling program.

We delivered water filter and replacement cartridges to every resident identified as having lead service lines and out of an abundance of caution, any household that participates in the testing program regardless of pipe material type is receiving a filter and replacement cartridges if they test over 15 ppb.

WASA is moving forward with its lead line replacement program and has already replaced about 800 service lines in public space this year. We will physically replace over 1,800 lead service pipes in public space and the board of directors for the Authority is proposing to totally eliminate lead service lines in public space by 2010. WASA has engaged a team of experts from George Washington University School of Public Health, including individuals with expertise in communication, epidemiology and pediatric health. The Lead Service Hotline has responded to 54,331 customer calls and 6,538 e-mails since February 4 and processed 23,200 test kits in response to these calls.

With respect to properties that are larger than single family households, which is a question that was raised, WASA's best information is that these large properties are served by pipes that exceed 2 inches in diameter and usually are not made of lead. However, we have proposed and the EPA has approved a test plan to test these assumptions. Technical experts in the working group have come upon the use of zinc orthophosphate as mentioned by two previous speakers, and I will not go into that discussion. We have also reviewed some of the national standards with the Environmental Protection Agency's regulations. One of the most important contributions I think the Authority can make in this discussion is to emphasize the enormous value in collecting and sharing accurate information, ensuring that the public has confidence in the water supply is of paramount concern, and we share the concern and are committed to that goal. The importance of informed

judgment and considered action by public water systems and our regulators and the public health authorities is at the heart of building confidence and we cannot overemphasize that.

As of Friday, May 7, the Health Department performed 5,291 blood level screenings, blood lead tests, including 1,924 from the target population. Of those, 37 children under 6 had elevated blood levels and 13 lived in homes with lead service lines, 24 did not. All children of nursing mothers with elevated blood levels lived in an environment where other significant sources of lead were present such as lead dust or lead paint. In fact, environmental assessments of those homes has shown lead dust in soil levels above the EPA and HUD guidelines.

With respect to the specific experience as a distributor of drinking water, we continue to learn and we put those learning experiences to use every day for our customers. We have undertaken two series of water samples in public schools and each of those has shown low to undetectable levels in the systems and we compared favorably to the surrounding jurisdictions. As recently as yesterday, a preliminary analysis of WASA's customer water samples drawn between April 2–8 appear to indicate that chloramine as a disinfectant used in drinking water to guard against bacteria, viruses and other diseases causing agents may have changed the water composition causing increased levels in lead and drinking water received by some District residents.

We detected the surprising change during the 6-week period in the spring of the year when the Washington Aqueduct switched from chloramines to free chlorine as a primary disinfectant of the routine annual treatment program. This possibility is the subject of much speculation and the idea that things like drought conditions could be contributing factors at one point but with the world of data we have collected, we may have identified the primary factor responsible for causing elevated lead levels in homes of persons who have lead service pipes. It is early yet, but our analysis of this data indicates that the change in chloramines in disinfectant in the water supply may have caused the water to become more corrosive.

We have shared this data with the Washington Aqueduct, the EPA and our partners in Virginia who are also Washington Aqueduct customers and strongly urge expedited review of this data to see what it means for the water distribution system. With this learning curve in mind, Mr. Chairman, we strongly encourage interested Members of Congress and the EPA to evaluate the lead and copper rule, with a careful eye toward the intent and a clear vision toward improving the Nation's public water system. H.R. 4268 provides one opportunity to help focus on such discussion and involve a broad range of stakeholders.

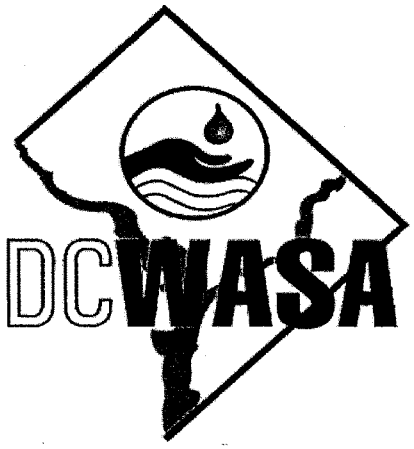
With respect to our relationship with the Washington Aqueduct, it has proven a very strong partnership in the effort to ensure residents have access to clean, safe drinking water. It is a relationship that has proven satisfactory to WASA's customers. It has, however, sometimes proven awkward with respect to the relationship with the Environmental Protection Agency and other Federal agencies. Your office, Congresswoman Norton, has interacted with both OMB and us to help address some of the issues with requirements related to financing. The question of operational responsibility and own-

ership was explored just a few years ago and perhaps the time has arrived for us to take a second look at that particular issue. There is something to be said for a single entity controlling both production and distribution in this environment especially since customers and many others hold WASA, the distributor, accountable for all aspects of the provision of clean drinking water.

In closing, Mr. Chairman, your invitation to testify asked who should be responsible for the District's drinking water, enforcing compliance and Federal standards? The Safe Drinking Water Act contemplates government closest to the operators of public water systems is best equipped to monitor and enforce the provisions of the law. We share that view and I believe the issue of primacy should certainly be explored more fully.

Thank you for this opportunity to testify. I would be pleased to answer any questions.

[The prepared statement of Mr. Johnson follows:]



Jerry N. Johnson, General Manager

The District of Columbia Water and Sewer Authority

Before the

House of Representatives Committee on Government Reform

Friday, May 21, 2004

Good morning, Mr. Chairman, and other members of the Committee. I am Jerry N. Johnson, General Manager of the District of Columbia Water and Sewer Authority, and I am pleased to represent the Authority before the Committee this morning.

As you know, the District of Columbia and the District of Columbia Water and Sewer Authority have been the focus of a great deal of attention in recent weeks. We appreciate this new opportunity to appear before the Committee to discuss these issues, explain what has been happening, and to talk about what it is we are learning as we respond to your questions.

My testimony will be very brief, but I would like to provide an overview of the current status of our activities in addressing elevated levels of lead in some of the District's homes.

Recent Actions
The Authority continues to work with the EPA on our obligations under the Safe Drinking Water Act and Lead and Copper Rule, including the recent submission of an updated action plan. The Authority is continuing a water sample testing program at no cost to the individual customer, and we are distributing filters to targeted residences. We continue to support the DC Health Department's activities, including blood level testing and follow-up environmental assessments.

Specifically, we have contacted each of the households by mail that is believed to have a lead service line or that does not have a record of service line pipe material. Each household has been strongly encouraged to participate in the lead sampling program.

We delivered a water filter and replacement cartridges to every residence that is identified as having a lead service line pipe. In fact, out of an abundance of caution, any household that participates in the testing program, regardless of pipe material, is receiving a water filter and replacement cartridge if it tests over 15 ppb.

WASA is moving forward with its lead line replacement program. WASA has already replaced about 800 service lines in public space this year. For the current year (ending September 30, 2004) WASA will physically replace over 1,600 lead service line pipes in public space. WASA's Board of Directors is considering a plan to increase the pace of the service line replacement – more than doubling the amount that will be replaced yearly, by proposing to totally eliminate lead service lines in public space by 2010.

WASA has engaged a team from the George Washington University School of Public Health, including individuals with experience in risk communications, epidemiology and pediatric health. The tem is headed by Dr. Tee Guidotti, Professor and Chair of the Department of Environmental and Occupational

Health, School of Public Health and Health Services, Director of the Division of Occupational Medicine and Toxicology School of Medicine and Health Sciences, The George Washington University Medical Center and Co-Director of the Mid-Atlantic Center for Children's Health and the Environment, a pediatric environmental health specialty unit.

A WASA consultant is currently working to develop a technology that will permit WASA to more accurately identify/confirm service line pipe material without an excavation. This technology is now being field tested over the next 6-12 months. WASA is also investigating other approaches to help identify service line pipe material more efficiently.

The Lead Services Hotline responded to 54,331 customer calls and 6,538 emails since February 4, and we processed 23,168 test kit requests in response to these calls. We have conducted about 12,000 tests of residences.

With respect to properties that are larger than single-family sized homes, WASA's best information is that these larger properties are served by pipes that exceed two inches in diameter that are not usually made of lead. WASA proposed and EPA has approved a test plan to test our assumptions, and it is underway.

The Technical Expert Working Group and a group of Peer Reviewers have strongly recommended the addition of a corrosion inhibitor, zinc orthophosphate to the Washington Aqueduct's treatment process. EPA has approved this proposal and the Aqueduct will apply the zinc orthophosphate in drinking water in an area around Fort Reno, beginning June 1. Following an evaluation, system-wide application is planned for later in the summer. We believe that this process will coat the surfaces of pipe that come into contact with water in a manner that prevents lead leaching.

Strategies to Improve the Safety of Drinking Water

With respect to the need to review national standards and the Environmental Protection Agency's regulations, Mr. Chairman, one of the most important contributions I think the Authority can make to this discussion is to emphasize the enormous value of collecting and sharing accurate information.

Ensuring that the public has confidence in the water supply is of paramount concern. We share that concern and we are committed to achieving that goal.

The importance of informed judgment and considered action by public water systems, our regulators, and public health authorities is at the heart of building that confidence, and it cannot be over emphasized.

For example, WASA is funding a DC DOH outreach initiative to expand the scope and reach of lead blood level screening in the District. I have attached to

my testimony information from the District Department of Health, Blood Lead Level Screening Results from February 3 to May 6, 2004.

As of Friday, May 7, 2004, DOH had performed 5,293 blood lead level screens, including 1,924 from the DOH target population.

Of the 37 children under six with elevated blood lead levels, 13 lived in a home with a lead service line pipe and 24 did not. All children and nursing mothers with elevated blood lead levels lived in an environment where other significant sources of lead were present, such as lead dust and paint. In fact environmental assessments performed at 44 residences have shown lead dust and or soil levels that exceed EPA and HUD guidelines.

WASA's Experience
With respect to WASA's specific experience as a distributor of drinking water, we continue to learn.

WASA has undertaken two series of lead water sample tests in public schools. Each series of tests confirms that the distribution system has low to undetectable levels of lead, and that District schools compare favorably with respect to potential sources of lead water contamination to surrounding jurisdictions.

As recently as yesterday, a preliminary analysis by WASA of customer water samples drawn between April 2 and May 8 appears to indicate that chloramines, a disinfectant used in drinking water to guard against bacteria, viruses and other disease-causing agents, may have changed the water composition causing increased levels of lead in drinking water received by some District residents. We detected these surprising changes during a six week period in the spring of this year when the Washington Aqueduct switched from chloramines to free chlorine as a primary disinfectant in its routine annual treatment program.

This possibility was the subject of much speculation, as was the idea that drought conditions may have been a contributing factor, at one point.

But with real world data, we may have identified the primary factor responsible for causing elevated levels of lead in the homes of persons who have lead service line pipes. It is early yet, but our analysis of this data indicates that the change to chloramines for disinfection of the water supply may have caused the water to become more corrosive thereby causing service line pipes to leach lead.

We have shared this data with the Washington Aqueduct, the EPA, and our partners in Virginia who are also Washington Aqueduct partners, and we are strongly urging that they expedite a review of this data and what it means for the water treatment process and the District's water supply.

So with this learning curve still in mind, Mr. Chairman, we strongly encourage interested members of Congress and the EPA to evaluate the Lead and Copper Rule with a careful eye to its intent and a clear vision of what is achievable by the nation's public water systems.

H.R. 4268 provides one opportunity to help focus such a discussion that should involve a very broad range of stakeholders.

I will offer a few further observations:

- Managing water chemistry is a complex challenge, with a variety of effects that must be anticipated at the treatment plant, in the distribution system and in the homes of residents. Too narrow a focus by regulators on limiting a single potential contaminant can have unpredictable spillover and even unintended effects;

- Similarly, too narrow a focus on lead may potentially thwart an opportunity to better understand and respond to other challenges, such as disinfectant by products;

- An appropriate balance among corrosion control and service line replacements is very important, and should be guided by a clear assessment of the optimal approach for assessing actual risks and addressing the problem;

- It is important for policymakers, because it is important to taxpayers and ratepayers to weigh the costs of their decision, both with respect to absolute dollars and questions of equity

  - Almost every household pays a water bill, Mr. Chairman, so it's important to make sure that their investment in safe drinking water pays off for them

  - Since almost every household pays a water bill, regardless of income, a decision to use public resources to fund infrastructure improvements like changing service lines on private property should be carefully considered.

The Washington Aqueduct and WASA

With respect to our relationship with the Washington Aqueduct, it has proven a strong partner in the effort to ensure that residents have access to clean and safe drinking water. It is a relationship that has proven satisfactory for WASA's customers.

It has, however, proven sometimes awkward with respect to our relationship with the Environmental Protection Agency and other federal agencies. Your office and Congresswoman Norton have both interceded with OMB to help address an

OMB requirement that WASA provide the entire cost of capital projects up front at the Aqueduct, regardless of the rate of expenditures.

EPA, for example, recently relented, and modified its draft Washington Aqueduct permit for discharges into the Potomac. If WASA had not been removed as a permit holder, we would have been liable for any permit excursions, even though we do not own or operate the Aqueduct.

The question of operational responsibility and ownership was explored just a few years ago, and perhaps the time has arrived for us to take a second look at this issue.

There is something to be said for a single entity controlling both production and distribution in this environment, especially since customers and many others hold WASA, the distributor, accountable for all aspects of the provision of clean and safe drinking water.

In closing, Mr. Chairman, your invitation to testify today asked, "Who should be responsible for the District's drinking water and enforcing compliance with the federal drinking standards?"

The Safe Drinking Water Act generally contemplates that government closest to the operators of public water systems are best equipped to administer, monitor and enforce the provisions of the law. We share that view, and I believe that the issue of primacy should be explored further.

I would be pleased to respond to any questions.

Government of the District of Columbia
Department of Health

Blood Lead Level Screening Results

(Micrograms/deciliter ("mcg/dL"))
As of February 3-May 6, 2004

Total number screened for blood lead levels	Total number of laboratory tests completed	Total number within DOH target population	Percentage within DOH target population with lead service lines	Total number within DOH target population with high lead levels	Total number outside of DOH target population with high blood lead levels
5293	5293	1924 • 1752 (91.1%) children under the age of 6; • 95 (4.9%) women who are pregnant; and • 77 (4.0%) women who are nursing.	17.9% have lead service lines; • 17.0% of all children under the age of 6 • 19.0% of all women who are pregnant; and • 37.7% of all women who are nursing. 82.1% do not have lead service lines.	• Women who are nursing=2* & pregnant = 0 • 37** children under the age of 6 have elevated (10mcg/dL or higher) lead levels. o This is 2.2% of all children under the age of 6; o 13 with lead service lines; and o 24 without lead service lines. *One nursing woman retested and had second BLL that was not elevated. **One additional child from MD who attends a DC daycare had an elevated BLL. As of Friday, May 7, 2004, environmental assessments for other sources of lead, such as lead dust & paint have been performed on 44 residences. All children and nursing mothers with elevated blood lead levels (with the exception of 1 residence) have shown lead dust and/or soil levels that exceed EPA & HUD guidelines.	• Of the 3349 residents outside of the DOH target population screened for blood lead levels only 4 have a blood lead level above 25 mcg/dL (the level of most concern for adults). Two (2) of those four residents have lead service lines. 5 children ages 6-15 have elevated blood lead levels (10, 11, 12, 16, and 19 mcg/dL). None of these children live in homes with lead service lines. The blood lead level at which medication is offered is usually 45 mcg/dL.

Note: 20 ages being confirmed.

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
5000 OVERLOOK AVENUE, S.W. WASHINGTON, D.C. 20032

SUMMARY OF 2004 WATER TESTING DATA
Samples Analyzed through May 19, 2004

Total Samples Conclusively Matched to Address in Database = 14290

	First Draw					
Lead [ppb]	Lead	Copper	Brass	Unknown	Other	
0-15	2277	4414	1204	2401	296	[illegible]
>15-50	1804	389	60	806	29	[illegible]
>50-100	280	58	10	99	2	[illegible]
>100-150	44	15	1	20	2	[illegible]
Over 150	46	17	3	12	1	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

	Second Draw					
Lead [ppb]	Lead	Copper	Brass	Unknown	Other	
0-15	2374	4501	1223	2470	287	[illegible]
>15-50	1268	249	41	559	25	[illegible]
>50-100	558	97	8	217	12	[illegible]
>100-150	173	31	4	63	4	[illegible]
Over 150	78	15	2	29	2	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

- Lead values continue to be measurably lower overall than last year's results
- "Second draw" results are indicative of service line impact on water quality, while "First draw" results relate to faucet and nearby internal plumbing impact.
- Copper, Brass, Other results present clear evidence that those service line materials contribute much lower levels of lead, and that 90%+ of these samples are below action level. Additionally, "first draw" results in premises served by those copper, brass and other materials are below the "action level"
- "Unknown" material results indicate that a relatively small percentage of these services may be lead services.
- Individual premise data are shared with DC Department of Health for correlation with blood lead level data

DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY
5000 OVERLOOK AVENUE, S.W. WASHINGTON, D.C. 20032

COMPARATIVE LEAD DATA
Before and During Chlorine Conversion
May 20, 2004

Customer Samples from March 1, 2004 to March 31, 2004												
	First Draw						Second Draw					
Lead [ppb]	Lead	Copper	Brass	Unknown	Other	Total	Lead	Copper	Brass	Unknown	Other	Total
	809	1881	589	796	119	4194	824	1921	599	812	114	4270
	712	163	29	291	11	1206	513	106	20	203	9	851
	119	27	6	42	1	195	225	37	4	83	6	355
	24	9	0	7	1	41	85	13	2	30	2	132
	19	6	3	5	0	33	36	9	2	13	1	61
	1683	2086	627	1141	132	5669	1683	2086	627	1141	132	5669

Customer Samples from April 2, 2004 to May 8, 2004												
	First Draw						Second Draw					
Lead [ppb]	Lead	Copper	Brass	Unknown	Other	Total	Lead	Copper	Brass	Unknown	Other	Total
	592	880	237	676	61	2446	571	904	242	666	61	2444
	278	76	16	141	8	519	234	45	10	135	6	430
	49	14	1	14	0	78	92	20	2	31	3	148
	7	4	0	9	1	21	22	8	0	6	1	37
	8	7	0	5	1	21	15	4	0	7	0	26
	934	981	254	845	71	3085	934	981	254	845	71	3085

Customer Samples from April 20, 2004 to May 8, 2004												
	First Draw						Second Draw					
Lead [ppb]	Lead	Copper	Brass	Unknown	Other	Total	Lead	Copper	Brass	Unknown	Other	Total
	353	260	61	433	20	1127	307	262	65	418	20	1072
	102	18	5	62	1	188	128	13	1	73	2	217
	14	4	0	5	0	23	32	4	0	9	0	45
	5	0	0	4	1	10	4	2	0	1	0	7
	4	1	0	0	0	5	7	2	0	3	0	12
	478	283	66	504	22	1353	478	283	66	504	22	1353

Comparison Data - Full Six Week Period

	Lead						Unknown					
	Actual				Predicted		Actual				Predicted	
Lead [ppb]	1st Draw	%	2nd Draw	%	1st Draw	2nd Draw	1st Draw	%	2nd Draw	%	1st Draw	2nd Draw
	592	132%	571	125%	449	457	676	115%	666	111%	590	601
	278	70%	234	82%	395	285	141	65%	135	90%	216	150
	49	74%	92	74%	66	125	14	45%	31	50%	31	61
	7	53%	22	47%	13	47	9	174%	6	27%	5	22
	8	76%	15	75%	11	20	5	135%	7	73%	4	10
	934		934		934	934	845		845		845	845

Comparison Data - Final Three Week Period

	Lead						Unknown					
	Actual				Predicted		Actual				Predicted	
Lead [ppb]	1st Draw	%	2nd Draw	%	1st Draw	2nd Draw	1st Draw	%	2nd Draw	%	1st Draw	2nd Draw
	353	154%	307	131%	230	234	433	123%	418	117%	352	359
	102	50%	128	88%	202	146	62	48%	73	81%	129	90
	14	41%	32	50%	34	64	5	27%	9	25%	19	37
	5	73%	4	17%	7	24	4	129%	1	8%	3	13
	4	74%	7	68%	5	10	0	0%	3	52%	2	6
	478		478		478	478	504		504		504	504

- "Predicted" results assume that distribution of results by lead concentration would be exactly the same for each service line material before and after transition to chlorine.
- Lead values noticeably lower for both lead and unknown service materials
- Results of final three weeks (still coming in) trend noticeably lower than first three weeks.
- Reductions are similar for both first draw and second draw samples.

Chairman TOM DAVIS. Thank you all very much.

I read in the Post this morning, page B5, an article by DeVira Cohen, about the lead in D.C. water, after a chlorine flush. When did WASA flush?

Mr. JOHNSON. The flushing took place in early April through May 8th.

Chairman DAVIS. When did you have these results?

Mr. JOHNSON. We received the results earlier this week, Mr. Chairman.

Chairman TOM DAVIS. The committee heard about it early this morning when we picked up the paper.

Mr. JOHNSON. I apologize. We were trying to get press releases and information out to everyone. We just completed compilation of that data on yesterday morning prior to holding the press conference and briefing. More complete data and all the raw information is contained in the attachments to the testimony for today.

Chairman TOM DAVIS. Let me ask you this. Do you think the city's elevated lead levels resulted from a structural problem with the testing, reporting and communications regime or do you think it was simply poor implementation of the existing Safe Drinking Water regulations?

Mr. JOHNSON. I am sorry, sir. Would you mind?

Chairman TOM DAVIS. What do you think the elevated levels resulted from? Is this a structural problem in the system? Was it the fact that we were using the wrong chemicals? In retrospect, could you try to tell me what you think the problem was?

Mr. JOHNSON. I would preface my comments, Mr. Chairman, by saying that I am going to be somewhat speculative. We have this information we recently received from the testing that was done during the period there was pre-chlorine added to the system. We found in the first 3 weeks that we had lower levels, the lead levels had actually plummeted in some cases. We went back and looked at the final 3 weeks when we are assured that the system had total chlorine and we flushed out all the chloramines and the numbers had gone down even further. We think that data certainly deserves further evaluation and a closer look at the experts before drawing any final conclusions, but it would certainly point in the direction of the chlorine having a positive effect on the leaching of lead in the service lines which would then suggest perhaps the use of chloramines would have had some impact on the leaching of lead and the elevated blood levels.

Chairman TOM DAVIS. WASA took a number of steps to address the lead levels in the District's water supply, many the result of being ordered to do so by the EPA. Some of them go beyond the specific requirements of the EPA Safe Drinking Water Program, as I understand it. Do you think all these steps are necessary to reduce the level of lead in the water supply and to better inform the public?

Mr. JOHNSON. Here again, I guess I would preface my comments by saying I believe many of the efforts that were undertaken were more collaborative than directive efforts in working with the Environmental Protection Agency to accomplish these and I don't quarrel with any of the activities we have undertaken to date. Some

were taken out of an abundance of caution, others because of specifically addressing very targeted issues.

Chairman TOM DAVIS. How effective do you think the lead service line replacement program is going to be in reducing lead in the system?

Mr. JOHNSON. I continue to have questions with regard to the effectiveness of replacing lead service lines if we are only doing the replacement in public space. The rule as it is currently structured requires that once we have done that, we have met the requirements of the EPA standard. If we are still leaving a portion of lead service lines for the customer to have to contend with, then we still have a potential problem. If we optimize the treatment process, if we have coated those pipes appropriately and there is no longer lead leaching, perhaps we will have a timing factor before something like this happens again. As you know, this is not the first time the District of Columbia has experienced this problem and we obviously have to monitor it very closely to ensure that it does not happen again, but the potential is there as long as there is a portion of lead service lines serving any customer's home.

Chairman TOM DAVIS. Mr. Welsh and Mr. Jacobus, let me focus on the testing protocols for just a moment and clarify whether the lead problem could have been identified in the summer of 2001. According to testimony by Seima Bott, the WASA water quality manager who was responsible for preparing lead test sample reports for the period July 1, 2000 to June 30, 2001, she had five samples that exceed a lead action level for that period that she did not submit to the EPA for the purpose of regulatory compliance. She testified those were backup samples in case she didn't have 50 samples for regulatory compliance purposes. If these five had been reported in addition to the four reported for that period, the District report would have exceeded the lead action level for the 90th percentile in the summer of 2001 instead of a year later when lead levels might have increased significantly.

While the EPA has responded to a question from the committee that it has no record of the invalidation of any samples for that period, my question for the EPA and WASA is whether the decision not to use these samples is consistent with testing and reporting protocol?

Mr. WELSH. Mr. Chairman, it is my understanding that the EPA should receive any of the data that is developed, any of the samples should be reported to the EPA. As mentioned, we discussed this before. We reviewed our records to see if there was any indication the procedure in the lead and copper rule for invalidation of samples had been used and it had not been. So it is my understanding that any data that is collected does need to be reported to the EPA.

Chairman TOM DAVIS. And you don't know why those particular samples weren't put in the selection process?

Mr. WELSH. That is correct. We were concerned about that issue and have been investigating that, including a request for information and an information request letter to WASA and the 6,000 pages of documents and some of the electronic files I mentioned earlier, some of that was in reference to that particular question and we are continuing to investigate that to see exactly what went on there.

Chairman TOM DAVIS. Let me ask WASA, what do you know about that?

Mr. JOHNSON. I only know what was in Ms. Bott's testimony with respect to that. It was not an issue that rose to a management level in the organization to be addressed. We had understood from discussions with Ms. Bott that there had been consultation with the EPA. Whether it was formal or not, I am not sure but she indicates that there had been consultation with the EPA through that process.

Chairman TOM DAVIS. Mr. Grumbles, in the next panel, we have testimony by a witness that the current Federal regulation of lead in water supplies is actuality is a one-size fits all approach. It is disproportionately costly for smaller water systems. Do you think that is accurate?

Mr. GRUMBLES. Mr. Chairman, I think the current rule when it was written very much intended to try to reflect that not all systems are of the same size, they have different affordability factors and different local conditions, so I would say that with any Safe Drinking Water Act regulation, there is the potential for some smaller rural areas to have difficulties meeting the requirements, the lead and copper rule does attempt to take into account special considerations and that it has the flexibility to do that.

Chairman TOM DAVIS. You are defending the current reg. You think it gives enough flexibility?

Mr. GRUMBLES. On the subject of small versus large, I think that is an area that people have brought to my attention that there needs to be greater flexibility. I would say there are other aspects of the rule that people want to have a different approach, different layers of sophistication and stratification that we are pleased to look at.

Chairman TOM DAVIS. Do you think the EPA should be more actively involved in individual water systems' decisions regarding chloracivity control? Do you have any thought on that?

Mr. GRUMBLES. We have a role to play. There are two roles we play. One is to try to help advance the national research front on corrosivity. I think we recognize the experience we are having in the District, we need to be at the cutting edge in research into how to control and maximize corrosivity control and to improve upon it.

In terms of the decisions on a system by system basis and the way the regs currently work is that it is the primacy agency that is more involved than the EPA.

Chairman TOM DAVIS. Do you think the EPA ought to be in that decision matrix when local decisions are made on that?

Mr. GRUMBLES. I would say in some degree, yes. I think it is important, our overall role in ensuring compliance under the Safe Drinking Water Act, but I am a little hesitant because I think one of the reasons the Safe Drinking Water Act has been successful over the years and that the lead and copper rule has been successful since 1991 is that it recognizes that the States, primarily the ones involved in carrying out and implementing the regs and working with the utilities.

Chairman TOM DAVIS. Has the EPA found that other jurisdictions with elevated lead levels failed to communicate effectively

like WASA? Is this a common problem or is this the worse you have seen?

Mr. GRUMBLES. From what we know, I would not say it is a common problem but it is extremely important to ensure that communities are as proactive and aggressive and robust as possible and continue to provide communities with some guidelines to really reach out and have the most targeted and proactive communications possible to comply with the lead and drinking water rules. I think that is one of the key lessons to be learned or if there is a silver lining here, it is if other communities are not proactive, we can find ourselves in situations where the public doesn't learn as soon as they should. I don't have any indication it is a problem, the failure to adequately communicate in other cities.

Chairman TOM DAVIS. Let me ask another question on the question of cost and benefits of lead line replacement programs. I guess I can ask you generally what you think about that. It is my understanding the city of Cincinnati replaced all of its lead service lines at enormous cost and it didn't significantly reduce the levels of lead in the water. Do you know anything about that or if anyone else knows about that, we would be happy to hear your comments.

Mr. GRUMBLES. I am not personally familiar with Cincinnati, I know there are some communities, I understand Madison, WI is going forward with the lead service line full replacement approach. It will be interesting to see what the results are.

Chairman TOM DAVIS. It is expensive?

Mr. GRUMBLES. It is expensive.

Chairman TOM DAVIS. I think, Mr. Johnson, you alluded to that a little bit, didn't you?

Mr. JOHNSON. Yes, sir.

Chairman TOM DAVIS. Because you are not getting all the lines, but just the public lines?

Mr. JOHNSON. That is correct, sir.

Chairman TOM DAVIS. You think a lot of the problem is in the private lines?

Mr. JOHNSON. I think if it is a problem with the lead service line, it is the entire lead service line and replacing a piece of it doesn't fix the problem.

Mr. GRUMBLES. I would say that the way the current rule is structured, the full lead service line replacement is viewed as the last resort after you go through the other procedures. One of the key lessons we are learning here in the District is the critical importance of the chemistry involved in the water and trying to figure out what is causing the corrosion. I think everyone agrees that if money weren't the issue or time weren't an issue, you would want to eventually remove lead service lines. The way the current rule is structured and I think the cities across the country have been implementing it is as you go through the maximizing of corrosion control, you monitor for the action levels and if you are in the 90th percentile exceedence, then you are required to engage in that process. It is a very costly proposition but there are communities doing it.

Chairman TOM DAVIS. Let me ask this. Is anybody prepared to say the switch to a different disinfectant in 2002 was the major

cause for the spikes? That is what the Post headline implies today. I am not saying it is the only cause.

Mr. JOHNSON. I don't believe, Mr. Chairman, that today with the information we have that we can definitively say that. That is why having recently obtained this information that certainly points in that direction, we would urge an expeditious and immediate review by the expert panel of the EPA and others to make that final determination so that we have some future direction and know where we are going with respect to that.

Chairman TOM DAVIS. Does everyone agree with that?

Mr. JACOBUS. I would say, sir, this information is very useful to helping us understand. It may be that the chloramine is not the corrosive agent. It may be that the chlorine, the free chlorine acts as an inhibitor. We weren't looking for the chlorine to act as an inhibitor because we were using pH control. The reason we switched from chlorine to chloramine was for this concept of simultaneous compliance. So if it weren't for the generation of disinfectant byproducts which are also regulated by the EPA and have a health connection, we would switch to free chlorine today to get the immediate apparent inhibitor effects of the chlorine but because we are trying to do two things at once, we don't think that is prudent. What we do know is that since we have not been adding the follow-on chemical, the corrosion inhibitor, that is designed to be an inhibitor, zinc orthophosphate or some kind of phosphate, when we do add the orthophosphate we expect that it will act as an inhibitor and protect the pipes from the water containing the chloramines. Our challenge now is to do it in a way that is as quick as possible with the results that the lowest concentrations of lead and at the same time keep the disinfection byproducts low.

We accept the data from WASA, we were part of this working group and we want to use it in an intelligent and responsible and very quick way. The EPA is working with us specifically Region III, and we hope to use it and be able to report to the public with the application of the orthophosphate and what we have learned from the chlorine good results soon.

Chairman TOM DAVIS. Ms. Norton.

Ms. NORTON. Thank you very much, Mr. Chairman.

It is important to understand two points about the backdrop of this hearing and this entire crisis. I want to thank the EPA for the oversight you are now giving to WASA. It does appear to follow the kind of regimen one might expect. The backdrop of this crisis is that the EPA was the State agency as well as the EPA for the District of Columbia. Therefore, it is very hard for the committee to look at the EPA kind of after the fact since as the State and Federal agency it is quite astonishing that WASA got as far as it did.

That is one backdrop that we are looking at, an EPA assigned by the Congress of the United States to play a role that it does not play anywhere else except in the State of Wyoming. That has made the District of Columbia and the residents very uneasy that it wasn't at the "State level," wasn't "by the EPA as the Federal regulator." The other backdrop to keep in mind is cost. We are quite aware that every single issue here is played against a backdrop of potentially enormous costs. As the Congresswoman for the District of Columbia, I know that most of those costs will be borne by rate-

payers. WASA went for 10 years with no increases to ratepayers. That was before Mr. Johnson got there and before the agency was revitalized but anybody who thinks that was a favor to the District of Columbia residents I think doesn't understand that people are willing to pay for a service if the service comes at reasonable rates.

I appreciate, Mr. Grumbles, that you understand that our bill, I think you called it a kind of road map, was addressed to the overall issue. I indicated in my opening remarks that we did not anticipate that the Congress would do a major overhaul of the Clean Water Act this session. We know that cost is always a factor and that any ultimate rule or any ultimate legislation has to live in the real world of cost as well as benefit.

I do want to say, and Mr. Chairman, I want to ask for your help here because Mr. Johnson raised a very important issue that goes to cost, a cost that the Federal Government inadvertently puts on the ratepayers. When WASA and Mr. Johnson go to do capital improvements because the agency involved is the Aqueduct and it is a Federal entity and because of the Federal rules involving how the Federal Government must pay itself for capital improvements, Mr. Johnson has to put all the money up front and can't use a letter of credit to do capital improvements the way any other jurisdiction in the United States always does it. It obviously cost the ratepayers more because he has to gather his money and take it and give it. Mr. Chairman, one of the reasons I am going to ask for your help is simply to get this exception that allows WASA to use a letter of intent, correct me if I am wrong.

Mr. JOHNSON. That is correct.

Ms. NORTON. A letter of intent. He has the money, he has to show he has the money but he wouldn't have to put up the money, stop earning interest on the money and he could do as they do in Maryland, Virginia and everywhere else, if we were exempt from this Federal rule which is being used for essentially a local water delivery system.

I think if the chairman and I could work perhaps with the appropriators and get the right language in the appropriations bill, I think Mr. Frelinghuysen would be quite willing.

Chairman TOM DAVIS. But I would really like to see WASA let us know about some of these things that are going on instead of having to read them in the paper when you get test results and we have a hearing the next day, it would create I think a better sense of working together on this issue. Do you understand what I am saying?

Mr. JOHNSON. I understand that, Mr. Chairman.

Chairman TOM DAVIS. It helps me to think we are in this thing together as opposed to everybody running out and doing their own thing. I am frankly a little disappointed when we could have had that data a day before and prepared it into the hearing record and been more fully prepared for it.

Mr. JOHNSON. I certainly understand your concern, Mr. Chairman, and certainly we will be mindful of that in the future. As we were compiling data yesterday morning and trying to think of all the things we had to do to get that processed and get it out to ensure that we were doing a better job of communicating with our

customers, we did have that as an oversight and for that, I apologize.

Ms. NORTON. Senator Jeffords and I wrote a bill only after Chairman Davis, Ranking Member Waxman and I on March 17, 2004 sent a letter to the EPA asking that the EPA look at what appeared to be serious flaws in the current rules. We asked that you reopen the lead and copper rule. You have to understand that backdrop at well. Nobody has reopened the lead and copper rule and that is part of the backdrop of our own bill.

I would like to ask a preliminary question. When the decision was made to switch from chlorine to chloramines, who made that decision, who was at the table, who made the decision to switch, who was involved, who participated in that decision?

Mr. JACOBUS. We are always looking at regulations that are going to be effective a date certain in the future. We knew the disinfection byproduct rule was going to change and we knew if we continued to operate free chlorine as a disinfectant, we would be in violation of the disinfection byproduct rule. The rule eventually became effective in 2001 and we began the planning the process and went through a typical evaluation using consultants and industry practices.

Ms. NORTON. Did you consult at all with WASA or the EPA?

Mr. JACOBUS. Yes. We initially looked at alternatives that would meet these requirements and then we brought our customers who were the complete funding operation so they are part of our technical, advisory and wholesale customer board, brought them into the decisionmaking process. The EPA was involved through Region III, knowing that we were about to make a technical change. We had to demonstrate a disinfection profiling requirement to make sure this process change would in fact meet the new disinfection requirements to provide that safety. What was not specifically coordinated between the EPA and Washington Aqueduct was a direct consultation over the concept of simultaneous compliance between the lead and cooper rule and the disinfection byproduct rule.

Using the guidance in the simultaneous compliance manual, we did look at the possible corrosive effects via pH change due to a bacterial nitrification situation, a chemistry change in the water, but we did not look at a direct corrosive effect. As is well known now, we did not conduct pipe loop studies or do any specific experimentation on the effects of chloramines on lead. Certainly in retrospect, that would have been a good idea.

Ms. NORTON. But of course you weren't required to do that? Let me fully understand how the process worked. Mr. Johnson, were you in on this process at all?

Mr. JOHNSON. Yes, ma'am.

Ms. NORTON. You were consulted about the change from chlorine to chloramines?

Mr. JOHNSON. Yes, we were very engaged as was the District of Columbia Health Department as we looked at the change but it was intended to address one specific concern having to do with the byproducts rule, the triolamethanes and I think where we may have had a shortcoming here was just the lack of any body of research. If we are going to start to talk about where we are going in the future, research into those issues of taking one action not

address one particular problem and not having a very clear understanding of what effect that action may have on something else is something that certainly needs to be looked at.

Ms. NORTON. You were not in the position to do that research. Mr. Jacobus was not required to do that research. Mr. Grumbles? Perhaps Mr. Welsh.

In retrospect, would it not have been wiser to have a corrosion control study done in advance of the change from chlorine to chloramines?

Mr. WELSH. My understanding of the situation is that the EPA Region III did consult with the Washington Aqueduct at the time the change was made for compliance with the disinfection byproduct rule. The EPA doesn't require that they use chloramines. It requires the jurisdiction to meet the disinfection byproduct rule.

Ms. NORTON. The operative words are corrosion control study. I realize there was consultation and I appreciate there was consultation and nobody acted without talking to one another, but the question here is before a water system undertakes to change the chemicals used in the water, given the different kinds of lines that send water to peoples' homes, shouldn't there be a corrosion control study done in light of the experience we have had in the District of Columbia?

Mr. WELSH. I think corrosion control studies and analysis when a treatment change is being made is critically important. Your legislation, I believe, requires a report on the corrosion control within a year after a treatment change is made.

Ms. NORTON. You notice I let you use it in my bill for a year, test it and only then rather than say don't do it to begin with. Do you think that is a preferable approach to a study ahead of time?

Mr. WELSH. Again, an important factor here is the existing rule. The existing rule does require that when there is a treatment change made that the analysis on corrosion control be done within 60 days after the treatment change is made. That is in the current rule.

Ms. NORTON. Did you do that?

Mr. WELSH. In the District, I am not sure what the facts were.

Ms. NORTON. I am sure because you are just finding out. If you did something approaching a corrosion control study within 60 days and Mr. Davis just read in the paper this morning that lead leaches into water because of the switch to chloramines, I am sure what was done after 60 days was not a corrosion control study. That is what I asked, about a corrosion control study. I don't care if it is a year as the legislation says or if you do in advance or in 60 days.

Mr. WELSH. I think the sooner the better. One of the reasons the 60 day figure jumps out to me is it gives you information, gives the primacy agency information.

Ms. NORTON. Did you have that information, Mr. Grumbles, did you get any information within 60 days?

Mr. GRUMBLES. It is my understanding that what we looked at, in anticipating that a change in treatment might have affected the corrosion, the chemistry we expected to see was an increase in nitrification, so nitrification monitoring was required, a look at the nitrification to see whether there was a change in nitrification.

That was done and it didn't pick up a change that would have indicated a problem with corrosivity. That is one of the open questions here as we look at all the data to see why did the water become more corrosive even though the way we anticipated it might become corrosive was not caught by the followup work that was done. So the nitrification study was there to identify whether that had caused a corrosion problem and that didn't indicate the problem.

Ms. NORTON. This is what gives me pause. I asked a very specific question. I know what happened in the District of Columbia. I am trying to find out whether or not if the very action that is taken now had been taken before, whether we could have avoided the problem. I keep hearing nitrification studies, I keep hearing we did something in 60 days that I still don't see the relevance of. It seems to me one way to allay our problem, particularly the problem you have with the fact that my bill is "pre-mature" is to say no and we are going to change it, in the lead and copper rule. I can't get a straight answer. Therefore, I don't have the confidence, at least with respect to this question which goes directly to what you have just found is the problem, namely the failure to do some kind of study. I don't have the confidence that you would do that or will do that absent a mandate to do that.

I have other questions but I will go forward.

Chairman TOM DAVIS. The gentleman from Maryland, Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you, Mr. Chairman.

I want to thank the witnesses for their testimony. Sometimes a severe problem in one jurisdiction raises questions and red flags about problems that may be far more extensive. That, I believe, has been the case with respect to the terrible situation with D.C., the lead in the water in the District of Columbia. It has raised awareness around the country and as a result, others have also begun testing their water. In Montgomery and Prince Georges Counties, school systems began testing their water and in fact, found elevated lead levels in the schools. I was at my son's elementary school the other day and when you went to the faucet, there is a big sign up there saying "Do not drink this water. It has not been flushed for long enough." There are signs throughout that school and other schools. So it seems to me that we do need to get to the bottom of this on a national level. I want to thank Ms. Norton for her leadership on this and for introducing the legislation.

I guess most of my questions will be to you, Mr. Grumbles, since they relate to the legislation itself. I assume that since your conclusion at least for now is that it is premature to go forward with this legislation, that is based on the fact you have reviewed and read the legislation, is that right?

Mr. GRUMBLES. I have read through it, yes, sir.

Mr. VAN HOLLEN. There has been a lot of talk about the replacement of service lines and I think it is true, whatever we agree to, if there is some consensus, that will be a longer term solution and it takes time to actually do those replacements. I think we could all agree that three things are critical. One, that you have ongoing active monitoring; second, that you have appropriate action levels; and third, that if you find something that is inconsistent with the

standards, that you have a system to quickly alert the public so individuals can take action immediately. Would you agree with that?

Mr. GRUMBLES. Yes.

Mr. VAN HOLLEN. Let me ask you about the notice requirements because my understanding is that the EPA has concluded, maybe I am wrong, that D.C. did not comply fully with the notice requirements, is that right?

Mr. WELSH. We have not finalized a review of that but we did identify areas where we believe that D.C. didn't fully comply with the rule and sent that in a letter to them, got additional information and we are continuing that review. We haven't made the final determination but we did indicate areas already where we believe the rule wasn't fully complied with.

Mr. VAN HOLLEN. Let me ask you this. You have identified some areas but what if the District of Columbia had minimally complied in those areas where you found problems, they minimally complied, would that, in your view, have been adequate notice to the residents of the District of Columbia?

Mr. WELSH. It is difficult to judge. I think we want to do a better job of review in the region and assessing whether, in fact, the information they put together is one, fully consistent with the rules but did it get the impact through to the consumers so they understood the message?

Mr. VAN HOLLEN. Let me take the second part because the conclusion is clear to most people that D.C. residents were not adequately informed. This broke in the newspapers and I don't think people were adequately informed. I think whether or not D.C. may have technically been in violation of some of the rules overlooks the larger question which is I think the current regulations with respect to notice are inadequate. I guess my question to you, Mr. Grumbles, is having reviewed the legislation, which provisions in the notice section do you find objectionable or premature? Maybe you don't. You said the overall bill was premature. Maybe you believe that part was not premature. I am trying to get at what we can agree on and what we don't.

Mr. GRUMBLES. Honestly, when you get into the specifics, I am not able to go into any detail. I think the spirit of the bill on notice is admirable. I think one of the things the agency wants to work with you on, whether through guidance or looking at whether or not to modify the rule, is the point in the legislation that better notice is required.

Personally, one of the things I have not finished doing is going through some of the specific aspects. I know that what we have to do responsibly is to weigh what is the balance between the notification requirements, what is the right degree to get out the word so that people know this. We don't want to have something become so routine that the consumers are inundated on a regular basis so that they mix the big picture. I think the spirit of the bill is good on increased notification and monitoring.

Can I just say, I misspoke a few minutes ago when Delegate Norton and I were talking about the corrosivity study and I mentioned the 60 days. What I was referring to incorrectly was the existing rule, a 60-day notification requirement. It is not a study, it is a notification requirement, if that helps to clarify. The public notifica-

tion, I think my point when I said the legislation provides a helpful road map, it is precisely in areas like that where it is a good road map for discussion in our expert national working groups that we are having on various ways to look at the existing guidance and the rule, and the spirit of the legislation in that respect is good but I have to defer on the specifics and whether or not some might be more than necessary or not as effective as existing guidance or existing rules.

Mr. VAN HOLLEN. Mr. Chairman, I know my time is up and I have more questions but let me say, there are some things that will take time and where there may not be consensus. It seems to me we should identify those areas and identify areas where there is consensus because when it comes to adequacy of public notice and monitoring, things like that where we can immediately take action, it seems to me we should move forward quickly in those areas if there is a problem. It would be very helpful, at least to me, if we could identify those parts of this legislation Ms. Norton has introduced where there is consensus and we can move forward immediately and then isolate the areas of the legislation that are maybe more controversial or where we don't have consensus.

Chairman TOM DAVIS. Thank you.

Ms. NORTON. I appreciate Mr. Grumbles, your response on the corrosion control study because my staff brought up the wording for me and you preempted them and I appreciate that.

Would you want a situation to arise in adjoining counties here or in other States where the water system proceeded without a corrosion control study given what happened in the District of Columbia? You acted after the fact to do a corrosion control study. I am just trying to see whether anybody is into preventing this problem elsewhere. You are doing it now. Is it your testimony that you will do it if you find a situation like what you found in the District of Columbia after you found it or do you think it is better to do it in advance? Can I get a straight answer on that one?

Mr. JACOBUS. I will try this. I believe a corrosion control study might include a pipe loop study and if we look back on the situation in D.C., it is possible, we can't be certain, but a pipe loop study was not done at the time of the change from chlorine to chloramines. Since we don't understand exactly the chemistry of what has caused this problem, it is possible that a pipe loop study may have identified that problem in advance. We can't be certain but it is possible that could have helped in this situation. I am not in a position to judge whether in every type of treatment change that an authority might have to make, whether that requires a full pipe loop study to determine whether there have been changes to the corrosivity, but that may have helped in the case of D.C.

Ms. NORTON. One would think then that the EPA rules would outline the various ways the locality can proceed but Mr. Jacobus and Mr. Johnson had to figure it out for themselves. If you have an expert environmental agency, it seems to me whether it is pipe loop study or full corrosion control study, it is something that there ought to be some guidance on which brings us back to the rules which give no guidance whatsoever on that as Mr. Grumbles indicated there is a notice requirement. This is an example of why there is legislation.

Mr. GRUMBLES. I know you have limited time but I wanted to say as we are carrying out work groups and work shops looking at areas of guidance, I think we are learning painfully in this instance the importance of understanding the changes and the unintended consequences when you have a change in treatment and how that relates to corrosivity. That is something we will certainly commit to work on more at a national level as well as to make sure when treatment changes are being made, as much as possible, we can understand or the primacy agency in those other 48 areas of the country understand exactly the effect.

Ms. NORTON. It seems to me even given the fact that the information is still rolling it, it has rolled in rather strongly. Your own experts, by the way, after the fact, Dr. Thompson indicated he thought this was very, very likely to be the result of corrosivity. At the very least, the EPA you would think, would be sending out messages, phone home before you change chemicals in your water. The notion that we can't get that kind of response is very troubling because it means everybody is still on his own and I appreciate how you have been willing to go.

Let me go to notification. That is an easy one. That is one I think everyone agrees we might be able to deal with. Of course there have been no changes and you have gotten to WASA and indicated they should have done more. Let me tell you the notification problem that really bothers me.

The notification problem that bothers me is that I am pregnant. I hope not. [Laughter.]

I am drinking the water but I am in 1 of the 10 percent of homes that have very high lead levels because you have a 90 percent rule. Not only don't I know it while I am drinking water during my pregnancy but I will never know it. So then I am going to use the water to make the baby's formula and I am going to continue to use the water while the child is in the formative years of brain development between ages 1 and 5 and nobody ever told me about lead in the water because of the 90 percent rule and I think you only have 50 samples even in a huge city like this and I was unlucky enough to be in the 10 percent and I never knew it. I am asking you what we should do about these lost residents, these people who never knew? Is there an obligation to at least give them some notice? Should everybody have notice rather than only some of those who may have lead? Should everybody have notice that there is lead or may be lead in the water?

Mr. WELSH. I would agree and I acknowledge the tone of the question that I think one of the priority areas for the agency to review the existing rule and our guidance associated with it is the amount of notice that is currently required adequate, is it robust enough to get out the word?

Ms. NORTON. What is your timeframe on that, Mr. Grumbles?

Mr. GRUMBLES. We are going full throttle on the review of the existing rule.

Ms. NORTON. The people I am talking about are drinking the water, so I want to know when everybody who may be drinking water is going to know they may be drinking water so they can switch real quick? That is why I am asking for the timeframe on that one. That is the most serious one.

Mr. GRUMBLES. The timeframe for the immediate notification.

Ms. NORTON. Even the 10 percent of the homes in a particular jurisdiction which may be above the action level would at least know it. This is notification only.

Mr. WELSH. One thing I can add is separate to the lead and copper rule, the consumer confidence rule requires the authority to put out a report on the quality of the water. In the annual consumer confidence report, the minimum and the maximum and the 90th percentile level has to be reported, so there is a mechanism that is designed to let the public know what the 90th percentile level is. That speaks partially to the concern you are talking about. I know there are issues about whether that will be read all the way through and that message will get through if it is just in the consumer confidence report but that existing requirement gets to some of the issues you are discussing.

Ms. NORTON. I wish you would look closely at that. I really do think when we are talking about pregnant and lactating women and children under 6, maybe at that point alone, there should be no margin of error. I think the science on that has long been in, so I am asking for that as a first priority.

Chairman TOM DAVIS. To go along with that, I think it is really important to worry about the entire water system. What does WASA do for those homes where the lead levels exceed the action level when the overall system doesn't? Does the EPA require action with respect to those?

Mr. WELSH. In the case where there is not an exceedence, but there are individual samples over the limit? No, there is not a requirement in the lead and copper rule that a specific action take place.

Ms. NORTON. You see the point the chairman is bringing out?

Mr. WELSH. Yes.

Ms. NORTON. Thank you. That really does clarify the point even better. Do you think, Mr. Grumbles, Mr. Welsh, that water fountains in school ought to be tested on a frequent basis?

Mr. GRUMBLES. I think they should be tested on a frequent basis. I say that and I have to acknowledge that I send out letters to every State in the country asking them whether they had a program for lead in drinking water at schools and day care facilities, we got back a mixed bag in terms of the number of programs specifically that States have related to lead in drinking water at schools and day care facilities.

Ms. NORTON. You got back what? I am asking should they be tested and you said what happened?

Mr. GRUMBLES. I said it was a mixed bag and I meant that some of the States have programs and others do not.

Ms. NORTON. Let me ask my colleague, was your son's school in Montgomery County? That is a public school in Montgomery County where they now have these signs. You think this thing is localized in the District of Columbia. Montgomery County doesn't get water from D.C. They all come under your jurisdiction and this is why I am probing this question. Should water fountains in the United States be subject to the mixed bag you described or should water fountains be tested on a frequent, not even saying what fre-

quency should be. We think once a year is par for the course but should they be tested on a frequent basis?

Mr. GRUMBLES. I think they should. The point I wanted to make and it is an important one based on the way the current law is implemented and with the court cases involving the roles of various governments. The States primarily carry out these programs for the Safe Drinking Water Act as it relates to schools and also schools and day care facilities if they are public water systems, then there is an action level for the lead and copper rule.

Ms. NORTON. Should there be a national requirement because you have varying responses from jurisdictions? Is the issue of lead in the drinking water of children serious enough for there to be a national requirement that water fountains in schools be tested on a frequent basis?

Mr. GRUMBLES. I know there is a national requirement based on the Lead Contamination Control Act of 1988.

Ms. NORTON. After the child already has lead in his system, please take back lead. Every answer I get is after we see the problem, we are going to do a corrosion control study, we are going to get to the water fountain have children have drunk the water. I am asking should the water fountains in schools, this is about the third time I have asked this question without getting an answer, should the water fountains in schools be tested on a frequent basis?

Mr. GRUMBLES. I think they should and I respect the question and I agree that is the case. What I wanted to communicate is that there needs to be a discussion about the appropriate roles for not only the EPA but the States.

Ms. NORTON. I agree, only calling for a national standard so that kids in Montgomery County wouldn't find they are not tested except every 5 years but D.C. tests every year because we have had a crisis. That is all I am asking.

Mr. GRUMBLES. One of our priorities Congresswoman is to survey the country and see what States are doing with respect to testing.

Ms. NORTON. In other words, knowing full well that we don't have uniformity in anything in this country, you want to do a survey before you decide whether or not there should be annual testing of the water fountains in schools.

Mr. GRUMBLES. We want to make sure whatever is done is done in a way that is sustainable and really works. It just needs collaborating with our partners. That is it.

Ms. NORTON. We would like to have a timeframe on that one too.

Chairman TOM DAVIS. We have another panel waiting and a limited period of time.

Mr. Van Hollen.

Mr. VAN HOLLEN. Thank you, Mr. Chairman. Ms. Norton covered some of the areas I wanted to cover but I do want to delve into the issue of the standard and the action level a little bit more because as I understand right now you do a test which is already a sample of the universe out there and if 10 percent are non-compliant, or under 10 percent, then you still pass the test. In other words, the system gets an OK. Is that right?

Mr. GRUMBLES. Right.

Mr. VAN HOLLEN. To make sure I understand, of the 10 percent of homes that were found to be non-compliant, there is currently no notice requirement that goes directly to those homes?

Mr. GRUMBLES. Right.

Mr. VAN HOLLEN. This raises a larger issue because it is not just the 10 percent of homes that were tested, it also means in that larger universe you would extrapolate, they are 10 percent of the homes in the entire area, that are non-compliant. That is why this legislation requires we take another look at this action standard and it proposes two alternatives. One is to have a minimum national standard at the tap and the alternative is that the EPA determines that not practicable, that they have to develop an actionable level that gives protection somehow to everybody because it is not the 10 percent of the people in the test not getting informed, it is also 10 percent of the population that may well have significant lead problems in their water who don't know it and are not informed and no change is being made in the system. Why shouldn't we revisit that whole issue and isn't it necessary to revisit that issue?

Mr. GRUMBLES. Congressman, I am fully supportive of revisiting aspects of the rule including the 90th percentile and the action level. I am not in a position to commit to a rulemaking. I am in a position to commit to doing what we want to do and that is to continue to work with congressional, State and local partners and the public on saying does this rule, which is about 13 years old, continue to make sense? There has been success. We have seen reductions in lead in drinking water throughout the country, so we shouldn't make light of that or neglect to see that.

When you get into the fine specifics, the percentile approach, the monitoring, the notification as you point out, the further things that can be done if not at a national level at a State and local level with respect to schools, we are welcoming that dialog and we appreciate that. We will work with you and your colleagues.

Mr. VAN HOLLEN. And I appreciate that. You mentioned the rule was 13 years old and I would just point out that Mr. Waxman is not here but when this issue was raised 13 years ago, I have the document from that time, he specifically addressed this question about this rule would result in not protecting potentially 10 percent of the people. He said it protects only 90 percent of the households, what about the other 10 percent? So while it is 13 years old, I think it is time to go back and relook at the warning Mr. Waxman raised 13 years ago on this very important question.

Thank you, Mr. Chairman.

Chairman TOM DAVIS. We will let you have the last question, Ms. Norton, but we have to move to the next panel.

Ms. NORTON. I appreciate your generosity.

Mr. Johnson, I did want to ask you a question. You raised a very important issue that I think the committee has to take seriously and I hope WASA will. It came forth in testimony that partial replacement would not do the job and Mr. Johnson has testified rather definitively to that. Indeed, we had testimony that partial replacement may make it worse because the two different metals could interact and one become a battery for lead.

I am not going to ask a question since the chairman wants to move on, but at the very least the kinds of mainstream science you are working on may well be out of date if in fact partial replacement doesn't do the job and public utilities are spending millions of dollars or more to do that and worse, the science says partial replacement may make it worse. Your rule allows partial replacement so it seems to me you are at ground zero when it comes to looking again at that rule.

Mr. Johnson, I appreciate what WASA has done. It has said to homeowners, while we are doing the work, we will replace the private section as well but we have had people call our offices to say they get a single dollar amount rather than a per square foot or linear foot amount. So it doesn't enable them to shop around, it is expensive. I want to ask if you have found a way since it really does make sense for WASA to do the whole thing while you are going into the ground, to help homeowners in fact take advantage of your service if it is the cheapest way to do it or do it some other way. Have you found a way to deal with this complaint we have had phoned in to my office?

Mr. JOHNSON. Ms. Norton, I am not familiar with the manner in which the estimates are given, whether it is on a linear foot basis or not, but typically we found that our contractor because of the number of lines they are doing, the sheer volume, are able to do it much less expensively than a private plumber.

Ms. NORTON. But you give them only 30 days I think to make the decision.

Mr. JOHNSON. It is 45 days that we require under the EPA rules to give them to make that decision and then they can come forward. We have also explored with a local bank and are attempting to establish a consortium of banks an opportunity to provide loans to homeowners who would be eligible in a low income category to replace those pipes in the private portion of their property. We also have looked at changing WASA regulations so that we would establish a per linear foot cost for providing the service from the public space into the homeowner's property. That is a rule currently in the D.C. register for public review and would establish a fixed price and we would work that on an average basis and work it into the system on an ongoing basis.

Ms. NORTON. Thank you. We will pass along that information.

Mr. WELSH. May I add very quickly that while we agree that full lead service line replacement is the most protective, the partial replacements are not without value. Reducing some of the lead reduces some of the risk. So after a proper period of flushing, the samples do show that the partial line replacement has some benefit in reducing the lead that comes out the tap.

Ms. NORTON. This is very controversial, Mr. Welsh, because if that were the case, then one could say at least it helps. It was troubling to hear from experts at our last hearing that partial replacement may make it worse because of the interaction of the two metals and lead acting as a battery, so I am going to ask that you look closely at that before concluding what your rules already say, do partial replacement. That has been called into serious scientific question.

Thank you very much, Mr. Chairman.

Chairman TOM DAVIS. Thank you very much.

I want to thank this panel for being with us and for answering questions. We will dismiss you at this time.

We will take a 2-minute recess as we bring our next panel together.

[Recess.]

Chairman TOM DAVIS. We now have time to recognize our second panel. We have Mr. Howard Neukrug, director, Office of Watersheds, Philadelphia Water Department, from the American Water Works Association; Ms. Angela Logomasini, director, Risk and Environmental Policy, Competitive Enterprise Institute; Mr. Scott Rubin, esq., consultant and public utilities expert; Mr. Paul Schwartz, national policy coordinator, Clean Water Action; and Ms. Katherine Funk, esq., Parents for Nontoxic Alternatives. I appreciate you all being here.

As you know, it is the policy of the committee that we swear you in first.

[Witnesses sworn.]

Chairman TOM DAVIS. Try to keep it to 5 minutes. Your entire statement is in the record, so questions will be based on the entire statements. We have the light in front of you. There is a button there that opens your mic when you start.

Mr. Neukrug, we will start with you and move straight on down the line. Again, thank you for your patience. We appreciate all of you being here. Thank you.

STATEMENTS OF HOWARD NEUKRUG, DIRECTOR, OFFICE OF WATERSHEDS, PHILADELPHIA WATER DEPARTMENT, THE AMERICAN WATER WORKS ASSOCIATION; ANGELA LOGOMASINI, DIRECTOR, RISK AND ENVIRONMENTAL POLICY, COMPETITIVE ENTERPRISE INSTITUTE; SCOTT RUBIN, CONSULTANT AND PUBLIC UTILITIES EXPERT; PAUL SCHWARTZ, NATIONAL POLICY COORDINATOR, CLEAN WATER ACTION; AND KATHERINE FUNK, PARENTS FOR NONTOXIC ALTERNATIVES

Mr. NEUKRUG. Thank you very much and good morning.

Thank you for this opportunity to present the views of the American Water Works Association on lead contamination in drinking water.

AWWA is the largest and oldest drinking water, scientific and technical association in the world. This morning we had 57,000 members but I think after hearing Ms. Norton's remarks, I think we are going to offer her an honorary membership to the American Water Works Association and make that 57,001 members representing all areas of the drinking water profession; 4,800 utilities and 80 percent of the Nation's drinking water supply are members of the American Water Works Association. We have an extremely long history with the lead and copper rule.

I would like to offer for the record an AWWA Research Foundation report showing $3.4 million of research that has been conducted on the issue of lead and copper and $2.5 million of new research that is about to begin in the area of corrosion control.

Personally, I am from the Philadelphia Water Department and I ran pilot studies for lead and copper about 10 years ago; 15 years

ago I was involved with development of the original lead and copper rule, so I have quite a history with this rule.

Nationally, I believe that the lead and copper rule has been extremely successful and the EPA's oversight of that rule has been tough and consistent. This is despite or because of possibly the highly complicated nature of this rule when in its sampling process, in its ownership of service lines issues, optimization and the education of the public about the issues, all are extremely complicated issues.

I would like to remind everyone that lead exposure is a national issue and comes from many different sources including lead paint, leaded gasoline and lead solder and all of those have resulted in the work that is happening at the EPA and in Congress and across the Nation which has really reduced children's blood lead levels over the years. We are on a very big mission now to eliminate these lead levels completely but there is a lot of good work that has already been done.

I respectfully suggest that the CDC or some organization like that take a new look at understanding all the remaining exposure pathways to lead in drinking water and from other sources and from that develop a comprehensive national, educational and action plan for dealing with the issue of lead, particularly in children.

With respect to drinking water and the route of exposure, AWWA has consistently advocated a three-pronged approach. One is public education. Two is optimization of corrosion control and three is the reduction of lead materials in distribution systems. With respect to public education and outreach, extensive programs already exist nationwide. I think a key lesson I am certainly hearing this morning and is clear from the recent past is that a review is appropriate at this point of the education and outreach programs that exist for drinking water and lead issues and to look at the consistency of these programs.

In terms of optimization of corrosion control, all systems should be optimizing for corrosion control. Drinking water is the universal solvent and every water is different, not just for lead but there are other issues for corrosion control including copper, including cast iron pipes and other issues of infrastructure which all require a well managed utility to optimize for corrosion control.

Chemistry, as we heard this morning, varies widely by location, by type of water, it can vary daily, it can vary seasonally and studies are needed to understand from both the literature point of view, lab and pilot point of views, and what corrosion control optimization works best and to slowly implement full scale implementation of this. Every utility should be reviewing corrosion control practices both over time and with changes in treatment.

Replacement of leaded materials where needed, there has been a tremendous success already with the lead free solder. We are not even lking about the solder issue at this point and it just shows the success that Congress and Safe Drinking Water have had in dealing with that issue.

Caution over removing of lead service lines, nationally we are talking about $10 billion. This goes on top of a $500 billion gap that the EPA has already recognized for drinking water and waste water utilities and infrastructure spending. I testified a few weeks

ago on the issue of infrastructure and I talked about a crisis in priorities. We have limited funding and where to spend that and the question I think this panel is looking toward is where does lead fit into the priorities of the infrastructure issues in the industry.

Finally, the issues in D.C. remind us all of the importance of understanding the cross links of all drinking water regulations. This is highly recognized in most of the regulations coming out particularly recently from the EPA but everything needs to be based upon good science and deliberately looked at over time. We need to do active monitoring, continuous verification of the effectiveness of corrosion control, disinfection byproducts and other issues.

In summary, I would like to commend Delegate Norton for the spirit of the legislation of H.R. 4268. I will not call it premature but I will say I hope that the EPA, the drinking water industry and other parties have the opportunity to discuss and implement something through the regulatory process prior to legislative action on those issues.

Mr. Chairman, I would request that this report from the American Water Works Research Foundation be entered into the record.

Chairman TOM DAVIS. Without objection, it will be entered into the record.

Mr. NEUKRUG. Thank you.

[The prepared statement of Mr. Neukrug follows:]

American Water Works Association
The Authoritative Resource for Safe Drinking Water SM

AMERICAN WATER WORKS ASSOCIATION
BEFORE THE
COMMITTEE ON GOVERNMENT REFORM
U. S. HOUSE OF REPRESENTATIVES

STATEMENT ON

THIRSTY FOR RESULTS
LESSONS LEARNED FROM THE DISTRICT OF COLUMBIA'S
LEAD CONTAMINATION EXPERIENCE

MAY 21, 2004

PRESENTED BY
HOWARD NEUKRUG, DIRECTOR
OFFICE OF WATERSHEDS
PHILADELPHIA WATER DEPARTMENT
PHILADELPHIA, PENNSYLVANIA

INTRODUCTION

Good morning Mr. Chairman. I am Howard Neukrug, Director of the Office of Watersheds for the Philadelphia Water Department in Pennsylvania. The Philadelphia Water Department is a municipal water, wastewater and storm water utility serving over two million people in the Philadelphia metropolitan area. I serve as the Chair of the American Water Works Association (AWWA) Water Utility Council. I am here today on behalf of AWWA. AWWA and its members commend you for holding this hearing and appreciate the opportunity to present its views on lead contamination of drinking water.

Founded in 1881, AWWA is the world's largest and oldest scientific and educational association representing drinking water supply professionals. The association's 57,000 members are comprised of administrators, utility operators, professional engineers, contractors, manufacturers, scientists, professors and health professionals. The association's membership includes almost 4,800 utilities that provide over 80 percent of the nation's drinking water. AWWA and its members are dedicated to providing safe, reliable drinking water to the American people.

AWWA utility members are regulated under the Safe Drinking Water Act (SDWA) and other statutes. AWWA believes few environmental activities are more important to the health of this country than assuring the protection of water supply sources, and the treatment, distribution and consumption of a safe, healthful and adequate supply of drinking water.

Recently, there has been much interest in Congress about the elevated levels of lead found in drinking water in Washington, DC. Much of the discussion has centered on the lead service lines between the distribution system and the home plumbing, and whether or not they are a significant source of lead in drinking water. We cannot speak to the specifics of the situation in Washington, DC. The matter is still under investigation and AWWA has no direct knowledge of the cause of the elevated lead levels found in tests of drinking water in Washington, DC, or any remedial action that has been taken or should be taken in that instance. Nor does AWWA have any information that would suggest that the problem experienced in Washington, DC, is occurring in other public water systems across the country. We can, however, provide general information concerning the sources of lead in drinking water and what has been done and can be done to reduce exposure to lead in drinking water.

AWWA and its members have a long history of promoting measures and research to eliminate or reduce exposure to lead through drinking water. AWWA supported amendments to the SDWA to eliminate lead contamination in school drinking water and prohibit drinking water coolers that were not lead free. Through the Awwa Research Foundation (AwwaRF), public water supplies have spent approximately $3.4 million dollars on research projects related to lead and copper corrosion and plan to spend over $2.5

million on planned or ongoing research. A summary of the funding for AwwaRF projects related to the Lead and Copper Rule is attached to this statement.

AWWA and its members emphatically support lead exposure reduction measures that promote public health.

1. First and most importantly, we advocate a comprehensive national approach to reducing lead contamination from all sources. This should involve a program of research and public education concerning the sources of, dangers of, and protection against lead contamination from all sources such as paint, dust, drinking water, and others. It is important that the program not be limited to drinking water, since drinking water is not the major source of lead exposure.
2. We advocate the use of corrosion control treatment techniques by all utilities to reduce exposure to lead in drinking water.
3. We support replacement of lead service lines that significantly contribute to high lead levels in the home.
4. We advocate a "holistic" approach to the development and implementation of drinking water regulations to minimize the extent to which regulations can interfere with each other.
5. We propose an independent study of the drinking water lead contamination incident in Washington, DC, by a group such as the National Academy of Engineering, to determine what caused this incident and what lessons may be learned from this.

BACKGROUND

Lead is a naturally occurring metal that was used regularly in a number of industrial capacities for most of the 20th century. Lead was used as a component of paint, piping (including water service lines), solder, brass, and as a gasoline additive until the 1980's. According to the U.S. Environmental Protection Agency (USEPA), lead paint and the contaminated dust and soil it generates is the leading household source of lead exposure. Research has confirmed that lead is highly toxic. Ingestion of lead can pose a serious health risk to humans, especially children. Health risks linked to lead ingestion include increased blood pressure, reduced I.Q. levels, brain damage, loss of hearing, stunted physical growth, reduced learning power, premature births, low birth-weight, fertility problems, and miscarriages. Since 1974, average lead concentration in human blood has been reduced almost 75 percent, primarily as the result of removal of lead from gasoline and lead solder from cans.

Lead contamination almost always occurs ***after*** water has left the treatment plant when it travels through piping and plumbing containing lead. Water is naturally corrosive, and in some cases will corrode the pipes and plumbing through which it passes. This corrosion can occur in home fixtures as well. If these fixtures are made of materials, like brass, which contain lead, the fixtures can add dissolved lead to the drinking water. Brass fixtures and lead-based solder used in home plumbing prior to 1986 are significant sources of lead exposure in drinking water. Grounding of electrical circuits in homes to water pipes and galvanic action between two dissimilar metals may increase corrosion that could cause lead to leach into the water. Customers who soften their water or otherwise change its corrosivity can affect the lead content of the water.

In 1986, Congress passed amendments to the Safe Drinking Water Act, effectively banning the continued use of lead in materials used in drinking water systems. This legislation prohibited the use of pipe, solder or flux containing lead and required specific public notification about the presence of lead in its drinking water or drinking water system.

In 1991, USEPA published the Lead and Copper Rule (LCR), to require water utilities to reduce and maintain the corrosivity of water in order to minimize the leaching of lead from pipes and plumbing into drinking water. The LCR requires public water systems to monitor first flush lead levels in a predetermined number of homes based on system size. The homes where monitoring is to occur are selected based on the high likelihood that they will have lead service lines or plumbing that contains solder with high concentrations of lead. Based on data from this monitoring pool of homes, a public water system must meet a 15 parts per billion (ppb) action level at the 90th percentile for taps monitored. Based on the initial monitoring and analysis under the revised LCR, public water systems determined the needed process to maintain "optimal corrosion control." The primacy agency reviewed and approved the proposed control strategies and must approve subsequent changes.

If a public water system exceeds the 15ppb action level, it is required to develop and undertake a lead service line replacement program. The LCR requires that a system replace 7 percent of the lead service lines which the system owns each year until all such lines have been replaced, or until tap water monitoring indicates that its 90th percentile lead level is equal to or less than 15ppb action level.

As part of a corrosion control strategy, many public water systems add a corrosion inhibitor such as zinc orthophosphate to the water. While this is often effective as a means of corrosion control, it does increase the phosphate content in wastewater in that community. Phosphate is a limiting nutrient in many surface waters to which wastewater is discharged and is regulated under the Clean Water Act because of its high potential to contribute to the eutrophication of our lakes and rivers.

AWWA RECOMMENDATIONS

1. NATIONAL LEAD REDUCTION STRATEGY.

AWWA advocates a comprehensive approach to reducing lead contamination from all sources. We believe that Congress should require a respected body such as the Centers for Disease Control to complete a comprehensive study of lead exposure from all sources, and to develop a national strategy to reduce lead exposure from all significant sources. Such research should include a determination of the contribution to lead in drinking water from lead service lines, pipes inside the home, and plumbing fixtures.

In addition, AWWA proposes a priority national public education campaign aimed at measures and steps people can take to protect themselves from significant sources of lead contamination. AWWA believes that a national coordinated campaign involving all concerned federal agencies and state and local governments will provide significant public health benefits.

AWWA also strongly advocates a continuing public education program concerning all sources hazards of lead exposure and effective protective measures. Public education is a key component of a lead exposure reduction strategy. Water suppliers, working in cooperation with local and state public health officials and others, can help deliver the needed messages on the dangers of lead and the part everyone has to play in reducing risks. Since most lead contamination occurs inside the home from paint chips and dust or comes from home plumbing, increased public awareness is especially important.

In the mid-1980's AWWA launched the "Get the Lead Out" campaign to raise the level of lead contamination awareness among consumers. We created informational material for utilities to give their customers. We now have consumer information about lead contamination in drinking water on the AWWA website. Concerned consumers can take several precautionary steps to limit possible exposure to lead from their home plumbing. Flushing the tap if a faucet has gone unused for more than a few hours and not using water from the hot water tap for cooking or drinking are simple methods to avoid high lead levels. The longer water stands in a faucet, the more lead can be dissolved and hot water dissolves lead at a faster rate than cold water. AWWA recommends that concerned consumers have their water tested by a State-certified laboratory to determine if lead is leaching into their drinking water from their home plumbing. Consumers should be advised of these precautions even if the water system results from lead testing do not exceed the USEPA "action level" of 15 ppb in more than ten percent of homes tested. Although it is not a specific requirement in the LCR, a water utility should notify a customer of the results of lead testing of the consumer's tap.

2. OPTIMIZATION OF CORROSION CONTROL.

AWWA advocates the treatment technique of optimizing corrosion control as the best way of reducing exposure from lead in drinking water. Determining the corrosivity of water is complex and depended on several characteristics of the water. Lead contamination of drinking water is primarily the result of lead in home plumbing and fixtures beyond the control of a drinking water utility. The means available to drinking water systems to mitigate the degradation of water passing through pipes and fixtures in home plumbing is through implementation or modification of the corrosion control process. This can be done by adjusting the finished water's pH and alkalinity or by adding corrosion inhibitors.

If source water were the only way lead could enter drinking water, establishing a maximum contaminant level (MCL) for a utility to meet at the plant or in the distribution system would be sufficient to protect public health as it is for the majority of regulated contaminants. If lead were to occur in source waters, it could be removed in the treatment process. Public water systems are clearly responsible for and can control water quality at treatment facilities. However, the major source of lead in drinking water is not source water. It is lead from plumbing systems and faucets in homes that are beyond the control of drinking water utilities. The contribution of lead service lines to lead contamination is uncertain.

Some have suggested establishing an MCL for lead at the end user's tap. This would have the effect of holding water suppliers legally responsible not only for lead sources that they cannot control but also the mistakes, omissions, and even illegal activities of others. There is still lead solder in home plumbing although it was banned in 1986. Studies have shown that brass faucets holding lead free water for an eight hour period can leach lead into water at levels of 10 ppb and higher. Grounding of electrical circuits in homes to water pipes and galvanic action between two dissimilar metals may increase corrosion that could cause lead to leach into the water. Customers who soften their water or otherwise change its corrosivity can affect the lead content of the water. These types of problems cannot be solved by an MCL at the tap or in the public water system. Each of these by themselves or in combination can cause lead to leach into drinking water. The SDWA limits EPA authority to regulating public water systems. A tap within a residence is not and should not be considered to be part of a public water system.

The SDWA also specifically prohibits USEPA from imposing both an MCL and a treatment technique for the same contaminant. Therefore AWWA advocates a lead control strategy of optimizing corrosion control in conjunction with public education and a lead service line replacement program as the best method to protect public health.

3. REPLACEMENT OF LEAD SERVICE LINES.

AWWA advocates lead service line removal as a means of reducing lead contamination in drinking water when the lead service line is significantly contributing to lead contamination. However, lead service line replacement is complicated by the ownership of the lead service lines. In some instances, the water utility owns the entire line. In others, the property owner owns the entire service line. And in still other cases, part of the lead service line is owned by the utility and part by the property owner. A public water system can only be held legally liable for replacing the service line or part of the service line owned by the utility. A public water system has no legal means to compel a property owner to replace a lead service line or portion of a lead service line. Requiring a water utility to remove privately owned lead service lines raises constitutional legal issues with regard to private property and eminent domain. All agree that partial replacement of a lead service increases lead levels in water and should be avoided. Further, removing a lead service line may not reduce lead contamination of drinking water. Tests have revealed high lead levels in homes that have no lead service line and low to no measurable lead contamination in homes with lead service lines. Removing lead service lines alone is not the complete solution to reducing lead exposure from drinking water. Because of the costs involved and the likelihood there will be little or no public health benefit in some cases, lead service removal programs should focus on removing lead service lines owned by a utility that are significantly contributing to lead contamination as a high priority.

When the LCR was promulgated in 1991, USEPA estimated that it would cost $1.5 - 6.25 billion nationally ($2.1 - $8.65 billion in 2003 dollars) to remove lead service lines. The LCR estimate is for replacement that will occur as a result of the rule. The USEPA estimate is based on the assumption that 8,300 of the 15,000 systems with lead service lines will be required to replace some lead service lines at a per service line costs of $900 - $1,800. A later study conducted by the AWWA Research Foundation in 1994 estimated that there was a total of some 2.3 to 5.1 million lead service lines in the nation. Removal of the utility owned portion of the lead service line would cost $3.4 to $5.1 billion nationally ($4.2 - $6.3 billion in 2003 dollars). Replacement of all lead service lines, including the portions owned by property owners and by utilities, would cost approximately $10-$14.1 billion nationally ($12.3 -$17.5 in 2003 dollars).

Some property owners may be unable to afford the cost and local or state restrictions may prevent a public water system from paying for or financing the lead service line removal. A public water system has access to the Drinking Water State Revolving Fund (DWSRF) to fund removing lead service lines that it owns. A property owner may not have such easy access to fund lead service line replacement. In 1991, AWWA recommended in testimony that Congress consider enacting a tax credit for property owners who must pay for the removal of lead service lines. We still believe this is a good idea that is in the interests of public health in this country.

The cost to consumers of removing lead service lines is in addition to the cost of replacing aging drinking water infrastructure. In September 2002, the USEPA released a Clean Water and Drinking Water Infrastructure Gap Analysis which found that there will be a $535 billion gap between current spending and projected needs for water and wastewater infrastructure over the next 20 years. In May 2002, the Congressional Budget Office estimated the spending gap for drinking water needs between $70 billion and $362 billion over 20 years. In AWWA's report entitled Dawn of the Replacement Era: Reinvesting in Drinking Water Infrastructure, AWWA estimates the drinking water infrastructure needs to be $250-300 billion over the next 30 years. By any estimate, the gap is real and is big. All estimates suggest an emerging large cost for drinking water infrastructure. As illustrated in the AWWA report, the "demographics" of pipe replacement is big and the bill is coming due soon. This challenge is exacerbated by population shifts and growth patterns over the years that have left stranded assets in many older cities, as well as today's economic conditions and the changed demographics and economic levels of urban populations.

Funding for drinking water infrastructure is further exacerbated by the enormously expensive federal mandates that wastewater utilities face, such as costs relating to Combined Sewer Overflows (CSO) and Sanitary Sewer Overflows (SSO), that set the context for all other funding issues. These needs significantly skew financing for other infrastructure investments in both water and wastewater utilities such as the replacement of aging pipes, appurtenances, and lead service lines. Local ratepayers are often seriously challenged to pay for these mandates, and little, if any, room is left in the ratepayer's budget for other vital spending. In many cases, it appears that mandatory spending for clean water mandates has "driven out" the ability to raise rates for drinking water needs. There is a limit to the costs that individual consumers can bear.

As if these challenges weren't enough, the post-September 11 world added a new dimension to water infrastructure in the form of investment needed to protect the security of the nation's infrastructure. A public water system is a critical infrastructure that not only is necessary to provide safe drinking water to the American people but also is critical to first responders for fire

protection. Cognizant of the many security needs facing drinking water utilities, AWWA did an analysis to estimate the costs to undertake the immediate steps in water system security: The cost of upgrading systems to ensure secure control of access to critical utility assets in community water systems subject to the Bioterrorism Act is approximately $1.6 billion. This does not include the capital costs of upgrades to address vulnerabilities identified in vulnerability assessments such as hardening pumping stations, chemical storage buildings, transmission mains, adding redundant infrastructure or relocating facilities and pipelines. Thousands of community water systems must make such investments to close vulnerabilities identified in the assessments done under the Bioterrorism Act. Nationwide, these needs undoubtedly total billions of dollars, and can be considered the cost of a secure water supply. Because homeland security is primarily a federal responsibility and the security needs are so large that they would swamp utility finances and funds through existing programs, AWWA has asked Congress to provide water security improvement grants. However, because federal funding for security upgrades is not now available, consumers will have to pay for the immediate security upgrade needs for drinking water systems.

These many and expensive infrastructure costs to the consumer present a complicated challenge to local governments in their efforts to remove lead service lines.

4. **HOLISTIC APPROACH TO DRINKING WATER REGULATIONS.**

AWWA advocates a holistic approach to drinking water regulations that considers simultaneous compliance with existing drinking water regulations and other environmental regulations. The recent experience in Washington, DC, with lead contamination is one example of the pitfalls of the "silo" approach to drinking water regulation. By "silo" we mean developing a rule in isolation and not completely understanding its connectivity to other regulations. Without having all of the data necessary for a complete technical analysis, it appears that treatment changes (enhanced coagulation and switching to chloramines) the utility instituted to comply with the Stage 1 Disinfectants and Disinfection By-Products Rule (DBPR) may have contributed to the increased levels of lead in the district's drinking water.

Potential problems with the Lead and Copper Rule (LCR) stemming from treatment changes made to comply with the Stage 1 DBPR were not unknown at the time that regulation was finalized. In AWWA's comments on the Notice of Data Availability (NODA) for the Stage 1 DBPR in 1998, and again in our comments on the proposed LCR technical corrections in 1998, AWWA recommended that the enhanced coagulation requirements for Stage 1 DBPR include greater flexibility for states and utilities in determining the most appropriate treatment approach for simultaneous control of organics, disinfection by-products, and corrosion.

USEPA expects to finalize the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and the Stage 2 Disinfectants and Disinfection Byproducts Rule (DBPR) in early 2005. These rules specify a range of treatment and management strategies to reduce disease associated with *Cryptosporidium* and other pathogenic microorganisms while at the same time avoiding dangerous levels of disinfectant byproducts. Many more utilities will switch to chloramines or make other major treatment changes to comply with the Stage 2 DBPR. The effect of these rules on compliance with the LCR was not a consideration in their development.

Furthermore, the recently released study by USEPA's Office of Research and Development (ORD), *The Occurrence of Disinfection By-Products (DBPs) of Health Concern In Drinking Water: Results of a Nationwide DBP Occurrence Study*, found alternative treatment methods, such as chloramine and ozone, create as many as 50 new, and possibly more risky, DBPs. Little health effects information is available on these new DBPS. In both Stage 1 DBPR and Stage 2 DBPR, there has been a consistent and progressive shift to alternative disinfectants for compliance. Unfortunately, this new research now suggests that there may well be significant, and as yet unquantified, undesirable health risks associated with this shift to alternative disinfectants.

The arsenic regulation provides another example of the "silo" approach to drinking water regulation. California has a more stringent classification of hazardous waste than the rest of the nation. This classification system was in place during the development of the arsenic regulation. AWWA and many California utilities, in formal comments on the proposed rule, advised USEPA that this regulation was going to result in the production of tons of hazardous waste in California. USEPA's approach to the hazardous waste issue was that this classification system was California's problem and this issue didn't need to be addressed in the national regulation. As a result, the costs to dispose of the hazardous waste from the California utilities were not included in the estimated national cost of compliance. Now, based on the latest research, treatments to remove arsenic generate both solid and liquid hazardous wastes, and the estimated costs to properly dispose of these wastes from California utilities alone, are equivalent to EPA's estimated national cost of compliance.

Section 1412 (b)(5) of the SDWA states that rule writers must consider risk tradeoffs in setting an MCL. In particular, they must consider risk tradeoffs if the levels of other contaminants are raised or they interfere with the efficacy of treatment techniques or processes that are used to comply with other regulations. Consequently, AWWA believes that the agency should adequately consider

negative consequences of regulatory actions, particularly with respect to potential human health impacts. This issue is particularly acute when regulations are driven by potential or poorly understood risks, such as DBP regulations.

AWWA urges USEPA to appropriately consider simultaneous compliance with existing drinking water regulations when a new drinking water regulation is finalized. Additionally, USEPA should appropriately account for the impacts from existing environmental regulations when it finalizes a new national drinking water regulation. We believe that a holistic approach to drinking water regulations will provide better public health protection.

5. INDEPENDENT STUDY OF D.C. LEAD PROBLEMS AND LEGISLATIVE AND REGULATORY CHANGES.

AWWA advocates an independent study of the drinking water lead contamination incident in Washington, DC, to evaluate what if any changes may need to be made in the law or regulation. Delegate Norton is to be commended for introducing H.R. 4268, the Lead-Free Drinking Water Act of 2004. AWWA supports the purpose of the bill to improve protection of public health by reducing exposure to lead contamination in drinking water. However, AWWA believes that the bill is pre-mature because no one knows for sure what caused the elevated lead levels in the District of Columbia water system. At this time, it is difficult to determine if H.R. 4268 could have prevented the current high levels of lead in the District of Columbia water system. Solutions proposed in the bill could be addressing issues that were not the cause of the high lead levels and miss entirely the actual cause that needs to be corrected. For instance, why were lead levels high in some homes without lead service lines and low in some homes with lead service lines? Why did the lead levels vary so widely for the same tap tested at different intervals? This would lead one to believe that other factors were the cause of or involved in the high lead levels. There is no reason, at this time, to believe that the high lead level problem in the District of Columbia is a nationwide problem that would require changes to the (SDWA. AWWA believes that the current SDWA requirements protect public health and USEPA currently is engaged in an extensive national review of the Lead and Copper Rule implementation to identify how well the rule is performing across the nation and what gaps exist in federal guidance and regulation. Last week, USEPA convened a panel of experts in St. Louis, Missouri, to address the issues involved in complying with the Lead and Copper Rule and will publish the results. AWWA supports these efforts by USEPA. The Lead and Copper Rule should not be revised until this review is completed.

Many of the reforms suggested in H.R. 4268 can be accomplished in the regulatory process rather than by statute. AWWA has concerns about mandating scientific and technological regulatory procedures in legislation. Scientific knowledge and technology change – sometimes very rapidly. When these become imbedded in statute it becomes very difficult to deal with situations as scientific knowledge advances. The Lead and Copper Rule is not perfect and AWWA can support changes to make it a better and more effective regulation in some areas. However, we recommend that the regulatory changes proposed in H.R. 4268 be addressed in the regulatory process.

AWWA recommends that Congress direct an independent study of the high lead levels in the District of Columbia water system be conducted. This could be done very soon in an appropriations bill.

CONCLUSION

AWWA and its members thank you for holding this hearing concerning lead contamination of drinking water. AWWA pledges to work with the Congress and the US Environmental Protection Agency to address this important issue. We thank you for your consideration of our views.

This concludes the AWWA statement on lead contamination in drinking water. I would be pleased to answer any questions or provide additional material for the subcommittee.

Awwa Research Foundation

Funding for AwwaRF Projects Related to the Lead and Copper Corrosion Rule **May, 2004**

[These projects represent the predominant work AwwaRF has done on this topic. There are other related projects regarding treatment, health, and public relations and other topics that are not represented on this list.]

Report (listed alphabetically)	Year (Yr Started / Yr Published)	Project Cost
A General Framework for Corrosion Control Based on Utility Experience (includes *Control of Pb and Cu Corrosion By-products Using CORRODE Software*)	1993/1997	$150,000
Chloramine Effects on Distribution System Materials	1989/1993	$75,000
Corrosion and Metal Release for Lead Containing Plumbing Materials: Influence of NOM	1994/1999	$203,000
Development of a Pipe Loop Protocol for Lead Control	1990/1994	$155,000
Disinfectant Decay and Corrosion: Laboratory and Field Studies	2000/2004	$75,000
Distribution System Water Quality Changes Following Corrosion Control Strategies	1994/2000	$400,000
Impacts of Enhanced Coagulation on Corrosion of Water Treatment Plant Infrastructure	2000/currently in publication	$200,000
Internal Corrosion of Water Distribution Systems, Second Edition	1991/1996	not available
Lead Control Strategies	1988/1990	$175,000
Lead Pipe Rehabilitation and Replacement Techniques	1997/2000	$175,000
Optimizing Chloramine Treatment (2nd Edition)	2001/currently in publication	$175,000
Optimizing Corrosion Control in Water Distribution Systems	1999/2004	$100,000
Post-Optimization Lead and Copper Monitoring Strategies	2000/currently in publication	$335,000
Role of Inorganic Anions, NOM, and Water Treatment Processes in Copper Corrosion	1992/1996	$200,000
Role of Phosphate Inhibitors in Mitigating Lead and Copper Corrosion	1999/2001	$120,000
Total cost of projects directly related to lead and copper corrosion		**$2,388,000**
Total cost of projects started in 2000 or later: $785,000		**$785,000**

NEW 2004 REQUEST FOR PROPOSALS

- Funding listed is approximated based on AwwaRF's contribution. Actual funding will be determined once a contractor is selected and participating utilities identify their in-kind and cash contributions to the projects.

Project Title	AwwaRF Funding	Minimum Total Project Cost
Contribution Of Service Line And Plumbing Fixtures To Lead And Copper Rule Issues (RFP 3018) This project will research and quantify the contribution of lead service lines, utility-owned plumbing fixtures, and customer-owned plumbing fixtures to lead and copper rule (LCR) compliance issues.	$500,000	$666,667
Nonuniform Corrosion In Copper Piping – Assessment (RFP 3015) This project will assess the prevalence of non-uniform corrosion in copper piping within the North American drinking water industry.	$400,000	$533,333
Methodologies for Assessing and Improving Water Quality Sampling Plans in Drinking Water Distribution Systems (RFP 3017) This project will develop methods and tools to help utilities to scientifically evaluate existing sampling plans and improve them to meet monitoring requirements and system operational needs. The project will include the development of procedures and algorithms to design optimal water quality sampling and monitoring networks to address multiple purposes and benefits.	$300,000	$400,000
Total 2004 RFP Funding	**$1,200,000**	**$1,600,000**

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Distribution System Corrosion and the Lead and Copper Rule: An Overview of AwwaRF Research

By Traci Case, AwwaRF Project Manager

This summary of relevant completed and ongoing AwwaRF research projects is meant to help with a basic understanding of the issues surrounding distribution system corrosion and the lead and copper rule. Additionally, several new projects are described.

Background

Drinking water lead and copper levels at the tap are regulated by the 1991 Lead and Copper Rule (LCR). This regulation requires utilities to apply certain treatment techniques and to meet action levels in order to control lead and copper release from distribution systems into drinking water at the tap. The LCR established an action level of 1.3 milligrams per liter (mg/L) for copper. If the action level is exceeded in 10 percent ore more of selected tap water samples, corrosion control treatment and source water treatment strategies are required. The LCR also established an action level of 0.015 mg/L of lead at the 90th percentile. If the action level is exceeded, utilities are required to respond with corrosion control and source water treatment strategies as well. Lead and copper release is of concern whether it is in the soluble or particulate form. With these regulatory requirements, the LCR presents a complex operational, treatment, and management challenge for U.S. drinking water utilities.

In the early 1990's, prior to the pending promulgation of the LCR, AwwaRF funded a number of research projects that investigated issues associated with meeting the requirements of the regulation. These projects focused on determining how treatment changes affect distribution water quality and how those water quality changes affect corrosion and metal release in the distribution system.

The following section summarizes the objectives, general research approach, and major findings of fifteen AwwaRF projects that have examined various aspects of the lead and copper corrosion issue. The project report summaries are organized under the following general topic areas:

- general overview
- corrosion-control effects on water quality and corrosion
- treatment process effects on lead and copper corrosion
- specific water chemistry effects on lead and copper corrosion
- tools to help utilities manage lead and copper corrosion issues
- new request for proposals (RFPs)

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The final section of this paper summarizes common themes and lessons learned from the results of this body of research.

A full listing of AwwaRF projects can be found by visiting the Project Center located on the AwwaRF website at www.awwarf.org.

AwwaRF Project Summaries:

General Overview:

Internal Corrosion of Water Distribution Systems, Second Edition (AwwaRF 90508, 1996) is a hard-bound comprehensive guidance manual on corrosion control for drinking water systems. It is a reference text and does not report specific research results. The second edition consists of ten chapters that cover corrosion principles, corrosion of materials, mitigation of corrosion impacts, assessment technologies, and approaches to corrosion control studies.

Three chapters directly address lead and copper corrosion issues. Chapter 4 focuses on the corrosion and solubility of lead, chapter 5 focuses on the corrosion of copper, and chapter 6 covers corrosion of copper alloys and solders.

Two chapters address the management of corrosion control strategies. Chapter 8 outlines mitigation strategies for corrosion effects and Chapter 10 helps water utilities organize and implement corrosion control studies and strategies.

Corrosion Control Effects On Water Quality And Corrosion:

Distribution System Water Quality Changes Following Corrosion Control Strategies (AwwaRF 90764, 2000) documented distribution system secondary water quality impacts of implementing lead and copper corrosion control strategies. The researchers also developed mitigation strategies to preclude, minimize, or eliminate problem areas that resulted from LCR treatment.

The researchers found that the interplay of the water quality of the distributed water, types of materials present in the distribution system, and the hydraulic conditions in the distribution system all lead to secondary water quality impacts. Most impacts occurred when the distribution system water quality was unstable, either because of multiple finished water quality changes over short periods of time or because of wide fluctuations in pH levels. Wide fluctuations in pH largely occurred because of inadequate buffering in the distribution system or because large changes occurred in finished water quality conditions. For systems controlling pH and/or alkalinity, few adverse secondary impacts occurred when consistent distribution pH levels and adequate buffering intensity were maintained.

The researchers recommended that utilities establish and implement procedures for corrosion control treatment, including:

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- Design corrosion control facilities with appropriate pH adjustment controls. Low buffer intensity can result in pH fluctuations that can produce scales on pipe surfaces that are less adherent. Large pH fluctuations can also cause solubilization and precipitation of scales.
- Ensure that distributed water quality remains stable by maintaining adequate buffering and consistency of treatment.
- Avoid other treatment changes during the period of time when corrosion control is initiated (such as changing disinfectants, changing coagulants, or adding new treatment processes).
- Make incremental changes to finished water quality during start up to avoid exposing the distribution system to large finished water quality changes over a short period of time.
- Respond to localized water quality problem areas with a flushing program.
- Evaluate the potential for secondary impact based on water quality data evaluations, assessments of piping conditions and hydraulic information, and review of historical treatment information.
- For systems using orthophosphate inhibitors, maintain adequate residuals in the distribution system and apply the inhibitors at the pH range that is optimal for lead and copper control (7.3 to 7.8).
- Implement a distribution system monitoring program to provide information to assess and respond to secondary impacts that might occur. Monitoring programs should include:
    - Standing lead and copper levels (more frequently than required by the LCR)
    - Water quality parameter measurements to assess the secondary impacts of corrosion treatment and to evaluate the amount of time needed for lead, iron, copper and other materials to re-equilibrate to new water quality conditions
    - Orthophosphate and/or silicate levels
    - pH and alkalinity levels

A General Framework for Corrosion Control Based on Utility Experience (AwwaRF 90712, 1997) and ***Control of Pb and Cu Corrosion By-products Using CORRODE Software*** is a compilation of utility experiences with mitigation of lead and copper corrosion by-product release under provisions of the LCR. Corrosion by-products include aqueous, dissolved, and solid species associated with lead and copper ions. This project report provides a list of publications that synthesize utility experiences with corrosion control, information on how to conduct desktop corrosion control studies, corrosion control case studies, and a software program that simplifies predictions of lead and copper solubility. This manual is meant to be used at two different levels. Utility managers, staff, and regulators could review the report to gain insights into corrosion control approaches and strategies. On another level, the report provides more specific utility experiences under the LCR, providing insight for mitigation of corrosion by-products.

The software product provided with this report is a tool to simplify predictions of maximum soluble lead and copper corrosion by-product release in pipes under different water quality conditions. It also addresses the impacts of aeration on pH and lead and copper solubility as well as the effects of mixing on water quality. It should be noted that due to gaps in knowledge regarding the fundamental science of corrosion by-product release and the fact that many corrosion by-products are particulates and not soluble, the software is somewhat limited.

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Despite those limitations, solubility predictions are an important component of corrosion desktop studies and were considered one of the best predictive tools for utilities at the time this report was published.

Some key points presented in this manual are:

- The 1995 Water Industry Technical Action Fund (WITAF) database referenced in this report provides a comprehensive compilation of utility experiences that allows utilities to compare their own experiences with those of other water utilities with similar water qualities.
- Differences in sampling rigor can cause substantial differences in the outcome of a tap sampling program. Monitoring programs should stress that samples be acquired following the minimum standing water period and using low flow rates during the sample draw.
- Before proceeding with the implementation of a corrosion control program, it is critical to establish representative metal release rates in the distribution system.
- Pipe loop protocols are proven to provide useful information in several corrosion control assessment programs; however, they required a substantial investment of resources and time. Additionally, the data they yield are often difficult to analyze and not always predictive of distribution system performance.
- The secondary impacts of corrosion control are usually relatively minor:
    - Utilities that attempted to define whether corrosion control treatments produced noticeable change in the taste and odor profile of the distributed water were unable to demonstrate any difference relative to the unmodified baseline water.
    - The pH shifts associated with most corrosion control strategies produced only minor changes in the concentration of disinfection by-products.
- Solubility models have value in terms of predicting metal release trends and for examining mechanisms of passivation and corrosion scale accumulation. However, while the models accurately reflect equilibrium conditions, they do not take into account solubility kinetics, the heterogeneity of plumbing surfaces, or the issue of particulate shedding versus soluble metal release.
- Some electrochemical screening techniques can accurately determine the underlying rate of corrosion on lead and copper surfaces, as well as on the surfaces of their alloys.
- Copper corrosion control is easier to achieve than lead release control. Copper corrosion is almost exclusively chemical, while lead release is governed by a combination of chemical, hydraulic, and other mechanical factors.
- Stability of pH is necessary for controlling the release of lead. Distribution system pH changes that drop the pH by greater than 0.5 units - even for brief periods - appear to disrupt the effective passivation of corrosion surfaces, especially on brass and lead/tin solder surfaces.
- There is evidence that opportunistic organisms can exploit corrosion scales as colonization sites. By doing so they create a microenvironment that may influence the rate and morphology of corrosion on the underlying metal.

Role of Phosphate Inhibitors in Mitigating Lead and Copper Corrosion (AwwaRF 90823, 2001) summarizes the effects of phosphate-based corrosion inhibitor chemicals on lead and

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copper corrosion. Experiments were conducted to examine the complexation of copper and lead, solid dissolution rates, and solid precipitation in the presence of polyphosphate.

Fundamental chemistry experiments: For the polyphosphate tested in this study, every 1 mg/L of phosphate inhibitor dosed (as P) had the potential to hold 2 mg/L of lead in solution. This could be considered a maximum capacity for lead dissolution, as this high of a value would rarely be achieved in practice due to the effects of calcium, magnesium, kinetic limitations, and other factors. Lead complexation is not as strong in the presence of calcium (40 mg/L) but is still relatively important. These experiments also indicated that hexametaphosphate increases the rate of dissolution from lead scales [including $PbCO_3$ and $Pb_3(CO_3)_2(OH)_2$]. Precipitation of lead from solutions containing $NaHCO_3$ was inhibited by sodium metaphosphate. The final dissolved lead concentration was roughly equal to the metaphosphate complexing capacity. Higher metaphosphate concentrations resulted in higher dissolved lead concentrations. This led to the conclusion that polyphosphate can influence the kinetics of scale formation in pipes.

Copper corrosion: With a few exceptions, dosing of orthophosphate and hexametaphosphate inhibitors had beneficial effects on copper release. The exceptions are for very new pipes at pH 7.2, in which hexametaphosphate had very significant adverse short-term effects, and for well-aged pipes at pH 7.2 and alkalinity 300 mg/L as $CaCO_3$. In the latter case, although the orthophosphate had dramatic short-term benefits, a few years of aging caused marked decreases in release when inhibitors were absent.

Lead corrosion: Orthophosphate dosing often produced significant benefits for lead. This was true for every stagnation time and water quality tested at 6 months' pipe age. The project also examined the role of phosphate inhibitors in controlling soluble lead release, as opposed to total lead. In every instance, soluble lead concentrations were lower in the presence of orthophosphate than in an equivalent system without inhibitor. Conversely, with few exceptions, soluble lead concentrations were higher in systems dosed with hexametaphosphate than without inhibitor. Orthophosphate has an enormous advantage over hexametaphophate when comparing soluble lead release. Hexametaphosphate demonstrated an increase in soluble lead in every instance when compared to an equivalent dose of orthophosphate. This lead to the conclusion that hexametaphosphate substantially increases problems with soluble lead.

Lead and copper corrosion by-products: Significant fractions of particulate and colloidal lead and copper were found in participating utilities' tap water samples. Copper was mostly soluble when total copper levels were high. In contrast, most of the lead found in the tap samples was in the particulate form.

Zinc orthophosphate: The addition of zinc did not enhance the performance of orthophosphate. In all cases zinc tended to detract from the benefits of orthophosphate. This lead the researchers to conclude that zinc orthophosphate cannot be recommended for copper or lead corrosion control when compared to orthophosphate alone.

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Treatment Process Effects On Lead And Copper Corrosion:

Chloramine Effects on Distribution System Materials (AwwaRF 90624, 1993). The purpose of this project was to investigate corrosion and degradation of elastomers and some metals with chlorine and chloramine disinfection.

For elastomers, the results pointed to accelerated elastomer failure after changeover to chloramination. Accelerated life-cycle testing of tension mounted thermoplastic coupons showed that with few exceptions solutions of chloramines produced greater material swelling, deeper and dense surface cracking, a rapid loss of elasticity, and loss of tensile strength than equivalent concentrations of free chlorine. Elastomers more susceptible to degradation are those formulated with natural or synthetic isoprenes. Newly engineered synthetic polymers performed well in the chloramines exposure tests.

For metals, the researchers exposed seven metals (copper, brass, bronze, three types of solders, and mild steel) to varying levels of pH (6-8), chlorine (0.5 and 5.0 mg/L), chloramines (0.5 and 5.0 mg/L) and ammonia (<10 mg/L). Corrosivity was measured using weight methods, electrochemical analysis, and galvanic current on coupons or pipe segments exposed to disinfectants. The researchers made the following conclusions:

- Both chlorine and chloramines accelerate the corrosion of copper and its alloys at pH 6 but cause minimal corrosion at pH 8.
- An increase in disinfectant concentration can increase corrosion of copper and its alloys at pH 6.
- Corrosion of copper and copper alloys by free or combined chlorine was greatest for brass, followed by copper, and then bronze.
- The presence of free or combined chlorine did not lead to pitting type corrosion on copper or copper alloy surfaces under the conditions tested in this project.
- The presence of ammonium ions produced no discernible increase in corrosion on copper or copper alloy surfaces.
- Neither leaded nor lead-free solders are substantially influenced by the presence of free or combined chlorine at pH levels common to distribution systems.
- In equal concentrations, free chlorine is slightly more corrosive than chloramines on copper and its alloys. However, residual concentrations are higher in systems that disinfect with combined chlorine, compared to free chlorine. As a result, systems that convert to chloramine disinfection may experience higher rates of corrosion depending on pH levels.

Optimizing Chloramine Treatment, Second Edition (AwwaRF 90993, currently in publication). In 1993 AwwaRF funded the first edition of this report, which is a manual on the use of chloramines and the role they play in water quality improvements for drinking water utilities. This second edition of the report provides updated information gathered from 68 utilities by documenting their experience with chloramination use. Using the information from the utility survey, the researchers identified critical parameters for controlling chloramination and formulated a chloramination optimization strategy.

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The report provides key evaluation criteria when evaluating a switch to chloramines, a process for determining if chloramines are the right choice for a utility, a process and operating procedures for optimizing chloramines treatment, ammonia storage and feed facility considerations, chloramination start up considerations, distribution system issues, parameters to monitor, and customer relations issues to consider.

The researchers did not find that the utilities surveyed had experienced any general trends of lead and copper corrosion issues with chloramine use. Through the literature review for this project, the researchers found that many corrosion studies conducted on chlorinated and chloraminated water systems included evaluations of copper; however, very few rigorous studies exist that make a direct comparison of the corrosive effects of chlorine and chloramines.

One case-study utility conducted a comprehensive corrosion study on their soft, slightly buffered water sources. The utility evaluated the corrosivity of chlorine and chloramines using flow through pipe loops for a 12 month period. According to the results, copper thinning rates decreased as the pH was increased. At each of the different levels, chloramines caused more copper thinning than chlorine, with the exception of three control loops. It is important to note that the utility did not compare equivalent levels of chlorine and chloramines. As such, the utility results, which indicate that chloramine was more corrosive to copper than chlorine, are not direct comparisons of corrosivity between the two disinfectants.

Impacts of Enhanced Coagulation on Corrosion of Water Treatment Plant Infrastructure (AwwaRF 90997, currently in publication) examined the effects of enhanced coagulation (lower coagulation pH and higher coagulant doses) on water treatment plant infrastructure. This project focused specifically on corrosion of treatment plant infrastructure to include concrete, internal plant piping, pumps, and valves.

The research team conducted a utility survey and case studies to determine the effects of enhanced coagulation on water treatment plant infrastructure. Additionally, the team conducted experiments on inhibitor compatibility with enhanced coagulation and a comparison of alum, ferric, and PACl coagulants in the degradation of concrete.

Some key findings of this research are:

- Free chlorine is highly corrosive to plant infrastructure. However, few utilities anticipate increased problems from free chlorine when coagulation pH is lowered, even though such changes are known to enhance release of Cl_2 gas from water. Painting plant infrastructure provides a simple means of slowing the rate of attack.
- Metallic plant infrastructure, such as pumps and pipes, bear close monitoring for pinhole or pitting-type corrosion.
- Coagulation at the treatment plant can cause discoloration and change corrosion of materials in the distribution system. Whenever a change in coagulant type or pH is implemented, the corrosivity of the water is fundamentally changed. Even small changes in the pH of distributed water can have noticeable impacts on corrosion of distribution system materials.

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- If inhibitors are used to protect components in the treatment plant, they need to be compatible with coagulation goals. Since phosphate or polyphosphate inhibitors are removed by, and likely interfere with, coagulation, they do not appear to be a good option for protecting plant infrastructure.

Role of Inorganic Anions, NOM, and Water Treatment Processes in Copper Corrosion (AwwaRF 90687, 1996) studied the effects of water quality on copper corrosion using both conventional and electrochemical aging methods. In addition to natural organic matter (NOM), the researchers focused on the effects of five common anions: sulfate, chloride, bicarbonate, perchlorate, and nitrate.

Some general implications for water treatment practices were discovered. Utilities delivering high-alkalinity (> 100 mg/L as $CaCO_3$) and low pH (<7.7) waters can expect a high likelihood of problems with copper corrosion. A small pH increase to about 8.0 may alleviate or eliminate copper corrosion problems. The research team recommends on-site corrosion studies to accurately define the pH increase necessary to gain the desired benefits.

In waters with NOM in the range of 1 – 4 mg/L (typical for surface source waters), NOM removal by coagulation or adsorption, or both, cause little change in copper corrosion and release.

With enhanced coagulation, waters treated with alum were more aggressive towards copper than those treated with ferric chloride. Alum also caused longer term corrosion rates. The choice between using aluminum sulfate and ferric chloride as coagulants is very important for copper corrosion control. Although chloride has beneficial effects and sulfate has adverse effects, it is not known whether these effects are magnified at increased concentrations, nor are the combined interactions understood. Once again, corrosion studies are imperative to determine whether the benefits, if any, would be worth the cost of changing coagulants.

Adsorption with GAC had a negative impact on copper corrosion while ozonation had no significant effects on copper corrosion.

Disinfectant Decay and Corrosion: Laboratory and Field Studies (AwwaRF 90992, 2004) examined the secondary water quality effects of the decay of free chlorine and chloramines in the distribution system. The research team developed and tested a pipe section reactor to measure the decay rate of disinfectant at the pipe wall. They also collected field data from two utility distribution systems to measure the decay of free chlorine by two alternative methods and to explore a relationship with corrosion rates.

The results of this research work are fundamental in nature and are meant to achieve a better understanding of disinfectant decay at pipe walls such that a set of default values for decay rate coefficients could be specified for free chlorination and chloramination, the two most common secondary disinfectants. These coefficients could be available within modeling software to be assigned to pipe sections based on information about pipe materials, corrosion rates, water velocities, and key water quality parameters (e.g., pH, alkalinity, and dissolved oxygen). This would ensure that the wall reaction has been accounted for within the model. Ultimately, an

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accelerated model calibration process and greater utility confidence in model predictions would be valuable when evaluating the impact of different strategies such as pipe replacement, alternative storage tank management, and changes in water treatment to meet regulations.

Specific Water Chemistry Effects on Lead and Copper Corrosion:

Corrosion and Metal Release for Lead Containing Plumbing Materials: Influence of NOM (AwwaRF 90759, 1999) investigated the effects of natural organic matter (NOM) on the corrosion of lead-containing materials (i.e., leaded brass, lead-tin solder, and lead pipe) in drinking water. The researchers found that the effects of NOM were dependent on the properties of the corroding material. The primary conclusion of this research confirmed the suspicion that the presence of NOM may be a major factor affecting lead release from lead pipe, lead-tin solder, and leaded brass or bronze. The adverse effects of NOM were exacerbated in low-pH, low-alkalinity waters. Increasing pH and alkalinity can alleviate the adverse effects of NOM. Chlorination and ozonation did not diminish the lead leaching associated with NOM on the short term, but may alleviate NOM effects associated with lead release in the long run. NOM did exhibit some corrosion-inhibiting action for brass and decelerate the dezincification of the brass, but it did not stop or inhibit selective lead oxidation and leaching caused by the galvanic coupling of the lead microphase with the copper-based matrix. The researchers concluded their report with a recommendation that all lead-containing copper-based alloys be eliminated in potable water applications.

Tools to Help Utilities Manage Lead and Copper Corrosion Issues:

Development of a Pipe Loop Protocol for Lead Control (AwwaRF 90650, 1994) provides drinking water utilities with a standard protocol for use of the AwwaRF pipe rack to evaluate the effectiveness of various treatment options in controlling lead and copper levels at the tap. The protocol provided is a practical, hands-on approach with construction, operation, and data evaluation recommendations based on results from several utilities that tested the AwwaRF pipe rack in their plants.

The AwwaRF pipe rack is designed to evaluate lead and copper leaching characteristics in a flow-through system that simulates household plumbing. Each rack is designed to contain several individual pipe loops for which various metal levels could be evaluated for specific water qualities. The pipe rack is designed to help utilities perform corrosion rate studies and metals leaching determinations for compliance with the LCR.

The LCR requires that all utilities serving over 50,000 customers conduct corrosion control optimization studies and demonstrate optimal treatment for lead and copper. The 1992 USEPA guidance manual for the LCR specifies a framework for conducting corrosion studies. The AwwaRF pipe rack can be used as a demonstration testing device for comparing the effect of corrosion treatments on metals levels and for testing secondary impacts of treatment changes on water quality and regulatory compliance.

Proper planning and operation of pipe rack studies are crucial for a successful pipe rack study: proper fabrication, adequate mixing of chemical feed solutions, adequate preconditioning, proper

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disinfection of sample ports (to prevent high heterotrophic bacteria counts), and monitoring of pipe rack operations. The operation can be divided into three phases: startup, preconditioning, and corrosion testing operations. With startup, a standard protocol for flushing is recommended in the manual. The manual also recommends a four-week preconditioning phase before chemical treatments are started. This allows verification that the pipe loops are constructed in a similar fashion and yield similar results with a common starting point for evaluating treatment effects on leaching. For the actual corrosion testing, the manual recommends a daily on-off cycle to simulate flow in a typical home, collection of standing samples for measuring corrosion-related parameters, and collection of running samples for determining influent water quality characteristics and operational consistency. At a minimum, lead, copper, temperature, alkalinity, total and free chlorine, and pH are recommended for analysis on first flush, standing water quality samples. The manual recommends frequency of collection of standing samples based on the expected variability of the results and the length of time over which samples will be collected.

The manual recommends that utilities run pipe rack studies for three distinct periods: a conditioning period, a transition period, and a stability period. The conditioning period consists of a rapid drop in metals levels, followed by a transition period where metals levels decrease at a slower rate. In the stability period, metals levels stabilize. Utilities must run the pipe rack studies long enough to ensure data represent the stabilization period. The utilities that tested the pipe rack for this study found that it took six to nine months for lead to stabilize in lead loops; three to eight months for lead to stabilized in lead-soldered copper loops. Copper levels stabilized in two to eight months. The manual recommends utilities operate the pipe rack long enough for the metals levels to stabilize. Longer periods may be required if data collected are highly variable or a greater degree of statistical confidence is required.

In 1994, when this study was published, an AwwaRF pipe rack cost $10,000 to $13,000 in materials in labor to build. For several water quality conditions to be tested, one rack would be needed for each treated water condition. Operation costs may require up to one full-time operator for a two to four week period, with routine operations up to 20 hours/week.

Noted drawbacks with the AwwaRF pipe rack study include:

- For statistically meaningful and valid results, the study may have to be run for as long as 18 months to obtain adequate data.
- Metals levels measured are impacted by the nature and consistency of source water quality.
- The stability of metals may not be observed if seasonal source water quality changes happen during the course of a pipe rack study.
- The cost of building a pipe rack system may be cost prohibitive for small utilities.
- Variability measured in the lead and copper data from the pipe racks used in the study was high. However, nonparametric methods are available with which to evaluate the variable data in a statistically valid manner.

Although the results from the AwwaRF pipe rack must be considered a relative evaluation of treatment impacts on metal levels, the data can be used for demonstrating optimization.

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Optimizing Corrosion Control in Water Distribution Systems (AwwaRF 90983, 2004) developed and tested an online, real-time electrochemical sensor to screen corrosion inhibitors for drinking water treatment. It also demonstrated the use of electrochemical noise (EN) in development for corrosion control applications.

The results of this study were successful in demonstrating the use of a multi-element sensor, electrochemical technique for instantaneously monitoring corrosion and optimizing corrosion in water distribution systems. Additional findings from the study include:

- The EN technique was shown to be a sensitive tool for identifying electrochemical corrosion phenomena and allowed low rates of pitting to be accurately detected and monitored.
- EN corrosion rate calculations appeared to follow changes in process parameters such as use of inhibitors, water flow past electrodes, and water temperatures.
- Electrochemical noise measurements in the field detected corrosion rates over a wide range, and characterized the degree of localization.
- EN monitoring can be implemented with informed but minimal effort. New monitoring techniques can be effective if process is kept fairly simple.
- Although EN signals could not be directly correlated to water quality concentrations, the value of using EN is having the ability to monitor changes in corrosion environments and having the ability to identify pitting and crevice corrosion regimes.

Post-Optimization Lead and Copper Monitoring Strategies (AwwaRF 90996F, currently in publication) developed a monitoring program for drinking water utilities that have already achieved optimized corrosion control. Alternative monitoring methods were developed to demonstrate to regulatory primacy agencies that corrosion control is being maintained when treatment techniques and/or source waters are altered.

Utilities have been struggling with variability in monitoring data, shrinking sample pools (due to home remodeling or lack of customer interest), increasing costs associated with monitoring programs, and the differing needs of utilities verifying optimization and corrosion control versus those trying to achieve optimization in the first place. The monitoring protocol recommended in this report simultaneously addresses the control of data variability and attrition of sample pools by recommending the sampling of fewer sites more often. It also provides utilities and regulators with tools to continue to collect statistically sound data in the face of fewer qualified sample locations.

The research team conducted regulator and utility surveys to develop both an in-home tap and an on-line corrosion monitoring protocol that were then field tested by four participating utilities. From this research the team developed a proposed alternative lead and copper corrosion control monitoring strategies. Included are proposed in-home tap sampling protocol and statistical evaluation methodologies and an evaluation of the applicability of on-line corrosion cell predictive technologies.

Alternative in-home tap monitoring protocol: A detailed summary of the alternative tap monitoring protocol can be found in the published report. It outlines, for both lead and copper,

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the number of sites recommended for sampling, the number of samples per site, a quarterly evaluation period, site selection criteria, and data collection and analysis criteria.

On-line corrosion monitoring protocol: The development of the on-line corrosion cell (OLCC) addressed many of the challenges associated with the initial design of a functioning corrosion cell. After several attempts the Narrow Rectangular Cell (NRC) design showed that the Corrosion Potential-Stagnation/Flow (CPSF) theory could be verified in the laboratory and in the field. In its current level of development the NRC OLCC is not widely applicable to utility use and data interpretation can be difficult for a typical utility operator. However, the OLCC design and findings reported are a significant first step to future investigation into this type of corrosion cell.

An automated sampling device was developed to a prototype stage and tested in the field. Data collected using the devices was comparable to manually collected samples. Future investigation will require design revision and more extensive field testing.

Finally, the investigation of lead and copper pipe loops as a tool for tracking corrosion control changes demonstrated that the potential for their use did exist. However, due to the time required for pipe loops to stabilize, the feasibility of their use is limited to utilities that have an operable pipe loop rack in inventory or under operation. The data provided by the pipe loop racks evaluated did not justify the time and associated financial commitment required for the development of such a tool for an already optimized utility.

Lead Pipe Rehabilitation and Replacement Techniques (AwwaRF 90789, 2000) tested and evaluated existing and emerging technologies for rehabilitation or replacement of lead pipes distribution systems. The LCR requires that a water system that exceeds the 90th percentile action level for lead after installing optional corrosion control and source water treatment is required to replace lead service lines that contribute more than 0.015 mg/L to total standing tap water lead levels. Although replacement or rehabilitation is an efficient method to remove lead sources in the distribution system, it is usually the most costly alternative for reducing lead levels at the tap (as opposed to corrosion control and source water treatment). This manual provides utilities with a tool for assessing and selecting lead pipe rehabilitation and replacement technologies. It provides descriptions of the various techniques, where those techniques can be applied, and factors that should be considered for successful application of each technique. The manual includes cost estimates (estimated in 1998) for comparison between the various techniques.

The research team used a utility survey, case studies, and field testing to document utility experience with several lead pipe rehabilitation and replacement techniques. Technology categories tested included:

- Open-trench replacement
- Replacement along existing route (discarded pipe is left in the ground and new pipe is installed along a different route using a trenchless method)
- Replacement along a new route (existing lead pipe is removed or displaced while simultaneously replacing it with a new pipe)

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- Slip lining (existing pipe is lined with a loose or tight fitting liner made of plastic material)
- Pipe coating (existing pipe interior is coated with epoxy or other polymer material)

For each technology category, the manual describes various techniques needed to apply the technology. Twenty-eight techniques were addressed in this manual. Technology profiles are detailed in the manual and facilitate a direct comparison between the various techniques.

Comparison of technologies:

- In general, the open-trench replacement technology is the most versatile and adaptable but the costs can be very high compared to other technologies (due to the typically high costs associated with site restoration).

- Replacement-along-existing-route technology is commonly applied in the U.S., but not in Canada or Europe. The technology is straightforward to apply and costs are generally lower than open trench technology - provided conditions are favorable below grade. It does tend to cause longer interruptions in water service because the water must be disconnected during replacement of the existing lead pipe.

- The replacement-on-new-route technology enables new service pipes to be installed at lower costs compared to open-trench and with minimum disruption to the environment and customers. It is commonly used in North America and Europe and is considered the most preferable technology choice for installation of replacement service pipes by many utilities surveyed for this project.

- The slip-lining technology is applied mostly in Holland and the U.K. Limited testing of this technology has been conducted in North America, but it is not applied routinely. This technology can be used to rehabilitate lead pipes where replacement-along-existing-route and replacement-on-new-route technologies are not suitable. This technology would not be suitable for lead pipes that follow a convoluted route or have significant breaks or restrictions. Costs are relatively high compared to other technologies due to the cost of the lining material and high capital cost of the equipment.

- The pipe-coating technology is not used routinely in North America or Europe to rehabilitate lead pipes. It is used in the U.S. to coat small diameter potable water pipes within buildings and ships. It can also be used to coat the inside of pipes around bends and through pipe restrictions. The major advantage of this technology is its ability to complete multiple installations at a reduced cost. The major disadvantage is the extended interruption in water service due to the long time required for the resin to cure.

Lead Control Strategies (AwwaRF 90559, 1990) was published during the time that the LCR was being first introduced in the U.S. At the time, USEPA guidance on LCR treatment plans (i.e., pipe loop studies, analysis of data, start-up, and monitoring of treatment) had not yet been developed or published. Despite the premature timing of this study with respect to the LCR, the manual does provide a body of knowledge to help utilities develop lead control strategies.

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This project identified potential sources of lead coming from customer plumbing as being goosenecks, lead service lines, lead plumbing, lead lined iron piping, lead tin solder, and brass faucets. Many variables control the rate of leaching and lead in water samples, including the age and type of material, workmanship, size of pipe, water quality, size of the water sample, standing time, and whether a water sample has been running or standing.

As a part of this project, the research team contacted utilities that had conducted lead studies to improve water quality for their customers. The studies included water quality tap sampling, pipe loop studies, lead materials investigations and replacement programs, and lead treatment programs. The case studies provided a good basis for developing viable lead control strategies at the time.

The manual also provided the theory and practical considerations for controlling lead leaching from chemical treatment processes. The researchers determined the most important water quality parameters for lead solubility to be pH, alkalinity, dissolved inorganic carbonate, and orthophosphate levels. The manual recommended controlling lead with pH adjustment, carbonate adjustment, orthophosphate addition, silicate addition, and calcium carbonate deposition.

New AwwaRF Request for Proposals (RFPs):

Two LCR-related RPFs were released by AwwaRF in March of 2004. Proposals are due in the summer of 2004 and work should commence by early 2005.

Contribution of Service Line and Plumbing Fixtures to LCR Issues (RFP 3018) will investigate and quantify the contribution of lead service lines, utility-owned plumbing fixtures, and customer-owned plumbing fixtures to lead and copper rule compliance issues. This project stems from a need in the drinking water industry to know if lead service line replacement is helpful for LCR compliance. Utilities also want to know if customer plumbing and utility installed in-line plumbing devices contribute to LCR compliance issues. The researchers are asked to conduct testing to determine what sources could contribute to elevated lead concentrations at the tap, and the operational/compliance significance of that contribution. This will be done by conducting a utility survey as well as conducting water sampling from utilities that have done sampling both before and after full- and partial-lead service line replacement. The researchers are also asked to evaluate a representative sample of customer piping, fittings, and solder material that are in contact with water for scaling characterization. An evaluation of the impact of hydraulic flow factors in plumbing systems will be done to determine how faucet-related physical characteristics affect LCR compliance. The final product of this research will provide guidance to water utilities on when to either fully or partially replace lead service lines versus applying corrosion control treatment strategies.

Nonuniform Corrosion in Copper Piping – Assessment (RFP 3015) will assess the prevalence of non-uniform corrosion in copper piping within the North American drinking water industry. This project stems from anecdotal evidence that certain water quality factors and water utility actions may lead to this type of corrosion in copper household plumbing. Factors to be

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investigated include elevated pH levels, use of NOM removal methods, increase in chlorine dosages, use of chloramines for disinfection, high aluminum levels, interactions of aluminum with silicate, and the presence of aluminosilicate particulates in finished water. The research approach includes an industry wide survey assessment as well as collection of water quality data from utilities where copper pinhole failures have occurred. Additionally, researchers are asked to characterize water chemistry from the surveyed utilities and to conduct physical examinations on representative pipe specimens. From this information, the researchers are asked to evaluate and find trends or correlations in water quality data from surveyed utilities and their distribution systems. The final product will be an assessment of the extent of the problem of pinhole leaks across North America, as well as potential causes that might lead to the problem in customer plumbing.

Summary of results/common themes:

One of the most important lessons learned from the AwwaRF research conducted on lead and copper corrosion is that every utility's lead and copper corrosion challenges are unique to that utility's source water quality, treatment train, and distribution system configuration and materials. There is no standard "recipe" for lead and copper corrosion control that every utility can apply regarding treatment strategies, corrosion control strategies, or distribution system management.

That being said, there are some general lessons learned from this body of research that do apply to most or all drinking water utilities that can be helpful in addressing lead and copper corrosion issues.

Corrosion-control effects on water quality and corrosion:

- Most negative water quality impacts occur when the distribution system water quality is unstable, either because of multiple finished water quality changes over short periods of time or because of wide fluctuations in pH levels in the distribution system.
- To minimize adverse water quality impacts, maintain a consistent distribution system pH with adequate buffering intensity. Distribution system pH changes that drop the pH by greater than 0.5 units - even for brief periods - can disrupt the effective passivation of corrosion surfaces, especially on brass and lead/tin solder surfaces.
- Utilities should make incremental changes to finished water quality during start up to avoid exposing the distribution system to abrupt changes over a short period of time. It is also advisable to avoid making other treatment changes during start up (i.e., changing disinfectants, changing coagulants, or adding new treatment processes).
- When using orthophosphate inhibitors, maintain adequate residuals in the distribution system and apply those inhibitors at the pH range that is optimal for lead and copper control (7.3 to 7.8).
- Look to other similar utilities' experiences concerning corrosion control. The 1995 WITAF database referenced in the report, *A General Framework for Corrosion Control Based on Utility Experience* (AwwaRF 90712, 1997), provides a compilation of utility experiences that allows utilities to compare their own experiences with those of other water utilities with similar water qualities. The report also provides a compilation of

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utility experiences with mitigation of lead and copper corrosion by-product release under the LCR.

- In general, copper corrosion control is easier to achieve than lead release control. Copper corrosion is almost exclusively chemical, while lead release is governed by a combination of chemical, hydraulic, and other mechanical factors.

Treatment process effects on lead and copper corrosion:

- While the AwwaRF body of research did not specifically investigate the effect on lead release when changing from chlorine to chloramines, it did look preliminarily at copper release. It was determined that residual concentrations of free chlorine are higher in systems that disinfect with combined chlorine (chloramines), as opposed to systems that disinfect with free chlorine alone. As a result, systems that convert to chloramines may experience higher rates of copper corrosion, depending on pH levels.
- Both chlorine and chloramines accelerate the corrosion of copper and its alloys at pH 6 but cause minimal corrosion at pH 8. In equal concentrations, free chlorine is slightly more corrosive than chloramines on copper and its alloys.
- In *Optimizing Chloramine Treatment, Second Edition* (AwwaRF 90993, currently in publication), the researchers did not find that the utilities surveyed had experienced any general trends of lead and copper corrosion issues with chloramine use. Through the literature review they found many corrosion studies conducted on chlorinated and chloraminated water systems included evaluations of copper. However, very few rigorous studies exist that make a direct comparison of the corrosive effects of chlorine and chloramines.
- With enhanced coagulation, waters treated with alum are generally more aggressive towards copper than those treated with ferric chloride. The choice between using aluminum sulfate versus ferric chloride as coagulants is very important for corrosion control. Corrosion studies are imperative to determine whether the benefits, if any, would be worth the cost of changing coagulants.
- In waters with NOM in the typical range for surface source waters (1 - 4 mg/L), NOM removal by coagulation and/or adsorption, or both, cause little change in copper corrosion and release.

Specific water chemistry effects on lead and copper corrosion:

- Utilities delivering water that is high alkalinity (>100 mg/L as $CaCO_3$) and low pH (<7.7) can expect a high likelihood of problems with copper corrosion. A small pH increase to about 8.0 may alleviate or eliminate copper corrosion problems. On-site corrosion studies can help to accurately define the pH increase necessary to gain the desired benefits of a pH change.
- The presence of NOM may be a major factor affecting the release of lead from lead pipe, lead-tin solder, and leaded brass or bronze. The adverse effects of NOM are exacerbated in low-pH, low-alkalinity waters.

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Tools to help utilities manage lead and copper corrosion issues:

- The AwwaRF pipe loop protocol (*Development of a Pipe Loop Protocol for Lead Control,* AwwaRF 90650, 1994) offers a practical, hands-on approach to evaluate lead and copper leaching characteristics in a flow-through system that simulates household plumbing. It is a useful tool for corrosion-rate studies and determinations of metals leaching for compliance with the LCR, but is expensive and time-consuming to use.
- *Post Optimization Lead and Copper Monitoring Strategies* (AwwaRF 90996F, currently in publication) provides a monitoring program for drinking water utilities that have already achieved optimized corrosion control. The program includes a proposed in-home tap sampling protocol (number of sites to sample, number of samples per site, a quarterly evaluation period, site selection criteria, and data collection/analysis criteria) and statistical evaluation methodologies.
- The LCR requires that a water system that exceeds the 90th percentile action level for lead after installing optional corrosion control and source water treatment is required to replace lead service lines that contribute more than 0.105 mg/L to total standing tap water lead levels. *Lead Pipe Rehabilitation and Replacement Technologies* (AwwaRF 90789, 2000) is a tool for assessing and selecting lead pipe rehabilitation and replacement techniques to meet this requirement.

Future work:

In addition to the two request for proposals (RFPs) currently advertised, AwwaRF continually strives to help utilities prepare for the future through new drinking water research.

Over the summer of 2004 the four workgroups of the AwwaRF Research Advisory Council (RAC) will be considering new research ideas and will develop a solicited research agenda for 2005. The RAC workgroup members are volunteer drinking water industry professionals – utility representatives, consultants, regulators, AWWA committee members, and academicians. They evaluate and consider research ideas collected from the drinking water community in order to develop next year's solicited research agenda. The four workgroups that make up the body of the RAC – High Quality Water, Infrastructure Reliability, Environmental Leadership, and Efficient and Customer Responsive Organization – will carefully consider any lead and copper corrosion related issues and, if they see a research need of high priority, will develop projects to release for RFP in 2005.

To submit specific research ideas related to the topic of lead and copper corrosion and the LCR, please contact Traci Case, AwwaRF Project Manager, at (303) 347-6120 or tcase@awwarf.com as soon as possible, but no later than August 1, 2004.

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Report Title	Year Published	Order #	Principal Investigator
Internal Corrosion of Water Distribution Systems	1996	90508	N/A
Distribution System Water Quality Changes Following Corrosion Control Strategies	2000	90764	Kirmeyer (Economic and Engineering Services, Inc.)
A General Framework for Corrosion Control Based on Utility Experience (includes *Control of Pb and Cu Corrosion By-products Using CORRODE Software*)	1997	90712	Reiber (HDR Engineering)
Role of Phosphate Inhibitors in Mitigating Lead and Copper Corrosion	2001	90823	Edwards (Virginia Tech)
Chloramine Effects on Distribution System Materials	1993	90624	Reiber (HDR Engineering)
Optimizing Chloramine Treatment (2nd Edition)	currently in publication	90993	Kirmeyer (Economic and Engineering Services, Inc.)
Impacts of Enhanced Coagulation on Corrosion of Water Treatment Plant Infrastructure	currently in publication	90997	Edwards (Virginia Tech)
Role of Inorganic Anions, NOM, and Water Treatment Processes in Copper Corrosion	1996	90687	Edwards (University of Colorado – Boulder)
Disinfectant Decay and Corrosion: Laboratory and Field Studies	2004	90992	DiGiano (University of North Carolina)
Corrosion and Metal Release for Lead Containing Plumbing Materials: Influence of NOM	1999	90759	Korshin (University of Washington)
Development of a Pipe Loop Protocol for Lead Control	1994	90650	Kirmeyer (Economic and Engineering Services, Inc.)
Optimizing Corrosion Control in Water Distribution Systems	2004	90983	Duranceau (Boyle Engineering Corp.)
Post-Optimization Lead and Copper Monitoring Strategies	currently in publication	90996F	Kirmeyer (Economic and Engineering Services, Inc.)
Lead Pipe Rehabilitation and Replacement Techniques	2000	90789	Kirmeyer (Economic and Engineering Services, Inc.)
Lead Control Strategies	1990	90559	Economic and Engineering Services, Inc.

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Chairman TOM DAVIS. Thank you very much.

Ms. Logomasini.

Ms. LOGOMASINI. Good morning. Thank you for having me to testify today.

I am Angela Logomasini of the Competitive Enterprise Institute. We are a public policy group focusing on free market and local solutions to a variety of public problems.

I am going to start with somewhat of a different angle on this. I think everyone has been focusing on whether the regulations were sufficient, whether we need more regulations. I would argue that more regulations are not going to be the solution. Certainly Delegate Norton has wonderful intentions and I think probably nobody in the Congress cares more about people in D.C. than she does, but I am not sure this is the right approach.

Looking at the issue in a larger perspective, with drinking water regulations the problem is they are not flexible enough. Drinking regulations affect different communities in different ways and this issue goes beyond the boundaries of D.C. and may end up having impacts that have serious consequences for people in communities around the Nation. Part of the problem is some communities that are smaller are going to be paying very high costs than they do today and make high tradeoffs for the regulations they have to meet. CBO did a study a few years back about this and sometimes there is actually a net loss to public health. As Delegate Norton noted, there are a lot of other issues that need to be addressed by the government and costs can be transferred from one area to another. For individuals, extremely high rates may mean difficulty paying insurance and things of that nature.

There may be a couple reasons why D.C. didn't send out the notification quickly, maybe there are reasons why people aren't testing as frequently as we would like. I think the law, because it has such inflexible, rigid regulations, may scare communities into trying to avoid having to trigger those regulations and having to avoid making sacrifices from other programs to pay for them. In this case, lead in drinking water poses some risk but lead in paint poses a bigger risk. Maybe resources in communities ought to be dedicated toward bigger risks, even beyond the lead issue. Maybe communities want to be spending their money on taking care of getting that emergency supply equipment but if they are triggering these regulations, they can't. Maybe they could find a better way to address the lead issue. Maybe use of filters in the homes is the answer but the regulations are going to trigger line replacements and they are not even sure the line replacements are going to work. So there are a lot of complicated factors. I think the law is contributing to that. Certainly the media coverage is something we all can't control, but it is sounding off an alarm too that may be more severe than warranted.

I think the D.C. government, although I am sure they are not perfect and make mistakes, didn't want to set off an alarm because they knew the cost to the city could be dramatic and they knew that there might be more affordable ways and also didn't want to scare people needlessly. There may be reasons for that. You have to think about this in terms of other sacrifices. Price Waterhouse did a study a few years ago basically surveying communities and

showing that communities were making big sacrifices to meet a whole host of Federal mandates. Families too make these sacrifices.

It was asked earlier if the EPA considers affordability and the tradeoffs of this one size fits all policy and it is supposed to but the way the law works what they consider affordable or feasible is silly for some communities. For instance, affordability to a household is determined as 2.5 percent of the median income. That is $1,000 and that is for 1 year of drinking water regulation. So if you have 80 some regulations and the EPA can have a regulation that goes up to $1,000 a year for a family, you can see that is not workable.

Feasibility standards, whether a regulation is economically feasible, is determined based on the size, based on what is feasible for the bigger systems but there are a lot of small systems that need some flexibility and there are provisions in the law that are supposed to allow for flexibility but they are rarely employed. What we need now more than ever is some flexibility for communities to deal with problems rather than more government regulations with more unintended consequences, for instance, the change in disinfection was an unintended consequence, not anticipated, probably not easily anticipated, so what we should be looking for is finding ways to assist rather than trying to find ways to regulate in the future where we have limited information.

Thank you.

[The prepared statement of Ms. Logomasini follows:]

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Statement of Angela Logomasini
Director of Risk and Environmental Policy
Competitive Enterprise Institute
Before the House Committee on Government Reform
Friday, May 21, 2004

Good Morning Mr. Chairman and Members of the committee, thank you for the opportunity to testify. I am Angela Logomasini, director of risk and environmental policy with the Competitive Enterprise Institute (CEI). CEI is a public policy group that focuses on promoting market-based solutions to policy problems.

Today, I am going to offer a rather different view on this issue, one that I haven't seen others offer anywhere. Everyone is suggesting that the District's recent activities related to lead levels in D.C. drinking water are a result of gross mismanagement. Frankly, the news coverage has been so intensely critical that one is almost led into thinking that D.C. officials were engaged in a plot to allow residents to slowly be poisoned. Following this line of reasoning, the next common conclusion that everyone seems to be making is that federal regulators must now search around the nation for similarly irresponsible public officials who are doing the same thing to their residents.

But it's time to step back and reevaluate this analysis. D.C. may have made mistakes, but I will argue that the inflexible attributes associated with the federal drinking water law have contributed to this situation. D.C. shouldn't bear all the blame here, and ceding more authority to the EPA won't provide a solution. In addition, media hype has distorted the situation, making the response to this risk disproportionate to the actual risk level. Congress can't do anything to change media behavior. However, Congress can make its laws more rational and eliminate triggers that contribute to the hype.

The issue raises an overarching problem with the Safe Drinking Water Act. The law applies a "one-size-fits all" policy to address multiple and innately different problems and issues in tens of thousands of communities around the nation. It's as if Congress decided to mandate that the answer to any mathematical equation must always be "4." We know that the answer "4" will be wrong in multiple cases even if Congress says differently.

Several years back, the Congressional Budget Office (CBO) produced a report that pointed out the pitfalls of such uniform regulatory approaches, and it highlighted the need for more flexible approaches. CBO noted at the time that greater flexibility in the

federal drinking water law would not only reduce costs, it could enhance benefits.[1] CBO explained that uniform federal standards translate into "welfare costs"—the situation in which a regulation costs more than the benefits it returns. The reason for using the word "welfare" is to remind us that those financial losses translate into reductions in quality of life. As the law is now written, the EPA considers costs to large systems when conducting cost-benefit analysis, but because of the economies of scale, the costs to households in small systems are far higher than that of the large systems on which the standards are based. As a result, what EPA considers an acceptable cost is often far higher than reasonable for rural residents, many of whom live on already tight incomes.

In particular, CBO explained:

> Considerations of information highlight the advantages of a decentralized approach to setting standards. The per-household cost of treating drinking water varies greatly among communities—particularly with differences in the size of water systems. Preferences for protecting drinking water also vary among communities. Local governments are therefore in the best position to choose drinking water standards that reflect those variations in costs and preferences.
>
> The local nature of costs and benefits of treating drinking water and considerations of information provide a rationale for allowing local governments to set their own standards. However, the reality of the situation is otherwise: the federal government currently sets standards for drinking water protection. Those standards may impose welfare losses on communities compelled to undertake more treatment than their unique circumstances justify. Welfare losses represent the decrease in net benefits (benefits minus costs) that communities experience because of meeting federal standards.

As part of the study, the CBO conducted a case study on one proposed drinking water rule for "adjusted gross alpha emitters," which it defined as "forms of radionuclides classified as human carcinogens." It found that the rule produced annual welfare losses ranging from $38 to $774 per household. Households in small communities paid the most.

In the lead case, we have seen that the disinfection byproducts regulations have basically forced communities to switch from disinfection technology to alternative one. These changes were based on the idea that the older disinfection method created byproducts that might be dangerous to health. This new disinfection product may have proven more corrosive to pipes, which may have led to the release of additional levels of lead in drinking water. There has been considerable controversy regarding whether the science supports the disinfection byproduct rule, and it may provide little benefit. Ironically, byproducts of the alternative technologies pose new risks that regulators didn't anticipate, but that will be subject of another debate.

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[1] U.S. Congressional Budget Office, *Federalism and Environmental Protection: Case Studies for Drinking Water and Ground-Level Ozone* (Washington D.C.: CBO, 1997), http://www.cbo.gov/showdoc.cfm?index=250&sequence=0&from=1.

This issue highlights the key problem with uniform federal mandates. When they are applied in real world, they can have unintended consequences that create new problems. When mandated across the board for every community, the costs of such decisions are magnified. If communities were not forced into switching disinfection methods, some might have decided to stick with the old method gas because they might have considered the potential lead issue. Some communities might have decided to switch anyway because their systems don't have lead lines. And some communities might have decided that the costs of addressing very small theoretical risks gas did not warrant shifting funds from other priorities—such as priorities related to health care, public housing, education, emergency preparedness, etc. When Congress passes such mandates it needs to realize that communities are in fact making such tradeoffs, the result of which can be net loss of public health and safety.

The law does require the EPA to consider whether the regulation is affordable for the public. However, EPA's rule for assessing affordability assumes that rules that would cost up to 2.5 percent of the median income are affordable—which amounts to about $1,000 per family, per rule. At this rate, one rule is hardly affordable to most families, and surely families can't shoulder such costs for the 80 plus rules combined!

Other parts of the law contributed to D.C.'s problems as well. The notification provisions of the Safe Drinking Water Act are also too inflexible. Every community must notify the public when violations occur according to Washington dictates on how they must report.

Clearly the underlying goal of notification is a good one. An educated public will be better able to demand solutions and keep officials accountable. But the problem is that these notifications are not educating people. Instead, they are being used to trigger alarm scenarios that are amplified by the media. The resulting crisis mentality is not educating the public, it's scaring them needlessly. The end result is "crisis" management styled policy—which demands a response that is disproportionate to the risks. Communities are then forced to pursue more federally determined "solutions" that divert funds from greater concerns.

The reality is that every violation means something different, and each deserves a different response. Clearly, Milwaukee public officials needed to provide urgent notification when they discovered the infectious cryptosporidium microbe in the city's water supply during 1993. They faced a pending public health emergency. That is different from periodic and modest violations of excessively conservative drinking water standards, which pose very little risk. While a rapid response and quick alert system is necessary in one case, it is unwarranted and potentially counter-productive in the second case. But federal notification requirements don't allow for enough differentiation.

The D.C. lead case may lie somewhere in between these two examples. For many residents, the levels deviated insignificantly, while levels for others were far higher. D.C. officials might have needed to have different alert levels for different communities in the city. But the law wouldn't allow that. In any case, I am not saying they did the greatest

job on earth. Frankly, it is extremely difficult to judge from the outside, particularly with everyone pointing fingers and fomenting controversy. I will note that it was rational for D.C. officials to attempt to deal with this problem without raising the issue to panic levels. However, this approach may have put them at odds with the law, which demands the triggering of a public health scare through an inflexible notification process.

The desire to avoid a crisis mentality in this case is commendable for several reasons. First, it is simply not right to needlessly scare the public. Second, a health scare would likely lead to panicked responses that divert huge amounts of limited government resources away from far more serious public health and community problems. Meanwhile, a less inflamed debate might have allowed city officials to find an affordable means for addressing the problem, while allowing other resources to continue to flow to address other issues. But instead, D.C. is likely to spend millions replacing lead service lines, which might not even solve the problem because homes might have other lead pipes or connectors that are contributing to the problem. If Congress attempts to demand more prescriptive notification, we can expect even more politically created "crisis scenarios" and more panicked responses, and more inappropriate "solutions."

For example, according to reports from EPA's recently assemble panel of experts on lead in drinking water, the City of Cincinnati reported that after spending tens of millions of the public's public health dollars to removed a substantial portion of their lead services lines – it only slightly decreased the lead concentration of lead in their water.

It is worth noting that D.C. was correct in its assessment that the lead issue didn't warrant a panicked response. The science and the history related to lead exposure strongly indicates that lead in drinking water—even at levels that are multiple times higher than federal standards—does not warrant the frenzied reaction we've seen in D.C. A recently released Centers for Disease Control and Prevention (CDC) study reinforces these findings.[2] It found that the elevated lead levels in D.C. water did not raise the level of lead in anyone's blood to a level of concern. They noted that lead levels are largely affected by other sources, particularly peeling lead paint and dust from such paint. Addressing drinking water levels, as a result, will have little impact, although it will force communities to divert resources away from areas of genuine need. While other sources of exposure remain an issue, progress is being made. The average lead blood level has declined substantially (80 percent) since the late 1970s, according to the CDC.[3]

Not surprisingly, the District government and the CDC discovered that every child they found with elevated lead levels in D.C. also lives a home with peeling lead paint and/or lead-containing dust from renovations. Based on tests of about 1,100 children, 14 children were found with elevated lead levels. Six of these children didn't even live in homes with lead service lines. Moreover, tests on about 200 people of all

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[2] "Blood Lead Levels in Residents of Homes with Elevated Lead in Tap Water—District of Columbia, 2004," *Morbidity and Mortality Weekly Report*, 53, no. 30, (April. 2, 2004): 268-270.
[3] "Blood Lead Levels in Young Children—United States and Selected States, 1996-1999," *Morbidity and Mortality Weekly Report* 49, no. 50 (December 22, 2000): 1133-7.

ages from homes with the highest lead levels in the water didn't find anyone with blood containing lead at levels of concern. As Daniel R. Lucey, the District's interim chief medical officer, recently told *The Washington Post*: "We are not seeing any widespread lead toxicity attributable to the water in D.C."

Accordingly, we could replace all the lead lines in the nation at an enormous cost, and still have little impact on lead blood levels. The cost to replace lead service lines in D.C. is estimated at $300-$500 million plus an additional cost for upgrading lines owned by homeowners of $50 to $60 million, according estimates presented by the Association of Metropolitan Water Agencies during other hearings on this issue.[4] Remember that means there will be that much less money available for D.C. to allocate to other needs, such as upgrading schools and providing essential services to the community. Congress can agree to cover some of service line replacement costs, but congressional authorizations are rarely enough to cover such costs. In addition, Congress's pockets are not unlimited either and expenditures here either mean less expenditures elsewhere or greater federal debt obligations.

Moreover, a federally mandated policy promoting lead service line replacements assumes we have a simple solution: replace lines and lead problems will disappear. But the reality is quite different. Because many homes may still have lead lines inside, replacement of service lines might still fail to provide measurable benefits in many instances. One problem is that lead problems may come not from service lines but directly from the tap.[5] Another problem revolves around whether a water system will be able to locate piping that is causing the lead.[6] In addition, mandated line replacement means systems do not have any flexibility in determining if better options exist.

The lead issue also raises issues of personal responsibility. In many cases, problems stem from piping that is owned by the user, not the public water systems. The cost of line replacements is high, and it raises questions as to whether the homeowner who owns the lines or taxpayers in general should be the ones to pay.

In the end the goal should be public health protection. That should involve rational approaches and sharing of good information rather than the advancement of alarming rhetoric and panic-produced regulatory measures that demand vast outlays of resources without regard to the impact of such policies on other priorities. D.C. and the

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[4] As cited by Patricia Ware, "Aging Water Pipes Cause High Lead Levels, Water Utilities Tell House Subcommittee," *Daily Environment Report*, April 29, 2004, A-8.

[5] American Water Works Association, "Comments on EPA's Proposed Minor Revisions to the Lead and Copper Rule," July 11, 1996; Conclusions regarding lead sources at the tap were drawn from an AWWA survey of 1,000 water systems.

[6] Back in 1991, EPA identified one problem with replacement mandates is that some communities might have a difficult time just finding the exact location of their lead service lines. It noted that many systems explained that they lacked records on location of lines; *Federal Register* 56, June 7, 1991, 26506. The AWWA makes similar observations in American Water Works Association, "Comments on EPA's Proposed Minor Revisions to the Lead and Copper Rule," July 11, 1996.

myriad other communities regulated under the law have other health issues, other community needs, and funds are not endless.

EPA can play an important role in this process. It can serve as a source of information and assistance to communities, rather than hammering them with mandates and compliance orders. The agency should be held to high scientific standards and should contribute to provision of accurate information, rather than the crisis mentality.

Congressional action at this time should focus on making the law more flexible. The Safe Drinking Water Act (SDWA) does include provisions that are supposed to allow for some flexibility, but they don't work very well. The EPA can grant variances (allowing the systems to deviate from EPA standards if they address the regulatory priority in a different way) and exemptions (allowing localities to vary their standards and use resources to address other needs in the community). But these provisions are so rarely used (because the bureaucracy associated with them) that they are essentially useless:

- The CBO notes that between 1990 and 1994, the EPA issued zero variances and only 15 exemptions. "Given that approximately 200,000 public water systems are subject to federal regulations (of which over 85 percent are small), that is a strikingly small number," noted CBO.[7]

- Little has changed since the passage of the 1996 amendments. In its latest compliance report, the EPA stated that "few public water systems were operating under a variance or exemption, and only 8 new variances or exemptions were granted."[8]

If Congress does anything in the near future on drinking water, it should be to provide genuine and workable regulatory relief. In addition, Congress should be engaged in vigorous review of all upcoming standards to prevent the agency from passing new regulations that are not supported by strong science. The costs of misguided rules, particularly to rural communities, can reduce quality of life and public health.

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[7] CBO, *Federalism and Environmental Protection*, 20.
[8] U.S. EPA, Office of Enforcement and Compliance Assurance, *Providing Safe Drinking Water in America: 1998 National Public Water Systems Compliance Report* (Washington, D.C.: USEPA, 2000).

Chairman TOM DAVIS. Thank you very much.

Mr. Rubin, thanks for being with us.

Mr. RUBIN. Good morning, Mr. Chairman.

Thank you for inviting me to be here today. I will mention that I am appearing today at my own expense and not on behalf of any client and I am doing that to ask you to focus on the larger problem of setting priorities for public health protection, particularly for the millions of low income households in this country. Then I will discuss how H.R. 4268 fits into this picture.

Initially, I would emphasize that nothing in my testimony should be used to decrease our commitment to controlling the exposure of infants and children to lead. I am concerned however, about the allocation of our limited resources for public health protection particularly for low income families. The health of low income families may be jeopardized by various environmental problems including lead exposure but their health is even more severely impacted by their lack of money to pay for essential services. One out of every five households in this country has an annual income less than $20,000. Most households with incomes below this level face serious challenges in attempting to meet their families' basic needs. Many low income families are faced with having to make serious tradeoffs that directly affect their family's health.

For example, the Census Bureau estimates that 10 million households are not able to pay their energy bill each month, 7 million aren't able to see a dentist when they need to, 6 million can't see a doctor, 5 million go hungry at some point during the year, 4 million have their telephone service disconnected, 2 million have their gas or electric service disconnected and nearly 2 million families have to leave small children alone because they can't afford child care. The plight of low income families raises important questions about our national drinking water policies, including how much more should you ask these families to pay for drinking water. Will an incremental improvement in the safety of their water provide benefits at least equal to the cost and will the tradeoffs the family must make result in improved or worsened public health overall?

Because there are so many low income families who will be affected by an increase in water costs, we need to be sure that the costs of paying for new drinking water requirements would at least equal the benefits from that measure. If they don't, then we run the risk of harming the health of low income households because many of them will have to cut back on some other necessity in order to pay the higher water bills.

With this understanding, I have a few concerns about H.R. 4268. First, the bill mandates a course of action without first determining its costs and benefits. The bill would require water utilities that experience an elevated lead reading to replace all lead containing service lines in their system. I don't know the total cost of such an effort. I would estimate it would cost at least $1,000 per line and probably several times that amount in many instances. I don't know how many utilities would be subject to the requirement or how many service lines would need to be replaced. Very importantly, we also don't know the public health benefit that will be derived from this effort. Will the benefits from reduced lead exposure

more than offset the reduced access to food, heat, medical care and child care that we can expect low income households to experience?

Second, I am concerned about the relationship between some of the requirements in the bill and the funding provision. While the legislation requires a 10-year line replacement program, it authorizes funding for only 5 years. Moreover, the bill's mandate exists without regard to the actual availability of funding. Even if the utility does not receive a grant, the utility would still have the obligation to replace service lines.

Thus, while the prospect of $1 billion in Federal funding is certainly a positive aspect of the legislation, I don't know if this amount is sufficient to meet the mandates set out in the bill and because of that, we can't assess the impact of the legislation on the water bills paid by low income families. If we don't know that, we can't determine the ultimate public health consequences of the requirement.

Please don't misunderstand me. I am not saying that we should do nothing about the lead problem either here in the District or elsewhere. I have been arguing for more than a decade that we need to provide much better and more understandable notice to the public. I think the legislation takes an important step in that regard, but we also need to make sure we are spending our money wisely. We need to make sure we are using our resources to enhance the overall level of public health protection, particularly to low income families.

The 1996 amendments to the Safe Drinking Water Act require the EPA to balance the cost and benefits of any proposed regulations. I continue to support that as being a reasonable approach to ensuring that we spend our dollars wisely. If we properly consider both the benefits and consequences of investments in our drinking water utilities, I am hopeful that we can improve the quality of life for 20 million low income households in this country.

Again, I appreciate the opportunity to be here and I look forward to your questions.

Thank you.

[The prepared statement of Mr. Rubin follows:]

U.S. House of Representatives
Committee on Government Reform

Lead Contamination in Drinking Water
H.R. 4268: Lead-Free Drinking Water Act of 2004

May 21, 2004

Written Testimony of
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Mr. Chairman and Members of the Committee,

Thank you for inviting me to appear before you today to discuss issues involving lead contamination in the District of Columbia's water system, H.R. 4268, and related issues. My testimony today will ask you to focus on the larger problem of setting priorities for public health protection, particularly for the millions of low-income households in our country.

Initially, I must emphasize that nothing in my testimony should be used to decrease our commitment to controlling the exposure of infants and children to lead. As you know, lead poisoning has been linked to developmental disabilities and other problems in small children.

I am concerned, however, about the relative allocation of our limited resources for public health protection, particularly for low-income families. The health of low-income families may be jeopardized by various environmental problems, including lead exposure. But the health of low-income families is even more severely impacted by their lack of money to pay for essential services.

The Plight of Low-Income Families

First, let's define what we mean by "low income." While there are different definitions of "low income" -- for example, we could look at various percentages of the federal poverty level, recipients of assistance from certain federal programs, or other measures -- using households with incomes less than $20,000 per year is one important measure to examine. According to the 2000 census, about 22 million households - one out of every five households in this country -- has an annual income less than $20,000 per year.

Most households with incomes below this level face serious challenges in attempting to meet their family's basic needs. Many low-income families are faced with having to make serious trade-offs that directly and adversely affect the family's health.

For example, in 1998 and 1999, studies by the U.S. Census Bureau estimated that 10 million households are not able to pay the home energy bill – electricity, natural gas, fuel oil – each month.[1] The same studies found that:

- 7 million households were not able to see a dentist when necessary
- 6 million households were not able to see a doctor when necessary
- 5 million households went hungry at some point during the year
- 4 million households had their telephone service disconnected
- 2 million households had their gas or electric service disconnected

In total, more than 7 million low-income households experienced at least one, serious hardship each year, with many of those experiencing multiple hardships.

Each of these hardships has a direct bearing on the health and safety of low-income families and on the overall level of public health within a community.

A more recent study adds another important health measure: the ability to pay for child care when needed.[2] That study only looked at families with incomes less than 200% of the federal poverty level – roughly $30,000 per year. It found that nearly 2 million families had to leave small children alone because they could not afford to pay for child care.

In other words, we have millions of families in this country that cannot make ends meet now. They cannot meet all of their basic needs for food, shelter, heat, medical and dental care, and child care.

What This Means for National Drinking Water Policy

The plight of low-income families raises important questions about our national drinking water policies, including:

- How much more should we ask these families to pay for drinking water?
- Will an incremental improvement in the safety of their drinking water provide benefits at least equal to the cost?
- Will the trade-offs that the family must make – reduced access to medical care, reduced ability to pay for child care, less money to spend on food and medicine and heat – result in improved or worsened public health?

Before we can talk about the impact of drinking water cost increases, we need some basic information about how many low-income households receive their water from a public water system.

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[1] Kurt Bauman, Direct Measures of Poverty as Indicators of Economic Need: Evidence from the Survey of Income and Program Participation, U.S. Census Bureau Population Division Technical Paper No. 30 (1998); Kurt Bauman, Extended Measures of Well-Being: Meeting Basic Needs, U.S. Census Bureau Current Population Reports, P70-67 (1999).

[2] Heather Boushey, et al., *Hardships in America: The Real Story of Working Families* (Economic Policy Institute, 2001).

My analysis of data from the 2000 census shows that 75% of all households with incomes less than $20,000 per year receive their water from a public water system. Of course, in large cities like the District of Columbia, that figure is 100%.

It is also important to know if low-income families actually pay a water bill each month, or is the cost of water service included in their rent or some other fee, like a mobile home lot charge. The census data also allow us to answer this question. Of the low-income households that receive public water, about 62% pay a water bill directly each month. The others pay the cost as part of their rent or some other fee.

According to the census, in Washington, D.C., there are about 65,000 households with incomes less than $20,000 per year. About 11,000 of those households – one out of every six low-income households in the District – pay a water bill each month.

Another way to gain an understanding of this problem is to look at differences between low-income households that rent and those who own their homes. Nationally, about 12 million low-income families are renters and 10 million are homeowners.

About 3 million of the renters pay a water bill each month, but more than 7 million of low-income homeowners pay a water bill. From census data on the relationship among poverty, age, and housing, I estimate that almost one-third of those low-income homeowners are age 65 or older.

What does all this mean? Simply, it means that about 10 million water customers in this country have incomes that are less than $20,000 per year. About 2 million of those customers are elderly, trying to make ends meet on fixed incomes without depleting their savings. The other 8 million represent a cross-section of our society – homeowners and renters; various family sizes and ages; in rural, suburban, and urban areas. What they have in common is an inability to meet all of their basic needs - items that are essential for the health and safety of their families – consistently from one month to the next.

Impact of H.R. 4268 on This Problem

With this background, we can begin to look at the problem of lead in drinking water. Because there are so many low-income families who will be affected by an increase in water costs, we need to be sure that the costs of paying for a new drinking water requirement will at least equal the benefits from the measure. If they don't, then we run the risk of harming the health of low-income households, because many of them will have to cut back on some other necessity – such as food, heat, medical care, or child care – in order to pay the higher water bill.

Another way to think about the problem is to ask: If we are going to spend $x on public health protection, how can we achieve the greatest improvement in public health? The answer may be through an improvement in drinking water, but we might be able to do much better by paying for cleaner air, improved police or fire protection, enhanced medical and dental care, greater access to child care, or some other public health program.

Using this approach, I have several concerns with H.R. 4268.

First, the bill mandates a course of action without first determining the costs and benefits associated with the action. The bill would require all water utilities – regardless of size – that experience a lead reading in excess of a standard to be set by EPA to undergo a 10-year program to replace all lead-containing service lines in their system. This effort would include the replacement of the customer-owned portion of the service line, as long as the customer consents.

I do not know the total cost of such an effort. Data from several utilities shows that the cost of installing just the utility's portion of a new service line to a new home is around $500. So I would guess that the cost of removing an existing line; replacing it with a new one; including the customer-owned portion of the line; and restoring any damage to sidewalks, pavement, landscaping; and so on, would have to cost at least $1000 per line, and probably several times that amount in many instances.

I don't know how many utilities would be subject to this requirement or how many service lines would need to be replaced. And, very importantly, we also don't know what benefit will be derived from this effort. Will the public health benefits from reduced lead exposure more than offset the reduced access to food, heat, medical care, and child care that we can expect low-income households to experience?

Second, I am concerned about the relationship between the requirements and the funding provision in the bill. The legislation would require a utility with an elevated lead level to undertake a 10-year service-line replacement program. However, H.R. 4268 authorizes funding for only five years.

Moreover, the bill's mandate exists without regard to the actual availability of funding. Even if no grant monies are actually appropriated in a given year, or if the need greatly exceeds the appropriation, or if a utility does not receive a grant, the utility's obligation to replace service lines remains in place.

Thus, while the prospect of $1 billion in federal funding for this program is a positive aspect of H.R. 4268, I do not know if this amount is anywhere near sufficient to meet the cost of the mandate set out in the legislation. Consequently, it is not possible to assess the impact of this legislation on the water bills paid by low-income families. Without knowing that impact, we cannot determine the ultimate public health consequences of this requirement.

Conclusion

Please do not misunderstand me. I am not saying that we should do nothing about the lead problem, either here in the District or elsewhere in the country. What I am saying is that we need to make sure that we are spending our money wisely. We need to make sure that we are using our resources to enhance the overall level of public health protection, particularly to low-income families. The 1996 amendments to the Safe Drinking Water Act require EPA to balance the costs and benefits of any proposed drinking water regulations. I continue to support that as being a reasonable approach to ensuring that we spend our dollars wisely. If we properly consider both the benefits and consequences of investments in our drinking water systems, we can improve the quality of life for 20 million low-income households in this country. Thank you again for the opportunity to be here today. I would be happy to answer any questions.

Chairman TOM DAVIS. Thank you very much.

Mr. Schwartz, good to have you with us. Thanks for being here.

Mr. SCHWARTZ. Good morning.

Thank you, Mr. Chairman and members of the committee, for giving Clean Water Action a chance to testify on this important issue here in the District of Columbia and nationally. Clean Water Action is an advocacy organization in some 25 States and here in the District with over 700,000 members. We seek to take lessons we have learned at the local level trying to fix problems and inject them into the policy debate at the State and Federal levels.

We wholeheartedly support H.R. 4268, the Lead Free Drinking Water Act of 2004. The legislative approach used in this bill builds on lessons learned and that we are still learning in the District over the past 4½ months and upon concerns with shortcomings of the lead copper rule since its inception as Congressman Van Hollen noted in 1991.

H.R. 4268 is a cost effective, pro-active, strengthening that gives the EPA regulatory flexibility while giving the lead and copper rule more teeth. A recent EPA survey of available State information shows that 22 community water suppliers, including DCWASA, serving over 5 million people have exceeded the action levels for lead at least one time since 2000. There is no data for 15 percent of the systems serving populations above 50,000.

The situation in D.C. surfaces a number of problems with the lead and copper rule some of which have been touched on earlier today, its enforcement and its implementation. In my remaining 3 minutes, I hope to illustrate some problems and show how this needed bill provides tools to correct the problem.

We are happy with the fact that the Washington Aqueduct Division and DCWASA and others are now moving more aggressively forward on a number of fronts but they are operating in an inefficient and haphazard crisis mode which could have been avoided if the EPA had been more aggressive and proactive in its oversight and enforcement role. The lead and copper rule is not a self implementing rule and without enforcement, it provides the public little protection.

In D.C. and in some other cities, elevated lead levels in drinking water were soft pedaled in the right to know reports or consumer confidence reports and other mandatory notes. Parents and even city officials didn't learn about the problem until well after the fact. The bill fixes this problem by requiring more effective notification and public education and mandatory swift notification to people whose water is tested. The bill also requires that the effectiveness of the notices must be evaluated.

In D.C. and many other cities, the water systems were allowed by the EPA's rules to reduce the number of homes they tested for lead and the frequency of testing. D.C. and Boston also apparently invalidated or tried to invalidate samples to avoid exceeding the action levels for lead. These problems contributed to the delay in detecting the lead problem and allowed unnecessary exposure of many kids and pregnant moms. The bill fixes that by ordering more aggressive statistically valid and frequent monitoring.

In D.C., changes in treatment apparently triggered more corrosion as we heard this morning and resulting in lead level increases

but no changes in corrosion control. The bill requires a detailed review of corrosion control when other treatment changes are made. In D.C. and other cities, the water system partially replaced the lead service lines in homes with elevated lead levels in water but studies as we have heard have now shown that for a period of time after the lead service lines were replaced, lead levels actually increased and then eventually come down. If replacement of the lead service line is indicated, then only full lead service line replacement as called for in the bill brings the level of lead down to a minimum.

There are many other problems which I don't have the time to get into that are addressed by this bill but I do want to take my remaining minute to address the issue of funding because I think that is an important issue. Nationally, as we have heard from Howard, the EPA estimates there exists a half trillion water and wastewater infrastructure gaps over the next 20 years. Our old drinking water treatment systems such as the Washington Aqueduct need to be updated. Duquesne distribution systems, whose pipes are reaching the end of their useful life spans, need to be repaired and replaced.

If we are going to have simultaneous compliance, we need to look at not doing the cheapest thing but doing the right thing that gets us simultaneous multiple benefits, so we need to look, for instance, within the Army Corps of Engineers and around the country at the Washington Aqueduct and around the country at using modern filtration and treatment alternatives, granular activated carbon, ultraviolet and other technologies that frankly are not in widespread usage in this country but are throughout Europe, Japan and most of the rest of the developing world. That is why we are supporting the creation of the Clean Water Trust Fund, full funding of the Clean Water and Drinking Water State Revolving Fund accounts, a water help program which we would invite AWWA and Scott and other people to join us in supporting a program from the Federal Government to low income consumers and why we are excited about the $1 billion in funding which certainly doesn't cover the whole gap but is a start in acknowledging the Federal role and responsibility in dealing with some of the lead problems here in the District and around the country.

Thank you.

[The prepared statement of Mr. Schwartz follows:]

STATEMENT OF
PAUL D. SCHWARTZ
NATIONAL POLICY COORDINATOR
CLEAN WATER ACTION

SUBMITTED TO THE
COMMITTEE ON GOVERNMENT REFORM
OF THE
UNITED STATES HOUSE

REGARDING
REVIEW OF THE NEED FOR
THE LEAD-FREE DRINKING WATER ACT OF 2004
& THE STATE OF THE CURRENT LEAD CRISIS IN WASHINGTON DC
MAY 21, 2004

Thank you for the opportunity to submit this testimony. I am Paul Schwartz, National Policy Coordinator with Clean Water Action (CWA), a national organization working to ensure clean, safe and affordable water, prevention of health-threatening pollution and creation of environmentally safe jobs and businesses. CWA has more than 700,000 members nationwide. I am on the steering Committee of the Campaign for Safe and Affordable Drinking Water, an alliance of over 300 medical, public health, nursing, consumer, religious, environmental, and other groups working to improve drinking water protection. I also serve on the steering committee of a new organization called Lead Emergency Action for the District (LEAD), a coalition of local and national civic groups, environmental, consumer, medical, and other organizations and citizens urging a stronger public response to the D.C. lead crisis. I testify today only on behalf of CWA.

* * *

REVIEW OF THE NEED FOR
THE LEAD-FREE DRINKING WATER ACT OF 2004
HR 4268/S.2377

The Lead-Free Drinking Water Act of 2004, introduced in the House by Del. Norton, and cosponsors Reps. Fattah, Hoyer, Markey, Moran, Solis, Van Hollen, Waxman, and Wynn (H.R. 4268), and in the Senate by Senators Jeffords and Sarbanes (S. 2377), includes an important set of provisions necessary to address the nation's continuing lead in drinking water problem. This serious issue has received renewed attention in light of the widespread lead contamination of the tap water here in the nation's capital. Lead is a cumulative poison, and EPA and public health authorities have concluded that the only "safe" level of exposure, especially for pregnant women and children, is zero. Recent scientific evidence published in the *New England Journal of Medicine* and elsewhere shows that lead significantly reduces children's IQ even when levels of lead in the blood are below the Centers for

Disease Control and Prevention's (CDC) current level of concern of 10 micrograms per deciliter (μg/dl). In fact, one study found that the most significant reduction in IQ (over 7 points on average) occurred when blood lead levels were increased within the band from zero to 10 μg/dl. In other words, virtually any substantial exposure to lead, from drinking water or otherwise, has the potential to significantly reduce a child's intelligence and ability to learn.

The provisions of the Lead-Free Drinking Water Act of 2004 are important to the protection of public health. The bill:

- Requires EPA to review and revise the national primary drinking water regulation for lead within 18 months, and to either establish a maximum contaminant level (MCL) for lead in drinking water as measured at the tap, or, if EPA determines that it is not practicable, to establish a treatment technique to prevent adverse health effects. The new standard must be at least as strict as the current EPA standard.
    - This review is critically important, as the recent experience with Washington D.C., and now emerging concerns with other water systems has shown. There are serious problems with the action level approach, as well as with the lead rule's provisions regarding lead service line replacement, monitoring, public notification/right-to-know, and other measures that must be addressed.
- Speeds up and requires complete replacement of lead service lines in systems that exceed the MCL or action level for lead
    - Upon exceeding the MCL or action level for lead, a water system must replace at least 10 percent of its lead service lines annually until they are gone. The current seven percent per year requirement means that it can take nearly 13 years to replace lead service lines in a community with serious lead problems—exposing almost a generation of children to excessive lead.
    - Priority is given to homes with highest lead test results and those that provide drinking water to infants, children, and pregnant and lactating women. Since these are the subpopulations at greatest risk, it only makes sense from a public health perspective to focus on "first things first."
    - Eliminates the existing loophole allowing systems to avoid replacing lead service lines by conducting water tests. While it is useful to conduct widespread monitoring of communities with lead problems, we believe that such monitoring should automatically be triggered by exceedence of the MCL or action level, and that lead service line replacement should not be delayed by intensive monitoring.
    - Requires community water systems and nontransient noncommunity water systems to replace lead service lines, including those portions owned by homeowners, but allows homeowners to veto installation of a non-lead line on their property if they choose not to do so. This provision is critically important in light of emerging evidence in Washington, D.C. and other cities that partial lead service line replacement can temporarily make lead levels worse in drinking water, and that even with the passage of time, lead levels at the tap still are not reduced nearly as much with partial replacement as when the full lead service line is replaced. We should not be spending tens or hundreds of millions of dollars on a partial solution when a much fuller solution costs only a small amount more (in Washington, for example, it has been reported that partial lead service line replacement costs $10,000-$12,000 per household, and replacement of the full line up to the home costs about $1,000 to $2,000 more, since the contractor is

already there with equipment and staff, substantially reducing costs).

- Strengthens public notice requirements. The experience in Washington, D.C. and other cities highlights the fact that even when serious lead problems exist in a city's drinking water, most citizens—and sometimes even senior city officials—are not made aware of the problem.
    - Upon exceedance of the MCL or action level for lead, water systems must deliver notice within a month to consumers of the testing results and corrective actions to be taken. A warning must be given on all water bills regarding the presence of a health risk from high lead levels in tap water, and repeated notices have to be provided every 90 days as long as the problem continues.
    - Water systems must provide, within two weeks of the receipt of results, notification to each home tested of their own results, the scope of the testing conducted and the results, and referrals for any required medical intervention.
    - Requires special emphasis on alerting parents, caregivers, and others of the high risks to infants, children and pregnant and lactating women from lead in drinking water; and encourages, when appropriate, immediate modifications of behavior to minimize exposure to lead in tap water.
    - Requires the EPA to establish verification procedures to determine the effectiveness of public notification.
- Establishes routine public education on lead in drinking water.
    - Requires routine public education programs by water systems, designed to improve the level of public understanding of the risks posed by lead contamination and available protective actions. EPA can waive this requirement for systems that have not exceeded the action level for lead since June 7, 1991.
- Requires that, upon exceeding the MCL or action level for lead, water systems provide on-location filters certified for lead removal to each residence, school, and day care facility that could reasonably be expected to have lead contamination of tap water in excess of the MCL or action level for lead.
    - Priority is given to vulnerable populations such as infants, children, and pregnant and lactating women; and to residences, schools, and day care facilities with high lead levels.
- Establishes testing requirements and corrective actions for federal buildings.
- Requires one-time nationwide testing for lead in drinking water at all community water systems or nontransient noncommunity water systems to be completed within 18 months.
- Requires an overhaul of monitoring protocols to ensure that tests for lead are conducted at 6-month intervals, that a statistically significant sample is used that is fully representative of all types of residential dwellings and commercial establishments, and that increased testing is conducted after any substantial modification in the treatment of drinking water or during any period in which the drinking water exceeds the MCL or action level for lead. The D.C. situation makes the need for this provision clear.
- Requires that water systems reevaluate and optimize corrosion control plans within a year of a change in water treatment or an exceedance of the MCL or action level for lead.
- Establishes a lead service line replacement fund that authorizes $200 million per year for 2005

through 2009, and provides $40 million per year to D.C.

- Revises current SDWA definition of "lead-free" from 8 percent lead to 0.2 percent lead and makes it unlawful to import, manufacture, process, distribute in commerce, or install in any residence anything but lead-free plumbing fixtures and components as of January 1, 2005. We now know that 0.2 percent or less lead alloys are widely available on the market, and are required in purchase contracts used by Los Angeles and other cities across the country. At a recent EPA-sponsored workshop in St. Louis May 10-13, experts noted that the current NSF voluntary standard for lead content in faucets and fixtures has serious problems and does not assure that lead leaching is minimized—in fact, at least one expert stated that his lab found that some pure lead fittings could pass the NSF protocol.
- Establishes requirements for testing and removing lead in schools. Authorizes $30 million per year for this purpose. A court decision that has cast a shadow of doubt over the continued enforceability of the current provisions makes clarification and strengthening of these provisions important.

The drinking water lead crisis in Washington D.C. poses serious public health risks to thousands of residents of the national capital area, and casts a dark shadow of doubt over the ability, resources, or will of federal and local officials to fulfill their duty to protect our health. Preliminary data released by the Centers for Disease Control and Prevention recently found that there are reasons to be concerned about lead in DC tap water. While severe acute lead poisoning due to drinking water was not found, blood lead levels in DC children who drink water in homes served with lead lines did not decrease, whereas they did decrease in children served by non-lead lines. This suggested to health experts that lead in tap water is likely contributing to higher blood lead levels in some children in the District. Because of deficiencies in the D.C. blood lead monitoring program design, and because blood lead levels begin to drop fairly shortly after exposure is stopped (with time much of the lead deposits in bone and tissues), it is quite possible that more serious problems were not detected. Mary Jean Brown, the lead poison prevention chief at the CDC and a co-author of the report said in releasing the report that "there is no safe level of lead…Even a small contribution, especially in small children, is not something that we want to happen…. We don't want to increase the blood lead levels of those individuals by even 1 microgram if it can be prevented." See Avram Goldstein, "Blood Lead Levels Affected by Disinfectant," Washington Post, March 31, 2004, available online at http://www.washingtonpost.com/wp-dyn/articles/A37404-2004Mar30.html and CDC study at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm53d330a1.htm.

It is important to note that new data published in major medical journals the past few years show that even at levels below 10 ug/dl in blood, lead has been linked to reduced cognitive function in children, and surprisingly, the most significant effects are seen at levels below 10 ug/dl. See CDC Advisory Committee on Childhood Lead Poisoning Prevention, Evidence of Health Effects of Blood Lead Level <10 ug/dl, available online at http://www.cdc.gov/nceh/lead/ACCLPP/meetingMinutes/lessThan10MtgMAR04.pdf.

The U.S. Environmental Protection Agency (EPA) has the primary responsibility for protecting drinking water only in Washington D.C., Wyoming, and a few U.S. territories. EPA has failed to fulfill its obligation to aggressively oversee the safety of D.C.'s water supply, to ensure that the public is fully apprised of the health threats posed by our drinking water, and to enforce the law.

This raises important questions about the adequacy of EPA's drinking water program not only for the Nation's Capital, but also for the whole nation. The U.S. Army Corps of Engineers'

Washington Aqueduct Division (the Corps) has failed to treat the water it delivers to D.C. and neighboring Northern Virginia communities sufficiently to assure that the water is not corrosive, in order to reduce lead contamination. The D.C. Water and Sewer Authority (WASA) has failed to act promptly or adequately on the lead contamination crisis, and has repeatedly confused and mislead the public about the lead problem. To date, the local and federal response has been far too slow and manifestly inadequate. The nation's capital's water supply should be the best in the world, an international model. Instead, it is among the worst big city supplies in the nation.

It should not be assumed that Washington is the only city in the U.S. affected by lead or other important tap water problems. We are now learning of lead problems in Northern Virginia, and there are several other cities have struggled with lead contamination in recent years, including:

- **Seattle, Washington** (19 ppb 90th percentile lead according to Annual Consumer Confidence Report (CCR) issued in 2003, citing 1997 data).
- **Portland, Oregon** (17 ppb 90th percentile according to CCR issued in 2003)
- **St. Paul, Minnesota** (45 ppb 90th percentile in 1996, reportedly brought down through treatment to 25 ppb in 1999, 20 ppb in 2000, and 11 ppb in 2003).
- **Bangor, Maine** (6-8 ppb 90th percentile from 1993-1999, increased to "15 ppb" in 2001 after switch to chloramines and subsequent nitrification problem; reportedly reduced since then after additional treatment—compliance issue boiled down to 1 ppb in one home out of 38 tested).
- **Madison, Wisconsin** (22.2 ppb 90th percentile lead level, city is now doing lead service line replacement, according to February 2004 report available online at http://www.ci.madison.wi.us/water/Report%20PhaseII%20S.pdf).
- **Greater Boston, Massachusetts** communities (most recent Mass. Water Resource Authority's 2003 CCR reports system-wide (consolidated) 90th percentile lead level has dropped from 65 ppb in 1992 to 11 ppb in 2002, but MWRA's 2001 CCR reported, on a community-by-community basis, that 13 Boston area communities substantially exceeded the 90th percentile level. It is unclear why MWRA stopped reporting these community-by-community data in its annual CCRs thereafter.)
- **Newark, New Jersey** (2001 90th percentile in Wanaque system was 24 ppb and 13 ppb in Pequannock system; 2002 level reportedly changed to 12 and 14, respectively, with new corrosion treatment).
- **New York City** (2002 and 2001 90th percentile levels reported in CCR at 15 ppb, with levels up to 3,555 ppb in 2001; compliance issue boils down to 1 ppb in one home out of 107 tested in all of NYC).
- **Oneida, New York** (2002 CCR reported 19 ppb 90th percentile level, reportedly doing lead service line replacement).

As several of these examples highlight, there are opportunities to "game" the system by slightly altering the monitoring program. Though there is evidence that this may have happened in Washington D.C., we are not aware of any evidence of this elsewhere, though the temptation could be large, and the lack of serious EPA oversight makes detection of such problems unlikely. If the compliance of a system serving millions of people boils down to less than 1 ppb measured at one or a few homes out of about 100 tested, this raises significant issues.

Many other cities have had similar lead problems to those noted above. However, incredibly EPA maintains no accurate up-to-date national information on this issue. Some of these cities will

assert that they are now in compliance with EPA's lead action level despite recent documented problems, but EPA has done little to aggressively ensure that this is correct.

School systems in many cities across the country including in Seattle, Boston, Baltimore, Philadelphia, Montgomery County, Maryland, and many others have found serious lead contamination problems, but often have been slow to inform parents and resolve the problem. Many other states and school systems have entirely failed to comply with the Lead Contamination Control Act of 1988's mandate to test school water for lead and replace coolers that serve lead-contaminated water. EPA and many states have done a poor job of assuring that the EPA lead rule, and the school testing and cooler programs are fully implemented.

The EPA Inspector General has recently issued a stinging report finding that EPA's national drinking water database mandated by Congress and EPA rules is woefully incomplete and out of date, and that EPA has repeatedly mislead the public about drinking water quality and compliance because violations are seriously underreported.[1] EPA has acknowledged that there are major problems with state reporting of all violations and specific lead levels to EPA—indeed, NRDC has learned that fully 20 states have not been reporting any required information on lead rule compliance, contrary to EPA rules. Yet EPA has has failed to crack down on states that are not complying with federal reporting rules, making effective federal tracking, oversight, and enforcement impossible. Moreover, the Washington crisis and experience in other cities highlight that the EPA lead rule and public education requirements are manifestly inadequate and almost designed to be difficult to enforce.

Below, we summarize some key problems with the response to the lead crisis, and the actions that need to be taken to resolve the problem locally and to avoid possible repetition of the problem nationally:

EPA. The EPA bears a special responsibility for addressing the D.C. water crisis, since EPA has primary responsibility for drinking water protection only in Washington, D.C. and Wyoming. EPA must take emergency enforcement action against WASA and the Corps. EPA's recent notice of violation issued to WASA was extremely long in coming. EPA's deals with WASA and the Corps lack the clarity, detail, and enforceability that is needed to assure this problem is promptly resolved. Only years after the alleged violations, of which EPA was well aware, and only after a barrage of two months of adverse publicity, did EPA take this feeble action of issuing an NOV. An emergency enforcement order should be issued that would not only mandate immediate actions to deal in the short-term with the lead crisis, but should also require a comprehensive top-to-bottom third party review of both WASA and Corps operations.

EPA has failed to ensure prompt and accurate public education and reporting on lead problems, and there are substantial questions about whether EPA adequately oversaw WASA's lead monitoring and sample invalidations. EPA failed to promptly and adequately review, or to insist upon the updating the Corps' corrosion control program. It is unclear whether EPA insisted upon an adequate and accurate materials survey, and EPA reportedly allowed WASA to avoid lead service line replacement by taking advantage of a regulatory loophole.

EPA has been slow to force WASA to redo its manifestly invalid and misleading school testing, or to mandate testing of day care centers or private schools. The EPA lead rule itself, which is drafted

[1] EPA Inspector General, "EPA Claims to Meet Drinking Water Quality Goals Despite Persistent Data Quality Shortcomings," Report 2004-P-0008, available online at www.epa.gov/oig/reports/2004/20040305-2004-P-0008.pdf.

in a way that makes it extremely difficult to enforce, needs to be substantially strengthened. In addition, as noted above, EPA's data reporting systems are woefully inadequate, to the point that EPA management cannot accurately and timely answer simple questions such as "which public water systems are above the lead action level and which are replacing lead service lines?" EPA also has done little to ensure that school testing for lead has been carried out nationally, perhaps in part due to a court ruling casting doubt on the program (Acorn v. Edwards, 81 F.3d 1387 (5th Cir. 1996)). EPA's inspection and enforcement program for drinking water has always been weak, but has gotten demonstrably worse during the Bush Administration, as is shown in graphs a the end of this testimony.

Army Corps of Engineers. The Corps has failed to ensure that its water is adequately treated to reduce its corrosivity and to thereby reduce lead levels in Washington and the Northern Virginia suburbs that it serves. The Corps has repeatedly responded to water quality problems by adopting the cheapest and often least effective band-aid solutions. Instead of using orthophosphate or other sophisticated corrosion inhibiters as recommended as best by its consultants, the Corps chose to simply adjust water pH with lime, a cheaper and apparently less effective alternative.

Instead of moving towards advanced treatment such as granular activated carbon filters and UV light or ozone disinfection, or membranes to reduce cancer-causing (and possibly miscarriage and birth defect-inducing) disinfection byproducts, and to more effectively remove the dangerous parasite *Cryptosporidium* and other contaminants, the Corps opted for the cheapest and least effective choice. It simply added ammonia to its chlorine to make chloramines. The switch to chloramines did slightly reduce chlorination byproduct levels, but also appears to have increased corrosivity of the water and therefore increased lead problems. It should be noted that contrary to the inaccurate assertions of some critics, the EPA rules setting new limits on disinfection byproducts were not the result of wild environmental extremists, but were negotiated by a diverse regulatory negotiating committee over a several-year period. The committee included major water utility trade associations, chlorine manufacturers, health departments, public health experts, states, local officials, and environmentalists (see 1998 agreement in principle at http://www.epa.gov/safewater/mdbp/mdbpagre.html).

WASA. WASA's response to the lead crisis has been slow, plagued by misleading statements to the public and even to senior D.C. officials, and often characterized by missteps and at best grudging compliance with EPA rules. Whether it is the alleged firing of a WASA employee for reporting lead problems to EPA, or the failure to notify customers with high lead levels for many months after samples were taken, or the failure to effectively notify the Mayor, City Council, and all city residents of the extensive and serious lead problem until the Washington Post broke the story, WASA has a lot to answer for. EPA has recently listed six alleged violations of federal regulations that may have contributed to the lack of public knowledge. See EPA Non Compliance Letter to WASA, dated March 31, 2004, available online at http://www.epa.gov/dclead/johnson-letter2.htm.

WASA's conflicting advice to customers (such as a February 9 letter to all customers telling them to flush their water for 15-30 seconds, followed by a public announcement a few days later to flush lead lines for 10 minutes, followed a few days later by a recommendation that pregnant women and children under six served by lead service lines should use a filter) has confused and justifiably outraged citizens. WASA's invalid and misleading testing of city schools, in which virtually all samples were taken after water was flushed for 10 minutes (with the likely effect of reducing or eliminating lead levels), necessitates a re-conducting of a valid school and day care testing program. At the mayor's and EPA's insistence, WASA has now said it will do additional school testing.

In addition, it appears that WASA's *partial* lead service line replacement program may be making matters worse, increasing lead levels in some homes' water. Since local and federal authorities have approved and encouraged the use of lead service lines in D.C. for over 100 years, we believe that WASA should fully remove all of the lead service lines at its expense (with federal assistance, see "Congress" below), instead of stopping at the property line. A comprehensive third-party public review of WASA's lead program and all water quality operations also is desperately needed.

Congress. We urge Congress to help D.C. and EPA to fund the response to the lead crisis, including lead service line replacement and upgrades to the D.C. and Corps water infrastructure. Congress also should respond to the national water infrastructure problem through national legislation and increased appropriations. In addition, Congress should vigorously oversee EPA's drinking water program, including its national implementation of the lead rule and its enforcement and data collection programs. Members of this Committee should urge their colleagues on the Appropriations Committee to increase funding for EPA drinking water programs, and particularly for drinking water enforcement. We also urge Congress to insist that EPA take emergency enforcement action against WASA and the Corps, as discussed below.

Specifically, among the actions that we believe Congress should take to address problems raised by the lead crisis are:

- **Water Infrastructure or Grants/Trust Fund Legislation**
  - Congress should substantially increase the Safe Drinking Water State Revolving Fund authorization and appropriations (now funded at $850M; authorization of $1B expired in 2003)
  - Congress should adopt broad water infrastructure bill and/or water infrastructure trust fund legislation.
  - Congress should adopt targeted legislation for lead rule compliance/lead service line replacement and filters for D.C. residents at least, since the federal government approved and oversaw the installation of the lead lines.
  - The Corps of Engineers should pay for D.C. lead service line replacement since Corps built the system, and operates the treatment plant that is providing corrosive water. Also, federal agents (federally-appointed Commissioners and engineers) approved and sometimes required lead service lines in D.C.
  - Congress should adopt new legislation that provides grants to needy water systems, like Reid-Ensign bill (S. 503, 107th Congress).
- **Fix Lead Pipe and Fixtures provision in the SDWA**
  - Congress should redefine "Lead Free" in SDWA §1417(d) to mean really lead free (i.e. no lead added, and no more that 0.1 or 0.25% incidental lead--as required by L.A., Bangor, Maine, etc.)
  - Congress should fix the public notice provisions in SDWA §1417(a)(2), which clearly have been inadequate (as shown by the D.C. experience)
- **Fix the SDWA lead in schools and day care provisions (SDWA §§1461-1463)**
  - Congress should redefine lead free in the Lead Contamination Control Act (LCCA), which added SDWA §1461, to mean really lead free (0.1% or 0.25%, see above)
  - Congress should order an EPA review of §1462 implementation and effectiveness of lead fountain recall provision in all states
  - Congress should clarify §§1461-63 to eliminate any constitutionality doubts raised by Acorn v. Edwards, 81 F.3d 1387 (5th Cir. 1996).

- Congress should require ongoing retesting of all schools and day care centers in light of Acorn and widespread non-compliance, and new info on lead leaching.

- **Fix the EPA Lead Rule & Associated Regulations**
  - Adopt a 10 or 15 ppb MCL at the tap. There was an MCL (50 ppb) until 1991.
  - As a clearly second-best alternative, the rule needs serious overhaul:
    - ✓ Require immediate review of corrosion control programs for systems that make treatment changes, and also require review periodically;
    - ✓ Change monitoring requirements so systems cannot go for years without testing, and to clarify and strengthen test methods, site selection, and number of tests (50 or 100 per city are not enough);
    - ✓ Strengthen/overhaul public education and public notice requirements in 40 CFR 141.85 which are obviously inadequate;
    - ✓ Require full lead service line replacement, or at a minimum require that water systems that approved, authorized, or required use of lead service lines to replace those lines if they are contributing to lead over action level;
    - ✓ Require in-home certified filters to be provided to high-risk people who have high lead levels, with water system-supplied maintenance in accordance with 40 CFR 141.100;
    - ✓ Eliminate the loophole that allows systems to count homes tested at below 15 ppb as is their lead service lines were replaced in implementing the 7%/year lead service line replacement provision;
    - ✓ Require an overhaul/upgrade of EPA's compliance & data tracking.
- **Fix the Consumer Confidence Report & Right to Know Requirements**
  - WASA's report said on the cover "Your Drinking Water is Safe" and buried the facts. No one knew of the problem. Similar problems have been documented for water systems across the country. EPA's right to know and consumer confidence report rules need to be overhauled & strengthened.
- **Fix SDWA Standards Provisions**
  - Congress should require that standards to protect pregnant women, children, vulnerable people.
  - Congress should overhaul the new contaminant selection & six-year standard review provisions. These provisions have been complete failures since 1996.

EPA's Responsibilities

EPA has known, at least since the mid-1990's, that lead contamination of tap water is a significant issue in Washington, and that the public was ill informed about the problem. In 1995-1996, in response to a Freedom of Information Act request, NRDC learned that many homes across the city had lead levels well in excess of the EPA Action Level, and that those homeowners had not been informed of the contamination. The Washington Post ran a story about the issue in April 1996. Meanwhile, the Corps' filed its corrosion control plan with EPA, and EPA substantially delayed in its approval, well beyond the legal deadline. Finally, EPA apparently simply accepted the Corps' plan to use only pH adjustment, rather than requiring the Corps to further study or use orthophosphate or other more sophisticated corrosion inhibiters recommended by some consultants. When the Corps later switched to chloramines as a disinfectant, EPA made the serious mistake of not insisting upon a full review of the corrosion control plan in light of the apparently more corrosive disinfectant.

Even when the lead Action Level was exceeded in Washington in 2001, EPA required no changes in corrosion control, went along with WASA's plan to replace only a small number of lead service lines, and did not insist that WASA conduct an effective public education program. There also are substantial unresolved questions about whether EPA allowed WASA to "invalidate" lead samples and avoid an exceedence of the Action Level, as alleged by a former WASA employee who was reportedly fired for informing EPA of the lead problem. Additionally, while EPA has issued a notice of violation recently to WASA for failing to comply with public notification and public education rules, EPA has never challenged the adequacy of WASA's water quality reports sent to all consumers in June 2003 boldly proclaiming that "YOUR DRINKING WATER IS SAFE," despite the exceedence of the lead Action Level.

Moreover, while EPA enforcement of the Safe Drinking Water Act (SDWA) has never been strong, this testimony documents that nationally, it has substantially dropped off since President Bush took office (see Figures at the end of this testimony). EPA's drinking water inspections, administrative penalty orders, administrative penalties, and other measures of enforcement activity generally have taken a substantial downturn in the past three years. We understand there is only one EPA staffer in EPA's Washington enforcement office dedicated to drinking water enforcement (though there are pieces of a few others who spend small amounts of time on drinking water enforcement), and that the dedicated drinking water enforcement staffing in the EPA's regions is small and dwindling. This enforcement downturn may have contributed to the lack of action in this case, compared to a far more vigorous EPA enforcement response to previous D.C. water crises in 1993-94 and 1995-96. There is a serious need for a major infusion of resources and a will to enforce in EPA's drinking water and enforcement programs.

The only solution to the D.C. water crisis is for EPA to initiate a full civil and criminal investigation, and to immediately issue emergency administrative orders to WASA and the Corps. The orders should mandate that they address the multitude of problems with their response to the lead crisis and other water quality problems, *including enforceable deadlines* for:

(1) expedited, valid testing of all schools and day care centers;
(2) expanded testing of multiple family and single family homes and apartments beyond those with lead service lines;
(3) reissued accurate, understandable notices to consumers of lead levels, health risks, and options to avoid lead;
(4) professional installation *and maintenance* of certified filters for homes with lead service lines or high lead levels in their water, and that have young children, pregnant women, women who expect they may become pregnant, and other high risk individuals;
(5) an aggressive, honest, ongoing public education campaign developed with public input;
(6) a comprehensive third-party review of all available records and archives to determine whether the D.C. materials survey correctly identifies all locations where lead components were used;
(7) an expedited third-party review of the Corps' corrosion control and disinfection byproduct control strategy, with mandatory implementation of solutions by specified dates certain; and
(8) a top-to-bottom third party expert review of WASA and the Corps' water quality, source water, and overall performance, including a detailed review of their implementation of past consultant recommendations, Comprehensive Performance Evaluations, and sanitary surveys, and recommendations for long-term compliance with current and upcoming rules and water quality objectives. The review should seek public input and should be published.

(See LEAD coalition recommendations below for a more detailed discussion of the terms of possible orders). Finally, EPA must overhaul its lead rule, and its overall and substantially better fund its

drinking water and enforcement program's oversight, sampling, data collection, and legal enforcement to ensure that this or other similar problems are not repeated in other cities around the country.

The Army Corps of Engineers' Responsibilities

The Corps has repeatedly opted for the cheapest, easiest way out of water quality problems, even if the "solution" is manifestly inadequate. Thus, instead of following consultants' advice to consider aggressive and sophisticated corrosion inhibiters such as orthophosphates to reduce lead problems, the Corps chose merely to adjust pH. Instead of addressing the underlying problem creating the high chlorination byproduct contamination of city water by installing advanced treatment such as activated carbon and ozone or UV disinfection, or membranes, the Corps opted for a cheap "band-aid" solution of using chloramines alone, apparently exacerbating the corrosion problem with our water. As noted above, EPA should immediately issue an emergency order to the Corps requiring: (1) a comprehensive and public third party expert review of the Corps' corrosion control and water treatment problems; (2) enforceable deadlines for completion of the review and implementation of recommend solutions; and (3) a longer-term top-to-bottom third party review, with public input, of the Corps' water quality and treatment.

D.C. Water and Sewer Authority's (WASA) Responsibilities

WASA has bungled its response to the D.C lead problem. In addition to violating EPA rules, WASA's public education and public notice efforts have been conflicting, confusing, misleading, and manifestly woefully inadequate. The direct notices provided to customers whose water was tested and confirmed to be highly contaminated was misleading and failed to provide any sense of health risk or urgency. The WASA water quality reports issued to the public proclaiming that "YOUR DRINKING WATER IS SAFE," despite evidence to the contrary, was highly misleading, as were a variety of other WASA public communications. WASA's changing advice on how long and whether to flush tap water, and whether filters are necessary, has confused the public.

WASA's program testing about 750 samples from over 150 city schools' fountains and faucets was fundamentally flawed and either completely inept or intentionally misleading. WASA admits that contrary to standard EPA regulatory protocol and standard scientific practice, they ran the water for 10 minutes before taking school samples, thereby likely substantially reducing lead levels in the samples. No child runs water for 10 minutes before drinking it. WASA's press conference portraying the results as demonstrating that there is no lead problem in D.C. schools was highly misleading and likely false. The Mayor and EPA have now told WASA to redo this testing. It should be done for all school and day care center faucets and fountains used by children for consumption.

In addition, there are serious unanswered questions about when WASA first learned of the lead problem, whether WASA "invalidated" lead samples to avoid exceeding the Action Level, and whether WASA fired an employee allegedly for notifying EPA of water quality problems (as has been found by a U.S. Department of Labor whistleblower review). It is also unclear whether the city's materials survey (intended to identify lead components in the system) adequately documents where lead service lines and high-risk homes are located. The WASA lead sampling plan and monitoring program clearly are inadequate, since to date they have not sought to document the extent of the lead problem in homes not served by lead service lines.

WASA's lead service line replacement program is insufficiently aggressive and will not promptly resolve the city's lead problems. In addition to the slow pace of replacement (at WASA's current rate, it will take about 15 years to complete), it also is becoming apparent that *partial* lead service line replacement (leaving the lead line on the homeowner's property in place) may actually make lead problems worse. Partial service line replacement can exacerbate lead problems by shaking loose lead particles during and after the replacement process, and by creating galvanic corrosion (similar to a battery) caused when two pipes made of different metal are connected. We believe that WASA should pay for—with federal assistance—full lead service line replacements.

A long history of problems with the operation and maintenance of the D.C. water distribution system, including past city-wide boil water alerts during the microbial crises in 1993-94 and 1995-96, and WASA's inability or unwillingness to candidly inform customers and apparently even senior city officials about water quality problems makes clear the need for EPA to issue an emergency order mandating a comprehensive top-to-bottom third party expert review of WASA's water quality and operations, with public input and public release of the findings, and a schedule for implementation of the recommendations.

History of Recent Lead Crisis in D.C.

On Saturday January 31, 2004, residents of the Nation's Capitol picked up their morning papers and were stunned to learn that thousands of homes' drinking water in the District was seriously contaminated with lead. Officials at the D.C. Water and Sewer Authority (WASA) and at the U.S. Environmental Protection Agency (EPA) had known about the lead problem for over a year, and probably longer, but had failed to effectively notify the public about the problem. The Mayor, City Council, Members of Congress, and the general public were caught by surprise that over 4,000 of 6,000 homes whose water WASA tested was contaminated with lead at levels above EPA's action level—the safety level at which federal rules require prompt action to reduce lead levels. There has been over a month of front-page stories, saturation TV and radio coverage, hostile City Council hearings, public outrage, and repeated (albeit often conflicting) WASA public statements that there was no serious health threat. Finally, WASA recommended on February 25 that pregnant women and children under age six whose homes were served by lead service lines should not drink city water, fueling further public concern, confusion, and outrage that WASA and EPA had known about the health threat for so long and never previously told pregnant women and parents of young children not to drink the water.

WASA also held a press conference in late February to announce that school drinking water was safe, based upon testing of over 750 fountains and faucets in D.C. schools. It then came out that the results were seriously misleading because in almost all cases, WASA flushed the water lines for 10 minutes, likely removing most lead from the water, contrary to EPA rules and all scientific protocols for lead testing. No child stands at a fountain flushing water for 10 minutes before taking a drink. WASA refused to retest D.C. school drinking water, or to comprehensively test day care centers, posing a serious health risk to D.C. school and preschool children, until ordered to do so by the Mayor and EPA.

Now we are learning that it appears that similar problems may be plaguing Northern Virginia communities that also receive their water from the U.S. Army Corps of Engineers' Washington

Aqueduct Division (the Corps). The Corps changed its disinfection practice to use chloramines in 2000, a switch many experts believe may account for increased corrosivity of the water and therefore more lead leaching into tap water. Chloramines are a "band-aid" that modestly reduce cancer-causing chlorination byproducts, but only a switch to modern water treatment technologies such as granular activated carbon plus UV light or ozone disinfection will actually solve both the chlorination byproduct problem.

The February 25 "don't drink the water" advice, though necessary, is woefully inadequate. Citizens are infuriated that they have been mislead and given conflicting advice. District leaders announced, as this scandal erupted in early February, that they would name an "independent" blue ribbon panel to investigate. However, this was followed days later by an announcement of a panel consisting entirely of WASA and other District government officials, with no independent experts and no citizens, environmentalists, or consumer representatives. The District government's retreat from its promise that there would be an independent review showed a lack of commitment to swiftly resolve this serious health problem or to get to the bottom of why WASA continues to fail in its duty to protect the public.

The decisions to approve the use of lead service lines were made with the explicit approval and oversight of federal officials, who were overseeing the construction of the city's water lines and supply. There had been a vigorous public debate about the safety of lead service lines stretching back to the 1890s, yet federal officials who ran the city supply decided to use lead lines. Thus, the federal government bears some culpability for the problem.

Conclusion

We urge members of this Committee to consider the legislative and oversight recommendations noted above. Without changes in applicable statutory provisions, and aggressive Congressional oversight, it is likely that problems like those in Washington, D.C. could happen in many cities and towns across the country. Public health protection requires increased vigilance by EPA, Congress, health authorities, and water utility professionals, and increased public awareness.

APPENDIX A

LEAD Coalition's Recommendations

Lead Emergency Action for the District (LEAD), a coalition of local and national health, environmental, and other citizen organizations of which NRDC is a member, recommended the following actions in February; only part of a few of these recommendations have been carried out:

1. The U.S. Environmental Protection Agency (EPA) has the responsibility to immediately take enforcement action against WASA to ensure our health is protected, and should initiate a full criminal and civil enforcement investigation.

The EPA has primary responsibility for overseeing the safety of the District's drinking water supply. Unlike its vigorous actions to resolve microbiological threats a decade ago, the agency has shirked its responsibility in response to the recent lead problem. The EPA should immediately initiate an enforcement action under its emergency order authority (which allows the EPA to enforce when there is an imminent health threat, requiring no finding of a violation of law), and should initiate a parallel criminal and civil enforcement investigation. The EPA order should mandate several specific actions, *including enforceable deadlines* for:

1) **Expedited, valid testing of all schools and day care centers**, both first draw and flush samples.
2) **Expanded testing of homes beyond those with lead service lines**. WASA should arrange free water lead tests for all D.C. residents. (This is what the New York City Department of Environmental Protection has been doing for more than 10 years.) Notice of these free lead tests should be drafted in consultation with EPA and the public, and should note the health implications of elevated lead levels in water and the threat from lead paint in D.C.
3) **Reissued accurate, understandable notices to consumers** of lead levels, health risks, and options to avoid lead, by mail and through broadcast media. WASA should be required to immediately notify all D.C. households whether they are believed to have lead service lines or not, what the risks are, and should arrange for free lead testing of any tap water on request. Notices similar to those recently sent to lead service line customers should be sent to customers who are not believed to have lead service lines noting that there still may be a risk of lead contamination, and offering to arrange for free lead testing.
4) **Professional installation *and maintenance* of certified filters** for homes with lead service lines or high lead levels in their water, and that have young children, pregnant women, women who expect they may become pregnant, and other high risk individuals.
5) **An aggressive, honest, ongoing public education campaign** developed with public input. This should include several specific requirements, such as:
    a. WASA should send all D.C. residents a *detailed* citywide map of all areas with known or suspected lead service lines with accompanying health and other explanations.
    b. WASA must acknowledge the public's right to know and issue a city-wide map of lead levels detected on a detailed map, and should provide *real time* monitoring results for lead and all contaminants found in its water.
    c. WASA must notify any home with a lead service line that has been found to have excessive lead in an appropriate water test that it is eligible for free lead service line replacement, and the schedule for replacement. The notice should also note whether WASA is responsible for only part of the service line replacement or full service line replacement under D.C. law.

d. EPA and WASA must issue notices that publicly recommend that those pregnant women, or parents of young children, with lead service lines or whose water lead levels are in excess of EPA's Action Level (or some other reasonable safety level), should obtain blood screening for lead for their children. This is not an emergency that would require going to the emergency room, but it is a matter of importance, and blood tests for lead levels should be provided by the D.C. Department of Health.

6) **A comprehensive third-party review of all available records and archives to determine whether the D.C. materials survey** correctly identifies all locations where lead components were used;
7) **An expedited third-party review of the Corps' corrosion control and disinfection byproduct control strategy**, with mandatory implementation of solutions by specified dates certain; and
8) **A top-to-bottom third party expert review of WASA and the Corps' water quality, source water, and overall performance,** including a detailed review of their implementation of past consultant recommendations, Comprehensive Performance Evaluations, and sanitary surveys, and recommendations for long-term compliance with current and upcoming rules and water quality objectives. The review should seek public input and should be published.

2. EPA should immediately take enforcement action against the Army Corps of Engineers' Washington Aqueduct and order it to aggressively treat the water to reduce lead leaching.

The EPA's 1991 lead and copper regulations require the Washington Aqueduct to treat our water in order to reduce its corrosivity; less corrosive water should mean less lead leaching from pipes. While the Corps and WASA do have a corrosion control program (albeit one that reportedly was reviewed by the EPA far later than envisioned by the 1991 rules), it is obvious that it must be critically examined and improved. Recent changes in water treatment at the Washington Aqueduct (apparently made after the corrosion control plan went into effect), aimed at reducing disinfection byproducts, may have altered the chemistry of the city's water. An urgent independent review of the corrosion control plan is warranted, with EPA-ordered steps to implement recommended actions. Deadlines should be established for completion of the review and implementation of its recommendations, and the results should be made public as soon as they are completed. When WASA was constituted, it entered into a governance agreement with the city of Falls Church and Arlington County over Washington Aqueduct, with oversight over expenses and actions. WASA and other customers should long ago have insisted upon improvements in the Washington Aqueduct's corrosion control program.

3. WASA must re-conduct its testing of District school water to be sure that *all drinking water fountains and all faucets used for consumption in District schools and day care centers* are tested—both *first draw* and flushed samples—within two weeks.

WASA's recent water test results were highly misleading because more than 97 percent of the samples taken were from faucets and fountains flushed for 10 minutes. Since no student flushes a fountain for 10 minutes before taking a drink, flushing water for a test sample would create misleading samples and test results. (Flushing often will reduce or eliminate lead levels in large buildings.) Since infants and young children are most vulnerable to lead poisoning, schools and day care centers should be top priorities for testing.

4. EPA and Congress should help WASA and the D.C. government fund home treatment units or bottled water for pregnant women and infants under age 6 in households that have lead service lines *or* lead in the drinking water at levels above the EPA action level.

There are likely thousands of pregnant women and young children under the age of 6 who are drinking tap water that contains lead at levels higher than 15 parts per billion, EPA's action level. These people need a safe alternative water supply until the problem has been resolved. The D.C. government, EPA and Congress should fund alternative water supplies for high-risk water drinkers. Bottled water is not necessarily any safer than tap water unless it is independently tested and confirmed to be pure, and many filters are not independently certified to remove the levels of lead found in many D.C. homes' water. Therefore, EPA should assist residents by assuring that any alternative water supply (such as bottled water) is indeed free of lead and other harmful contaminants, or that a filter is independently certified (see www.nsf.org) to take care of lead. It should be noted that NSF certifies only that lead levels up to 150 ppb will be reduced to below 10 ppb; there is no guarantee for reducing levels above 150 ppb. Finally, it is critical that WASA and other officials involved ensure that there is a follow-up program for maintenance of filters, since poorly maintained filters can fail to remove lead or even make contamination worse.

5. WASA should expedite replacement of lead service lines, and the City Council should review policies on replacement of the homeowner's portion of the line.

Under EPA's lead and copper rule, WASA reportedly has begun to implement its obligation to replace 7 percent of the District's lead service lines (or to test and clear homes served by lead service lines as containing less than 15 ppb lead in their water) each year. At this pace it will take nearly 15 years—until about 2018—for WASA to replace all the city's lead service lines. In the meantime, thousands of pregnant women, infants and children could be consuming water with excessive lead levels. We strongly urge that the lead service line replacement program be aggressively expedited. A schedule should be published, with objective criteria for which lines will be replaced first (presumably based primarily upon replacement of those lines posing the greatest public health risk first). Federal and city general funds should be set aside for this program to augment promised rate increases on our water bills. WASA customers should not foot the entire bill, since the decisions to approve the use of lead service lines were made with the explicit approval and oversight of federal officials who were overseeing the construction of the city's water lines and supply. There was a vigorous public debate about the safety of lead service lines stretching back to the 1890s, yet federal officials who ran the city supply decided to use lead lines. District officials also should consider using the city's multimillion dollar rainy-day fund to help pay for service line replacements.

In addition, the City Council should review WASA's and the city's policy about lead service line replacement for the portions of the line that are supposedly owned by homeowners. Evidence is mounting that partial lead service line replacement often will not solve the problem, and actually can make lead levels worse by shaking loose lead in the pipes and causing galvanic corrosion that may exacerbate lead problems.

Under recent EPA rule changes, it is apparently up to the City Council to determine how much of the service line should be replaced by WASA. In 1991, EPA originally required full lead service line replacement unless the water utility could prove that it did not control part of the line, in which case it was to replace only that portion that the utility controlled. After being sued successfully by a water industry group, the EPA changed the rules to provide that it is largely a question of local law what

portion of the lead service line is the responsibility of the water utility. We believe that it is only fair that since many of the lead service lines were installed from the 1890s through the 1940s under the direction, approval and control of the District and federal officials, those authorities should be responsible for replacing them, not homeowners. The cost to homeowners of their portion of lead service line replacement could be thousands of dollars, but it is far more efficient and cost-effective to replace the entire service line at once, rather than digging up yards twice. This is a question that deserves a full public airing by the City Council.

6. The City Council should create a permanent citizen water board for water to oversee WASA and the Washington Aqueduct, to address longstanding problems with D.C.'s water supply.

In 1996, the Natural Resources Defense Council (NRDC), Clean Water Action (CWA), and the DC Area Water Consumers Organized for Protection (DC Water COPs) issued a report, based in large part on city and federal records obtained under the Freedom of Information Act. That report found serious ongoing problems with the District's water, and identified likely problems that could occur in the future. Among the current and future problems noted were lead contamination, bacteria and parasites, cloudiness (turbidity) in the water – which may indicate poor filtration and can interfere with disinfection – and disinfection byproducts that cause cancer and may cause birth defects and miscarriages. The report also noted that the Washington Aqueduct's water treatment plants need a major infusion of funds to modernize and upgrade treatment, and that the District has ancient and deteriorating water pipes leading to water main breaks, regrowth of bacteria, and lead problems. Those pipes must be replaced. In addition, the WASA-operated sewage collection and treatment systems have serious inadequacies, including major problems whenever stormwater runoff overloads the treatment plant's capacity, causing raw sewage to flow into the Anacostia and Potomac rivers.

In the wake of the D.C. citywide boil-water alerts in 1993 and 1996 due to turbidity and bacteria problems, and EPA's enforcement orders issued thereafter, comprehensive sanitary surveys and engineering reviews by outside contractors found a series of serious problems with our water treatment and distribution system. These reviews recommended hundreds of millions of dollars in improvements in the city's water supply system.

While the city has addressed some of the most pressing problems, it has not made many of the important investments needed to repair local water infrastructure. We strongly recommend that the City Council establish a citizen water board to oversee the city's water supply and sewer system. The board should oversee not only steps to improve our drinking water system, but also WASA's storm water and sewer obligations, because of the overall competition for water infrastructure dollars and need to focus on whole watershed and "sewer shed" solutions. This board—like those created by some states to oversee electric and other utilities—should be funded with a small surcharge on water and sewer bills, and should be wholly independent of WASA and the Washington Aqueduct. It should include independent engineering and public health experts and citizen activists interested in drinking water, and should issue an annual progress report on WASA's and the Washington Aqueduct's performance, progress and problems.

7. The City Council must improve its oversight of WASA.

The District's City Council is responsible for overseeing WASA's day-to-day activities, and has failed to do its job over recent years to make sure that WASA is carrying out its responsibilities to deliver safe drinking water and to safely collect and fully treat city sewage. More aggressive City Council oversight is needed to avoid continued problems with WASA.

8. The mayor should make tap water and all environmental protection a high priority.

The mayor should make drinking water safety, sewage collection and treatment and environmental protection a high priority. The mayor bears some responsibility for ensuring that WASA is doing its job. He has many ways to influence WASA's board and daily operations, and should insist on regular briefings and updates on how the city is fulfilling its obligations to provide these most basic city services.

9. Consumers, health, and citizens groups should be on the blue ribbon commission, and should recommend people to serve on the panel.

The announced "independent" panel to review WASA's embarrassing performance in addressing the lead problem has instead morphed into an internal review panel of city officials, including two of the WASA officials who so obviously have failed to do their jobs. In order to avoid a panel that merely papers over the problems and whitewashes the lead crisis, LEAD is calling upon city officials to name independent experts, consumers, citizen groups and environmentalists to the panel.

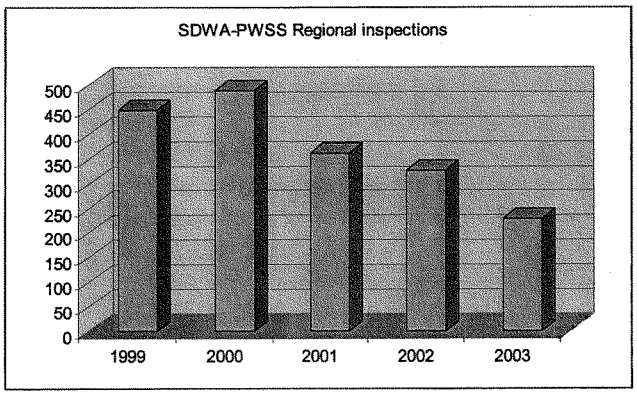
10. The EPA, CDC, the D.C. Dept of Health and the City Council should establish a joint task force with citizen participation, to evaluate the extent of lead poisoning from all sources in the District, and its environmental justice implications, particularly for low-income African-American and Latino households.

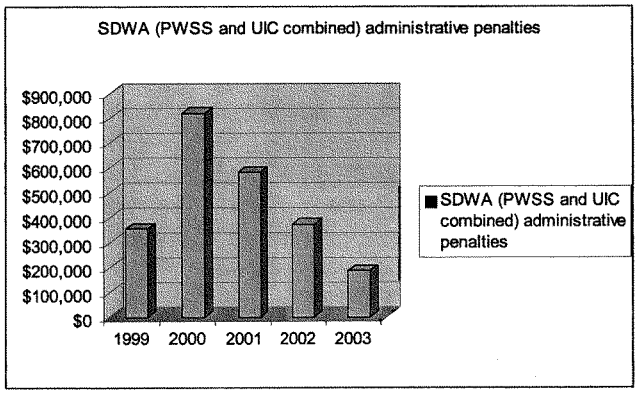
According to expert estimates, the District has widespread lead poisoning, affecting perhaps tens of thousands of District children. Because of the city's demographic and economic realities, most of these children are African American and Latino. The District and federal officials should establish a joint task force, with citizens and medical experts, to evaluate the extent of the problem and its environmental justice implications, and to recommend actions to remedy it.

APPENDIX B

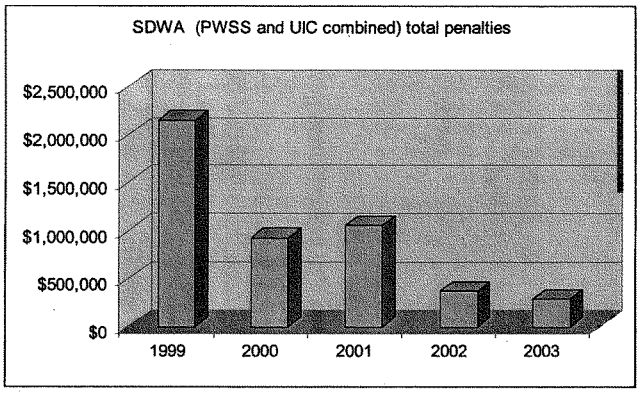
RECENT TRENDS IN EPA DRINKING WATER ENFORCEMENT

Source: EPA Data, 2004[2]





2


SDWA (PWSS and UIC combined) total penalties
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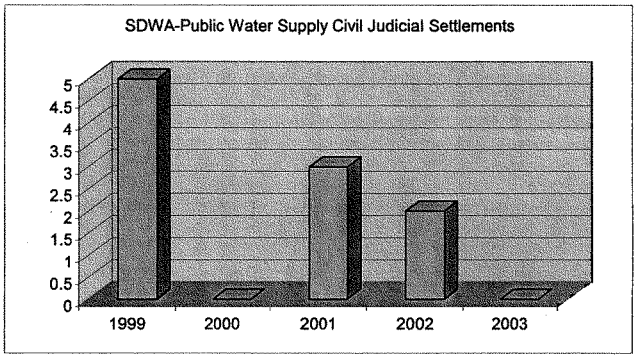
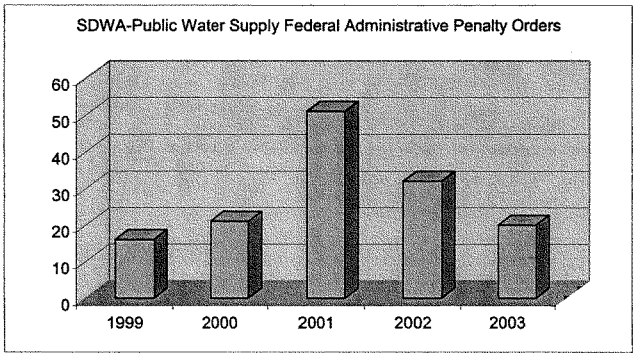
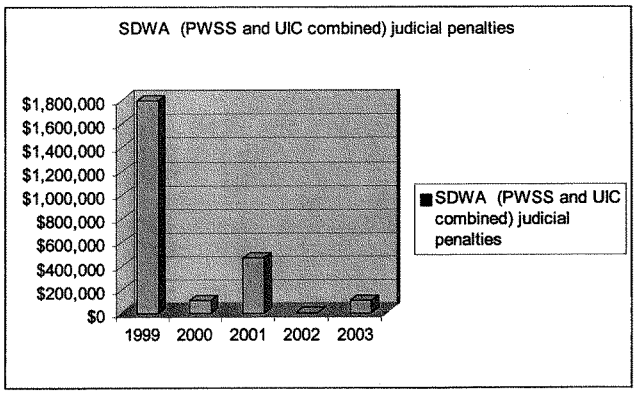
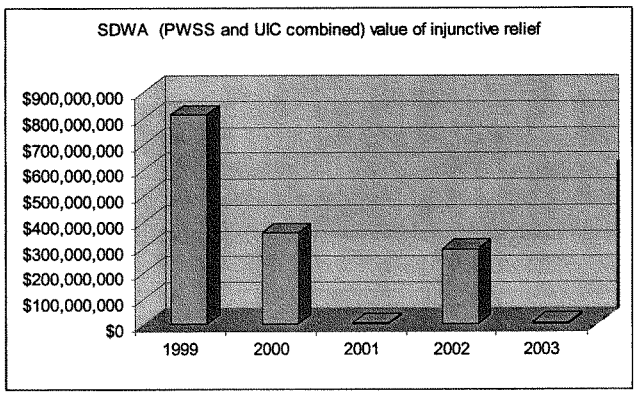
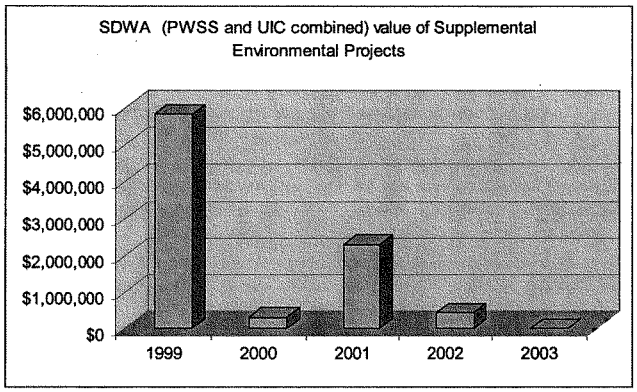
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
1999
2000
2001
2002
2003

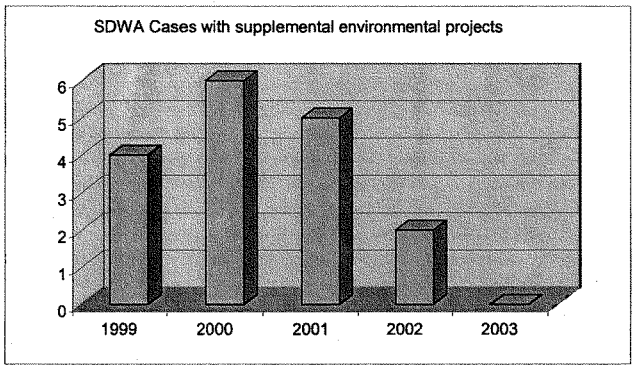

SDWA-Public Water Supply Civil Judicial Settlements
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1999
2000
2001
2002
2003


SDWA-Public Water Supply Federal Administrative Penalty Orders
60
50
40
30
20
10
0
1999
2000
2001
2002
2003


SDWA (PWSS and UIC combined) judicial penalties
$1,800,000
$1,600,000
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
1999
2000
2001
2002
2003
SDWA (PWSS and UIC combined) judicial penalties


SDWA (PWSS and UIC combined) value of injunctive relief
$900,000,000
$800,000,000
$700,000,000
$600,000,000
$500,000,000
$400,000,000
$300,000,000
$200,000,000
$100,000,000
$0
1999
2000
2001
2002
2003


SDWA (PWSS and UIC combined) value of Supplemental Environmental Projects
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
1999
2000
2001
2002
2003


SDWA Cases with supplemental environmental projects
6
5
4
3
2
1
0
1999
2000
2001
2002
2003

Chairman TOM DAVIS. Thank you very much.

Ms. Funk, thanks for being with us.

Ms. FUNK. Thank you.

Good afternoon. My name is Katherine Funk and I am an antitrust attorney here in Washington for a large national law firm but today I sit here in two other roles, first, as a homeowner in the District of Columbia and most importantly, as the mother of a 5-month-old daughter who is with me here today but is apparently out to lunch.

Thank you, Chairman Davis, for holding this hearing. I would also like to thank Delegate Norton for her leadership on this public health crisis.

Today, I would like to discuss real life situations that I and other D.C. homeowners and parents have faced and to urge support for and passage of the Lead Free Drinking Water Act of 2004 which would help prevent the recurrence of these problems in D.C., often referred to as the Nation's laboratory, and in other cities with aging water infrastructures. Further, this is not a partisan issue. As Senator Crapo of Idaho, a Republican, told me in my living room last month at a public gathering on this issue, in his opinion, safe, clean drinking water is the No. 1 environmental problem facing the United States.

Thousands of homes in D.C. have tested for lead levels in drinking water far above the EPA action level of 15 ppb. Our home, just a few blocks from here on Capital Hill, is one of them. In February, WASA tested our lead levels at 29 ppb on the first draw and 100 ppb on the second draw. Many of our neighbors have tested higher. The problem is twofold. First, that in 2004 this problem even exists in this Nation's Capital and second, in the maddeningly unresponsive response to the problem by WASA, the EPA, the Corps of Engineers and the D.C. government have basically given the D.C. residents the stiff arm. Most unfortunately, current law and regulations let them do it. I will give you a few examples and point out how this legislation would help.

WASA, the EPA and D.C. health officials knew for at least 2 years that water samples throughout the city were showing wildly elevated levels of lead, yet despite some test results showing levels in the hundreds and even thousands of ppb, the people at WASA, the EPA and the D.C. government did not inform the people in the homes that tested high, let alone the general public. Why? As it turns out, the current law and regulations do not require that such results be shared unless 10 percent of the test results are elevated. Why does this matter? When I was pregnant last year, I drank glass after glass after glass of D.C. water daily for 9 months just as my doctor ordered. Every evening, I took my prenatal vitamin with a glass of D.C. tap water. Who would have thought that these acts which should have been good for my child could instead have been endangering her development? If WASA had only announced that its testing showed elevated blood levels and that certain persons, pregnant and nursing women and small children should take precautions, I would have been able to make an informed decision about my health and that of my daughter. This legislation requires notification to persons in all homes that test above the EPA action level, a relatively cost free solution.

WASA's lack of knowledge of its own inventory which hinders its ability to solve its problems and its unwillingness to fill in its information gaps is the second issue. As I mentioned, our water has elevated lead levels, yet WASA does not know and has taken no steps to determine whether our water level service line is lead. According to published reports, tens of thousands of other homes in D.C. are in the same position. Why is this information important? Because as an unknown, WASA has not offered to us any other remedial efforts, including filters, despite the fact that we had elevated lead levels and an infant in the home and I am nursing. Even in today's Washington Post story, WASA officials only mention those homes with lead service lines, completely ignoring us unknowns. This legislation requires local water agencies to maintain up to date information about their service line inventory. Again, a relatively low cost solution.

Third, when water samples return test results putting WASA over the threshold for replacing service lines, WASA began nullifying results. Incredibly the EPA, which has the role of oversight, allowed them to do this. Let us call it what it is and I am not being hysterical. It is a cover up and it puts thousands of D.C. children and pregnant women at risk. Additionally, the entire testing protocol is inadequate. The number of samples required is not consistent with accepted scientific protocols. This legislation eliminates the existing loopholes that allow systems to avoid replacing lead service lines by conducting water tests and it mandates sampling at a sufficient level to obtain an accurate measure of the situation.

Today's story in the Post makes it seem that this is a problem merely of water chemistry. However, the story presents a stark choice, on the one hand, too much lead, on the other hand, chlorine, a known carcinogenic. The real problem is the presence of lead in the service lines and in home plumbing which leads me to my final two points, the misinformation and outright lies promulgated by WASA, the D.C. government, including bizarrely its Department of Health.

Since the day the toxicity of the D.C. drinking water became public notice, WASA and D.C. government officials have sought to minimize the problem. In public forums, WASA officials describe the EPA action level as a level at which water is safe. Further, filters have not been delivered, contrary to what Mr. Welsh testified today.

With regard to the pilot program for replacing some lead service lines in the city, WASA has misled residents as to how, when, what and the cost to the consumer of the replacement. Now WASA won't take telephone calls from residents seeking clarification or more information. This legislation establishes baselines for public education about the risk posed by lead contamination. Further, it sets out a protocol for lead line replacement, clearly marking each participant's role and their responsibilities.

Finally, the problem is not entirely with the water agencies because lead free doesn't really mean lead free. When defending their actions, WASA officials blamed excess levels on home plumbing fixtures. WASA may actually have a point. Currently the Safe Drinking Water Act defines lead free as 8 percent lead. This legislation would define lead free as 0.2 percent and going forward, it would

be unlawful to install plumbing fixtures and components with lead levels higher than that in any residence. Again, it is a relatively costly solution. I remind them that the goal of U.S. public health agencies since at least the 1980's has been zero exposure to lead and I ask them, why not take action to address the source of the problem?

Some might think this is a D.C. problem and one that does not affect their constituents and their families. I ask them, has your local water agency tested your water lately? Has the EPA let them nullify results? How old is your city's infrastructure? What are your water service lines made of? In the interest of all of our children, shouldn't we know the answers to these questions?

Some say the answers cost too much and are too burdensome on water agencies, but as I have demonstrated here, it really isn't that expensive. When experts do cost benefit analyses, they certainly don't include their children on the cost side of the equation. Further, D.C. consumers, rich and poor, are spending lots of money on bottled water, filters and pitchers and more importantly, I ask them, what monetary value do they place on the mental development of a fetus and a growing child? What is the long term cost of children with learning disabilities and young adults with schizophrenia?

I urge you to pass this legislation so that 1 day in your district, you don't have to face the mother of a child who is developmentally delayed because of lead exposure and have to say to her, I am sorry, I could have fixed the problem when I had a chance but I thought it cost too much.

Thank you.

[The prepared statement of Ms. Funk follows:]

Testimony of Katherine Funk
Committee on Government Reform, United States House of Representatives
May 21, 2004

Good morning. My name is Katherine Funk. I am an antitrust attorney here in Washington for a national law firm. But today I sit here in two other roles: as a homeowner in the District of Columbia and, most importantly, as a mother of a five-month old daughter, Kathryn Agnes Stearns, who is with me today. I'll address the key points of my testimony here, and ask that my full statement be included in the record.

Thank you, Chairman Davis, for holding this hearing on the issue of excessive amounts of lead in DC's drinking water. I'd also like to thank Delegate Eleanor Holmes Norton for her leadership on this very important public health issue facing our community.

I would like to discuss some issues that I - and other DC homeowners and parents - have faced, and to urge passage of the Lead Free Drinking Water Act of 2004, which would help prevent the problems these problems from recurring again in DC – often referred to as the "Nation's Laboratory" – and in other cities with aging water infrastructures. As Senator Crapo of Idaho told me in my living room last month at a public gathering on the issue, safe, clean drinking water is the No. 1 environmental problem facing the United States.

As we all know by now, thousands of homes in DC have tested for lead levels in drinking water far above the EPA action level of 15 parts per billion. Our home, just a few blocks away from here - on Capitol Hill in sight of the Capitol, is one of them. WASA tested our lead levels at 29 parts per billion on the first draw, and 100 parts per billion on the second draw. Many of our neighbors have tested higher.

The problem is two-fold: First, that in 2004, this problem even exists, especially here, in this nation's capitol; and second, in the maddeningly unresponsive response to the problem by WASA, the EPA, the Corps of Engineers and the DC government. They've basically given DC residents the stiff-arm. Most unfortunately, the current law and regulations let them do it. I'll give you a few examples, and point out how this legislation would help.

1. For at least two years, WASA, the EPA and DC Health officials knew that water samples throughout the city were showing wildly elevated levels of lead. Yet, despite some test results showing lead levels in the hundreds and even thousands parts per billion, the people at WASA, the EPA and the DC Government did not inform the people in the homes that tested high, let alone the general public. Why? As it turns out, the current law and regulations do not require that such results be shared unless 10% of the test results are elevated.

Why does this matter? When I was pregnant last year, I drank glass after glass of DC water, daily, for nine months just as my doctor suggested. Every evening, I took my pre-natal vitamin with a glass of DC water. Who would have thought this act, which should have been good for my

child, could instead have been endangering her development? If WASA had only announced that its testing showed elevated lead levels, and that certain persons – pregnant and nursing women and small children – should take precautions I would have been able to make an informed decision about my health and that of my daughter.

This legislation requires notification to persons in all homes that test above the EPA action level. A relatively cost-free solution.

2. WASA's lack of knowledge of its own inventory, which hinders its ability to solve the problem, and its unwillingness to fill in its information gaps. As I mentioned, our water has elevated lead levels. Yet WASA does not know, and has taken no steps to determine, whether our water service line is lead. According to published reports, 10s of thousands of other homes in DC are in the same position. Further, no one at EPA or the DC Government has thought it necessary to insist that WASA find out the answer.

Why is this information important? Because as an "unknown" WASA has not offered to us any of their remedial efforts – including filters -- despite the fact that we have elevated lead levels AND an infant in our home and I am nursing. Even in today's Washington Post story WASA officials only mention those person with "lead service lines" completely ignoring us "unknowns."

This legislation requires local water agencies to maintain up to date information about their service line inventory. Again, a relatively low-cost solution.

3. The nullification by EPA and WASA of test results showing a clear problem years ago. When enough water tests returned results putting WASA over the threshold for replacing service lines, WASA began nullifying results. Incredibly, the EPA which has the role of oversight allowed them to do this. Let's call it what it is – a cover-up and it put thousands of DC children and pregnant women at risk. Additionally, the entire testing protocol is inadequate in that not enough homes are tested; essentially, the number of samples required is not consistent with accepted scientific protocols.

This legislation would eliminate the existing loophole allowing systems to avoid replacing lead service lines by conducting water tests. And it would mandate sampling at a sufficient level to obtain an accurate picture of the situation.

Today's story in the Post makes it seem that this is a problem of water chemistry. However, the story presents a stark choice – too much lead or a chlorine, known carcinogenic. The real problem is the presence of lead in the service lines and in home plumbing – which leads me to my final two examples:

4. The misinformation and outright lies promulgated by WASA, the DC government, including , bizarrely, its Department of Health. Since the day that the toxicity of DC's drinking water became public knowledge, WASA and DC Government officials have sought to minimize the problem. In public forums, WASA officials described the EPA action level as "the level at which water is safe." With regard to its pilot program for replacing some lead service lines in

this city, WASA has misled residents as to the how, when, what and the cost to the consumer of the replacement. And now, WASA won't take phone calls from residents seeking clarification or more information.

This legislation revamps public notice requirements and establishes baselines for public education about the risks posed by lead contamination. Further, it sets out a protocol for lead-line replacement, clearing marking each participant's roles and responsibilities.

5. The problem is not entirely with water agencies because lead-free doesn't really mean lead-free. When defending their actions, WASA officials blamed excess lead levels on home plumbing fixtures. WASA may actually have a point. Currently, the Safe Drinking Water Act defines lead-free as 8 percent lead.

This legislation would define lead-free as .2 percent. And going forward, it would be unlawful to install plumbing fixtures and components with lead levels higher than that in any residence . Again, this is a relatively cost-free solution.

Some will say that water is a very small contributor to the problem of excessive lead levels in pregnant women and young children, especially in urban areas where lead paint and lead dust abound. I remind them that the goal of U.S. public health agencies since at least the 1980s has been zero exposure to lead, and I ask them, why not take action to address this source of the problem?

Some might think this is a DC problem, and one that does not affect their constituents and their families. I ask them _ has your local water agencies tested your water lately? Has the EPA let them nullify results? How old is your city's infrastructure? What are your water service lines made of? In the interests of all our children, shouldn't we know the answers to all these questions?

Some will say this legislation would be too burdensome on water agencies and too costly for them and for consumers. But as I've demonstrated here, it really doesn't. Well, when experts do cost-benefit analysis, they certainly don't include their own children in the cost side of the equation. Further, DC consumers – rich and poor – are spending lots of money on bottled water, filters and pitchers. And more important, I ask them what monetary value they place on the mental development of a fetus and a growing child?

I urge you to pass this legislation so that one day, in your district, you don't have to face the mother of a child who is developmentally delayed because of lead exposure and have to say to her, "I'm sorry. I could have fixed the problem when I had a chance. But I thought it cost too much."

Chairman TOM DAVIS. Thank all of you very much.

We don't have closure on this with the panel. We have some different opinions but I want to just explore a few. Ms. Funk, let me start with you. Do you know what your water bill is at this point?

Ms. FUNK. Interesting that you would ask because we just received our water bill 2 days ago and it is about $25 a month.

Chairman TOM DAVIS. I know out in my district, I go in to buy a case of water and water is almost as expensive as gasoline and people pay for this stuff and yet if you had a good water system, I guess the ultimate question is how much more are you willing to pay to get water out of the tap and have to go and pay more for gasoline when you buy it at the store? That is kind of an inquiry but the answer is I think people are buying water that is bottled not just for convenience but because they think it is in some way safe. If they could pay more at the tap and get that clean water, would they save a lot of money?

Ms. FUNK. For example, a case of water at the local grocery store costs $7. You figure you buy two or three cases a month, that is another $21. In addition, there is the cost of the Brita filters that we use in the pitcher in our refrigerator so that we can use clean water to cook with. Further, we have a water filter on our kitchen tap that costs $35 and each replacement cartridge I think is another $15.

Chairman TOM DAVIS. Just for the record, the water that you are drinking there, we bought that water but the ice, I think, is regular ice.

Mr. Schwartz, did you want to say anything on that?

Mr. SCHWARTZ. I just wanted to say that many low income D.C. residents are currently spending lots of money on bottled water and many residents continue to do things like boil their water with the notion that is what it takes to make their water safe.

Chairman TOM DAVIS. That doesn't do anything for lead, does it?

Mr. SCHWARTZ. It makes the lead problem worse. I think what we are facing is maybe a little bit of an untenable position. It is not that cost doesn't matter, cost does matter and there are certainly not unlimited funds. The question is a question of priorities. I think we heard that from other panelists.

Chairman TOM DAVIS. Let me ask this. I guess this is a fundamental question. The tape within a residence and the line leading from the main line to the residence, whose line is that, who should be responsible because, if that is lead, is that the city's problem or is that the individual's problem? I guess I would ask all of you how you view that because if you change all the public lines but the lines leading up to the house are still bad, you still have a problem. Who wants to start?

Ms. FUNK. Currently, Mr. Chairman, the EPA regulations require the water utilities to be placed at the lead service line on public property. On Capital Hill, most public property starts at the edge of a homeowner's house which leaves the homeowner with several inches of lead line to replace. As Delegate Norton pointed out, the connection of a non-lead service line to a lead service line actually might exacerbate the problem because of some scientific reaction that I probably learned about in high school but couldn't tell you about now.

Chairman TOM DAVIS. We are lawyers, not scientists.

Ms. FUNK. So whose responsibility is it? I would say it is the water authority's responsibility. If there is a problem with your phone line, the phone company can come in and fix the phone line. So if there is a problem with your water line, why doesn't the water company fix it?

Chairman TOM DAVIS. If it is on your property, they will charge you.

Ms. FUNK. Charging is one thing. I am not suggesting that you shouldn't bear the cost.

Chairman TOM DAVIS. OK. Thanks.

Mr. Schwartz.

Mr. SCHWARTZ. One thing I would refer to is the 1993 and 1996 Washington Post articles that indicate a bit of a disagreement between the Federal managers of Washington, D.C. and the residents over the installation of the lead service lines here in D.C. originally. Those lines were in large part installed over the objections of the population who were living here at the time. We think there is a special Federal responsibility in D.C. because of that decision to mitigate the financial cost to the population here.

In addition to that, to get more to the point of your question nationally, I think it is worse than doing nothing to only do partial service line replacement. We really need to, as the bill says, do full service line replacement and we need to figure out the right funding mechanisms. I am not sure what all those are but they include for those who are unable to pay and for those systems that have stress, some support nationally so that we meet public health needs. That is what this law is about, meeting public health goals. We need to meet those goals.

Chairman TOM DAVIS. Let me ask the other panelists what you think in terms of the private plumbing. What should be the States' burden in that vis-a-vis the homeowners. Ms. Funk said we could facilitate it, at least, make it available to come in and maybe do the bills. Mr. Schwartz takes a larger view, particularly for D.C. given the history of this that it is a State responsibility, State meaning government. What are your thoughts on that? I would ask each of you.

Mr. RUBIN. Legally, I think the utilities' property and responsibility ends at the end of the public right of way. In the District there might not be that much land between the end of the public right of way and the home. When you get into other communities, you might be talking several hundred feet and it is a large part of the expense and certainly a very high percentage of the service line is owned by the customer and not by the utility.

Part of that problem which makes it even worse is the whole landlord/tenant problem. If the landlord is paying the water bill and owns the service line and is responsible for the service line but isn't the one who is drinking the water or going out and buying bottled water or filters to replace it, is the landlord really going to incur that expense, especially if there is rent control or some other way he can't pass that cost along to the tenant.

Chairman TOM DAVIS. Not if he can help it, right?

Mr. SCHWARTZ. Yes. I think that is going to be a very difficult problem. So there is the legal side of it which says once the public

right of way ends, it is the customer's property and the customer's responsibility, but the policy implications of that I think, especially with landlord/tenant issues, are very difficult.

Chairman TOM DAVIS. We face that with a lot of different utilities but, in point of fact, in this case, if you don't do the last 20 feet, 100 feet or 200 feet, you really don't solve the problem.

Mr. SCHWARTZ. That is true.

Chairman TOM DAVIS. Whatever the expenditure is on everything else.

Mr. SCHWARTZ. Yes, we are facing the same kind of problem in the nature gas industry where they are finding certain types of old pipes that were installed that are prone to leaks and ultimately explosions but the gas utility only controls a small portion of that line and gas utilities around the country are fighting with the same problem, can they require homeowners to replace the line?

Chairman TOM DAVIS. I guess one difference here is WASA is a governmental organization and gas lines are private. There is a different privity. Ms. Logomasini, do you have any thoughts on that?

Ms. LOGOMASINI. Yes. I think this highlights the point I have been making all along, that it is a question of who is responsible. It is not clear that this can be solved in Washington. Every community may have a different answer. Because utilities are responsible for water as it comes out of the tap, even though they don't own all the lines, they are in a difficult situation and it may be that in each locality, the decisions are going to be different, it is going to be negotiated and some may cover part of the costs and in some cases, if costs are passed on to homeowners, maybe homeowners should be given opportunities to find other solutions because this isn't a few inches of line, this could be a dramatic disruption in their lives, there could be problems at the tap as well. So maybe what they need to be able to do is make priority judgments as to whether or not filters would be more efficient or whatnot, but it is not going to be an easy answer from Washington. There has to be some flexibility.

Chairman TOM DAVIS. It would be a huge unfunded mandate for Congress to say this to water authorities across the country. I think Mr. Schwartz's comment is that in D.C., particularly going back to the 1890's when a lot of this stuff was installed, there really was a dispute over who was going to take it, is that fair to say? Not to bind you but I think you said, whatever you feel about nationally mandating this, the District has a peculiar situation that may indeed set it apart however you agree with the other part?

Mr. SCHWARTZ. I think the bill addresses a suite of solutions to deal with lead problems and lead service line replacement is one of the lead elimination solutions in the bill and the bill seeks to remove the cause of the problem. The bill is not proscriptive and it is looking at giving the EPA lots of flexibility in coming to terms with this problem. I think the important thing is to recognize that the communities that are on a short watch list on lead because they have been at, near or one point per billion under the action level like New York City or Newark, NJ, or Massachusetts Water Resources Authority where Boston is, problems in St. Paul, Bangor, Madison, these are very similar to Washington, D.C. in terms of the configuration of the communities.

I think we also have to look at the organic reality of where the lead service line problem is and we need to find out more about that and we need to find out more about that in the District as well. I don't think we even have an accurate picture here yet. So, yes, there is a particular situation for the District, I agree with that, but I also think there is a national point to be taken here.

Chairman TOM DAVIS. Mr. Neukrug.

Mr. NEUKRUG. Thank you.

There are so many different issues here and so many different ways to answer this question. There are issues of ownership and who owns what, responsibility beyond ownership, location, where are these lead service lines, and finally, does it solve the problem? When you replace a lead service line, does that now mean the citizens are going to start drinking the water and not boil the water, not use the filters, or are those cost issues still going to persist? I am not really sure if that solves the problem.

One other point is that we have been very successful in removing the introduction of new leaded materials into society, whether it be lead paint, leaded gasoline, lead solder, lead pipe or fixtures. Removing any of those from our environment has proven to be very difficult and it is interesting that this discussion and a lot of the discussion in D.C. lately revolves around the lead pipe versus issues of lead solder, issues of the fixtures, issues of the paint and all these things need to be considered together.

Chairman TOM DAVIS. We addressed the solder issue in the last hearing giving the chemicals that are coming in and out and the effects, but I understand.

Let me ask one other question to anybody who may know anything about this, I asked the EPA about the situation in the city of Cincinnati where it replaced all of its lead service lines at enormous cost but, from what I have read, it didn't significantly reduce the levels of lead in the water. Does anybody know anything about this? Tell us about the wholesale replacement or maybe they didn't do the last 20 feet. Obviously it is a whole host of issues that could cause levels to spike and rise and fall. Does anyone know anything about Cincinnati?

Mr. NEUKRUG. We will be glad to find out.

Chairman TOM DAVIS. We would be happy if you have those resources. Thank you for being here and I am going to recognize Ms. Norton.

Ms. NORTON. I want to thank all of today's witnesses. It is important to hear from all of those concerns and trying to figure out how to proceed.

Mr. Chairman, I would like to submit for the record the testimony of a resident of the District of Columbia who like Ms. Funk, was kind enough to invite public officials to his home, to take that kind of initiative in order to be heard and to tell us what he thought should be done, Robert Vinson Brannum, he is here today. I ask that it be submitted for the record.

Chairman TOM DAVIS. Without objection, so ordered. It will be made a part of the record.

Ms. NORTON. Thank you very much, Mr. Chairman.

We were just discussing the complicated issue of who pays for replacement. Not withstanding my bill, I want to understand that to

be a central question. As indicated in my opening remarks, we tried to write a bill based on what needs to be done when you get down to brass tacks, then you do what you can do. By the way, Ms. Logomasini, there is something that could be done in Washington and something that I am pleased this Congress has continued to do. I don't know if it fits here but one thing we could do is provide a tax credit to homeowners who indeed proceeded on lead line replacement.

I would like to know if we might reach in this set of witnesses, all of whom have given valuable testimony in good faith albeit from perhaps different perspectives but all I think have agreed that lead in the water is not what anybody here thinks needs to happen in this country and may have to decide how much you can afford. Ms. Logomasini talked about tradeoffs. Life is about tradeoffs, so you teach a child from the child is the time of Ms. Funk's baby about tradeoffs. There is no question about that. But life is also about priorities. One way to decide the issue of priorities of tradeoffs is to decide what is really important to you.

I would like to look at where all the witnesses stand on a set of very narrowly focused questions, recognizing that we would have vast array of answers on various aspects, for example, of our bill or of any regulatory approach. As to mothers, the one thing I think there is agreement about is if you live to get as old as I am, you ought to take your lead to the grave with you and don't worry about it. The public health folks still say zero but you don't see me clamoring. We have Ms. Funk here and you have heard directly from someone who has gone through the D.C. experience. Could we agree that at the very least there ought to be a clear warning to every person in a given jurisdiction who may be affected following testing on the assumption that at least some of those residents will be people like Ms. Funk who are pregnant, who are nursing and/or who have small children on the question alone of notice I am asking. I am not even getting to the question of what you ought to do for Ms. Funk or people like her. On the question of letting people like Ms. Funk or any other resident who may in fact be affected, regardless of what normal realities force us to do with respect to remediation, can we agree that everybody who may be affected with lead in the water should have notice on the assumption that they are more like Ms. Funk out there? Can we get agreement on the panel on that baseline?

Chairman TOM DAVIS. Let us go down the line.

Mr. NEUKRUG. I agree with you, Ms. Norton, and I think the only thing I disagree on is that you seem to limit it to a certain geographic area and I think it is a worldwide, nationwide issue, exposure, prenatal care, exposure to lead in drinking water.

Ms. NORTON. I am talking about following testing. Let me be clear. You testified about an education campaign. I am talking about following testing, I am talking about the 10 percent rule, I am talking about when you have to remediate and when not and action levels. I am putting all that aside for the moment.

Mr. NEUKRUG. I would agree with you there.

Chairman TOM DAVIS. If you find bad results.

Mr. NEUKRUG. If you find bad results, you report it.

Ms. LOGOMASINI. There is notice required now and I think the question is how quickly.

Ms. NORTON. There is not notice required of everybody who is affected and that is why I asked this question.

Ms. LOGOMASINI. If there is a public health issue that is imminent and a serious threat, absolutely people should know but I think there needs to be some flexibility in communities to make judgment calls as to when there is a serious health threat and when there is something that is not as serious and doesn't require immediate action. Sometimes there is time necessary to collect information to make sure that you are providing the right information. I think there is a lot built into the system that encourages people to sound alarms and then we get overreactions and people get scared and maybe the response is not appropriate. I also think the way the law is working now, and this is a conclusion I have been coming to listening earlier today, that maybe we are not getting the proper notice because communities are afraid of the repercussions on the regulatory front. They don't have flexibility in how they are going to handle it, so maybe they are going to try to not do it as quickly. So we do have a flaw there. People need to get good information and they need to get it in a timely fashion.

In a private system, you would have competing companies and that would provide some regulation in the private fashion. We don't have that here. We have a political system and we have a lot of bad incentives.

Ms. NORTON. We have a lot of competition for people.

Chairman TOM DAVIS. Ms. Logomasini, can you give a yes or no to this?

Ms. LOGOMASINI. I think it should be determined more locally. I don't think you need to pass a Federal law to do that.

Chairman TOM DAVIS. How about conceptually? Conceptually would you agree it ought to be done?

Mr. RUBIN. The simple answer is yes, absolutely and the key is notice that is effective and understandable which usually is not the case now.

Chairman TOM DAVIS. Yes, it gets buried.

Mr. Schwartz.

Mr. SCHWARTZ. My answer is yes and I would just note that if WASA hadn't been trying to gain the actual replacement of lead service lines and so did a bigger sample, we never would have found out the true extent of the problem. When you look at cities like Boston who only have a 25 household sample per year, it raises the question whether we really know what is going on out there. I think we really have to take a hard look at the information the agency has. I don't think the rule is providing the right context to even get to the point of public notification because I don't think we know what is going on, positive or negative.

Chairman TOM DAVIS. Ms. Funk, you have already spoken to this, but in answer?

Ms. FUNK. I would say of course and as to whether or not notification that the lead in your water might be too high, might cause panic, I find that an outrageous, pedantic statement. Parents every day are called on to make health decisions on the part of their children. This Congress passes laws about parental notification. I

think parents are equipped to make an informed decision when it comes to their child's health.

Chairman TOM DAVIS. Thank you.

Ms. NORTON. I really do think in good faith all of us really do believe that and I understand the question the notice may trigger cost, notice may trigger, but I want to separate the question of notice because that is low cost. I want to concede Ms. Logomasini's point that once you get to what to do, there may well be different strokes for different folks. That is why I confine myself to the notion of those 10 percent, none of whom may know which doesn't seem to me to be very American way to approach things. Most people, whether free market people or whatever, want everybody to know so they can then decide what to do. I think that is the whole notion, frankly, of the market system.

Let me ask you another question designed to get agreement, if I can get it. Since the population that appears to be at risk, perhaps not but appears to be at risk, is the youngest population, children now go to be educated beginning at 3 years old because they go to day care centers and to elementary schools and the rest, do you think it makes sense to say to every community you have to decide how to do this but every water supply, normally a water fountain of some kind used by children should be tested once a year? I say once a year, I pulled that out of the hat. I don't know if the scientifically appropriate way would be less or more, I am simply saying you can count, when I put this child in school, they are going to look on a frequent and regular basis to see whether there is lead in the water? Could I go down the line on that one, please?

Chairman TOM DAVIS. Can I dovetail on that? Let me ask this. There is obviously a cost-benefit to doing that kind of thing with school water fountains. Do you really get any bang for the buck by factoring any consumption from school water fountains?

Mr. NEUKRUG. I think it is important to understand that. I think there are other ways of doing it than once a year. I think the original Safe Drinking Water Act addressed it by the type of water fountain, whether that had lead parts exposed in it. I think in general, yes, you should have a very good idea for every water fountain, particularly in a school, whether or not there is lead.

Just one quick anecdote is that my son is at Philadelphia public school and he doesn't have water. That is the solution.

Chairman TOM DAVIS. It is a solution sometimes.

Mr. NEUKRUG. The priority is no lead in the water but the priority is other things, books and other things, rather than providing water.

Ms. NORTON. What does he do if he gets thirsty in the middle of the day? I understand that solution.

Mr. NEUKRUG. Bottled water.

Ms. NORTON. So your child has to bring it to school?

Mr. NEUKRUG. Yes.

Ms. NORTON. He's in a public school?

Mr. NEUKRUG. Yes, and just for the record, since I was sworn in, he is now in a private school in fourth grade, but yes, in kindergarten to third grade, he brought in water every day.

Ms. LOGOMASINI. I am not sure in every case that would make sense. Again, the cost benefit angle is important here. If the school doesn't have lead lines and low risk, they have to be able to decide, the community needs to decide do we want to spend our money here, do we want to spend it somewhere else. There may be an asthma problem in that school and they may need to test for that. It may be a more imminent threat.

Ms. NORTON. So we said if it had lead lines you should?

Ms. LOGOMASINI. I am not sure. Again, they may decide to go with a filtration system instead.

Ms. NORTON. I have asked a very particular question. I work in the Congress where Tom Davis and I have to get agreement if we want to get a bill or if I want to get a bill, you are not going to change my question now. I am saying because I accept your amendment, if in fact your school because it is very expensive to change lead service lines and there may not be a problem because there may be no corrosion, I am asking whether or not the once a year testing of the fountains in those schools where the fountains are attached to lead service lines would be an appropriate thing to do?

Ms. LOGOMASINI. I am saying that I don't think the Federal Government should make that determination. I am saying that needs to be a school by school, community by community decision. They need to look at all of their concerns.

Chairman TOM DAVIS. Fine. Thank you.

Mr. Rubin.

Mr. RUBIN. Simple answer, yes. I don't know if 1 year is right, probably focused on elementary schools and day care centers but sure, we ought to know what is going on.

Mr. SCHWARTZ. I think we need to have a serious review with detailed auditing by the EPA of the implementation of the Lead Contamination Control Act to see if the provisions there have been fully implemented and if we have had real reductions in lead that is available in schools and if reductions have been made and to what extent. That will help us figure out the answer about what the nature and extent of the problem is.

I want to amend one other thing. I think it is important to know that kids are certainly at risk, pregnant mothers and nursing mothers but there are several other vulnerable populations who are really at risk for lead exposure including frail elderly and other people with weakened immune systems. I just don't want to minimize that lead can be a problem for people at all stages of their lives.

Chairman TOM DAVIS. Ms. Funk.

Ms. FUNK. I would suggest if a school or day care center could show they don't have a lead service line and then their plumbing fixtures have lead in them, then perhaps instead of testing every year, they could be absolved from testing unless there was some sort of community issue that had been raised. If, however, a day care center or school can't show that it doesn't have a lead service line or that all of its plumbing fixtures do not contain lead, then I would suggest those centers and schools be tested regularly.

Chairman TOM DAVIS. Thank you.

Ms. Norton.

Ms. NORTON. We have enough problems, Ms. Funk will attest, trying to encourage parents to trust our public schools not to add lead service lines to the mix.

The chairman certainly doesn't want to miss the Tyson's Corner Lion's Club engagement he has now, so I have asked him for one question only and he has been extremely generous. The last thing I am going to do is try to take advantage of it because I have only one more questions for all of you.

I am concerned with nullifying results. I would like to talk to you afterwards about the whole notion of nullifying results. We are trying to restore confidence in our water supply, we are trying to get people to move to the District of Columbia. When they hear you can nullify the results and say can I just change this, that is a concern of mine.

Partial replacement, the way in which the EPA operates has been called in serious question. A small number of samples, 50 samples, for a 600,000 person jurisdiction, all of which leads me to ask the EPA, WASA and everyone, just kind of begin again. Why not and just look at it again through rulemaking because whatever you do is going to be what it is after you receive comment.

I do want to ask one more question again. I am a consensus person particularly when it comes to legislation. This has nothing to do with the public expense, this has to do with how our market system operates. You can sell pipe to WASA and to homeowners that says lead free and it can contain as much as 8 percent lead. Should lead free in fact at least be close to lead free before it is sold to public works in Philadelphia and Fairfax, D.C. and to homeowners across the country? Final question, down the line.

Mr. NEUKRUG. Theoretically, I absolutely agree. I don't really know how far down you can get to lead free and still have a good plumbing product.

Ms. NORTON. I should say as practicable. I am not even assuming zero.

Mr. NEUKRUG. Absolutely.

Ms. LOGOMASINI. Maybe this is a fraud or legal issue for the Federal Trade Commission. Maybe they need to have a different term because it does sound misleading when you say lead free.

Mr. RUBIN. I don't know. I think the real problem is with plumbing fixtures more than with pipe and I don't know what you need in order to make plumbing fixtures the way people want to buy them.

Ms. NORTON. Perhaps you want to buy something that has 8 percent. Perhaps it is cheaper. I don't know. I am only going to the question like my first question, if you are looking after the D.C. water crisis for equipment that has no lead in it, should lead free mean as much as 8 percent lead?

Mr. RUBIN. Congresswoman, one concern I have is we don't know what impact if any that would have on public health.

Ms. NORTON. We don't but we know this much. I think I am buying a lead free product and that is my only question.

Mr. RUBIN. And I am saying I don't know the answer to that. If the scientific studies say if you have less than some threshold level of lead, effectively it is lead free because the lead is never going to come out of there and if you want us to reduce it from 8 percent

to 0.2 percent, that is going to triple the cost, then we have to be concerned about that. I don't know.

Ms. NORTON. My understanding is that no scientific study would say that lead free means as much as 8 percent. I would agree with you. If in fact, there is a study that says lead free can mean as much as 8 percent, I absolutely agree with you, then to use that would be scientifically valid.

Mr. SCHWARTZ. Your question is right on. California and many water systems now require nearly zero lead and I think we ought to take a look at their experience which was prompted by Proposition 65, the Safe Drinking Water and Toxics Act that passed in California many years ago. We would think this is probably one issue that most witnesses could agree on. We have experience. We should take a look at the experience that has been operating out there. If it works for 10 percent of the population in California, it might work out here.

Ms. FUNK. The FTC has something called truth in labeling and I think this squarely falls under it. If it says lead free, then it should be as close as lead free as you can get; 8 percent is not lead free, so 8 percent shouldn't say lead free, 8 percent should say 8 percent lead.

Ms. NORTON. Thank you very much.

Thank you, Mr. Chairman.

Chairman TOM DAVIS. I appreciate this panel for a very lively discussion on this. We appreciate it. We will leave the record open for 10 days if anyone has any additional thoughts you would like to incorporate, Members' statements and the like.

The hearing is adjourned.

[NOTE.—Additional information is on file with the committee.]

[Whereupon, at 12:51 p.m., the committee was adjourned, to reconvene at the call of the Chair.]

[The prepared statement of Hon. Henry A. Waxman and additional information submitted for the hearing record follow:]

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INDEPENDENT

Opening Statement of
Rep. Henry A. Waxman, Ranking Minority Member
Committee on Government Reform
Hearing on Lead in Drinking Water

May 21, 2004

I would like to thank the Chairman for holding this hearing on lead contamination in the nation's drinking water. This is a serious threat to public health. Today we are considering the next steps that should be taken to protect people from this threat, both in the District of Columbia and across the country.

The District and its residents were unknowingly forced to serve as a "canary in the coal mine" for lead in drinking water. This is a tragedy. The weaknesses in EPA's lead regulations were evident from the start. I strongly urged EPA to fix them thirteen years ago. But, until the lead crisis in the District, the full effects of such faulty regulations had not been demonstrated.

We have now been clearly warned about the flaws in our national program on lead in drinking water. We must prevent more such unknowing exposures. That's why I have co-sponsored H.R. 4268, the Lead Free Drinking Water Act, which was introduced by Congresswoman Norton and Senator Jeffords. This bill would provide the strong protections against lead exposure that are necessary.

In their testimony, EPA and the water suppliers say legislation is premature. In fact, EPA says it's too soon even to start work on a proposal to strengthen the regulations. Mr. Grumbles says that first we need to understand the national scope of the problem. EPA, the Aqueduct, and the American Water Works Association all want to know more about what happened with the water chemistry in the District. But these arguments are red herrings.

Even with incomplete data, we know that systems across the country serving over 5 million people have exceeded the action level for lead during at least one monitoring period since 2000. Other systems are quite close to the action level.

-over-

Moreover, the absence of an exceedence does not necessarily mean the water is safe. All of this data comes from very limited sampling – as few as 50 samples every three years for some big systems. It may be possible to manipulate such small sample sets, and, as we learned in the District, limited sampling may underestimate the problem. Also, the action level for lead is not a health based standard. EPA's health based goal for lead in drinking water is zero because any amount of lead may harm people.

However, it is also true that we urgently need more information on lead levels in drinking water across the country. Right now, EPA's system reflects data from 85% of the water systems that serve over 50,000 people. EPA is still working to gather information for smaller systems. Data is missing for about half of the population served by community water systems.

The fact is, we do not have data of sufficient quality and quantity to be sure that EPA's program is working. We don't have confidence that it protects children, infants, and pregnant mothers against drinking water exposures to lead that may cause neurological damage. And we know that in many places the program has failed.

H.R. 2438 takes into account what we do know and don't know about lead in drinking water across the country, and it prescribes a sensible approach to this national problem. The bill requires EPA to conduct a rulemaking to strengthen the lead rules and close identified loopholes. The rulemaking process will allow EPA to gather all of the information it needs and ensure broad public participation.

Here are just a few of the flaws in the current approach that we know need to be fixed.

By design, the current regulations do not protect up to 10% of households from elevated lead levels. The regulations also do not protect against very high lead levels in individual homes. As a general matter, water systems tell people that their drinking water is safe. Americans believe that they do not need to test or filter their tap water before giving it to their children. But even if implemented perfectly, the current regulations would not guarantee that level of safety. H.R. 4268 would require EPA to fix these obvious problems.

There are also serious concerns that the monitoring required under the regulations is not adequate to identify all areas with elevated lead levels. H.R. 4268 requires EPA to adopt statistically sound monitoring requirements.

The Safe Drinking Water Act allows so-called "lead free" plumbing products to be sold that contain up to 8% lead. We know such products can leach considerable amounts of lead. H.R. 4268 would set a far tighter standard for plumbing products.

It isn't too soon to take action on the problem of lead in drinking water. It's actually far too late. Congress should not accept any further delay.

Statement of Harold Brazil

At-Large Member

Council of the District of Columbia

Before

The House Government Reform Committee

Hearing on

"Thirsty For Results: Lessons Learned From

The District Of Columbia's Lead

Contamination Experience"

2154 Rayburn House Office Building

May 21, 2004

10.00 A.M.

Chairman Davis, Ranking Member Mr. Waxman, and other esteemed members of the House Government Reform Committee, my name is Harold Brazil and I am an At-Large Member of the Council of the District of Columbia. First, I would like to extend my appreciation to the federal government for being so involved to help us resolve the issue of lead-contaminated drinking water in the District of Columbia. And I would especially like to acknowledge the efforts of our Congressional delegate, Ms. Eleanor Holmes Norton, who has been working on this issue from the beginning.

It is fitting that today's hearing would be called "Lessons Learned From The District Of Columbia's Lead Contamination Experience." Because of the challenges we have faced since the revelations that the District's drinking water has lead levels that were above the federal standard, I have been called upon to use my leadership and experience to find ways to help alleviate the problem. I have been on the frontlines trying to do what I can to

help District residents deal with a scary situation. I have distributed lead testing kits; I have created legislation to create a local lead-pipe replacement fund for pipes on our residents' property; and I have been trying to convince Congress to assist the District with the funding for pipe replacement, among other actions.

Last Friday, I was able to get the Council to agree to establish $5 million in capital budget authority for a Lead Pipe Replacement Fund to help residents pay for replacing lead pipes on their properties. I will continue to work on the second step, to get the bonds issued to fill the $5 million pot. Also, I have appealed to WASA in several public forums not to raise its water rates until the problem with the lead has been solved. Raising rates is the wrong action to take at this point. WASA must instead regain the public's trust.

I have also supported the recommendation of the Interagency Task Force, which I had suggested earlier as well, that WASA cut water

bills by 20% for people who flush their pipes for 10 minutes daily. Residents should not have to pay for water that goes straight down the drain because of WASA's outdated infrastructure.

We must continue to find viable solutions. That is why I felt it important that I testify before this Congressional committee to discuss my experiences and efforts. Your probe into the lessons learned is a good one, and I hope that we can get WASA to change the way it conducts business.

Before wrapping up, I wanted to make a comment on what I see as WASA's major shortcoming. The public's outrage stemmed not only from the lead itself, but also from the public's not knowing for a long time that lead was in the drinking water; and that WASA did not communicate this more urgently. In essence, WASA had failed to warn residents for over two years after they learned that lead contamination levels in the water exceeded the federal standard. Residents were left more vulnerable as they were not

able to make contingency plans–such as buying bottled water or water filters. And they are still upset by this. WASA still has to work on its credibility and re-establish its trustworthiness as residents still do not trust the board or its management team to be straightforward.

WASA needs to be more aggressive in its campaign of informing residents about what it's doing to solve the problem. Whether it's advertising with large-scale posters in the subway, on the buses or the bus kiosks, it needs to do what it can to fully disclose everything to the public. And it can be in the form of a PSA to continually warn pregnant women and children under six not to drink the water, should they have lead service lines; or encouraging people to have their blood tested for lead; or to have their water tested for lead. Ads can cover what are the various solutions WASA has in place—like explaining more about the chemicals they're putting in the water; or what areas of the District with lead service lines are due for replacement.

I think WASA can move beyond just using the local newspapers and make better use of ad space in the areas that I mentioned—on buses, in subway stations and in bus kiosks. In this way, WASA is accepting responsibility, better informing the public, and re-establishing its credibility.

Thank you for giving me the opportunity to testify.

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STATEMENT SUBMITTED TO THE

HOUSE GOVERNMENT REFORM COMMITTEE

"THIRSTY FOR RESULTS, LESSONS LEARNED FROM THE DISTRICT OF COLUMBIA'S LEAD CONTAMINATION EXPERIENCE"

FRIDAY, 21 MAY 2004
10:00 AM
HEARING ROOM (2154)

REPRESENTATIVE THOMAS M. DAVIS, CHAIRMAN

REPRESENTATIVE HENRY WAXMAN, RANKING MEMBER

SUBMITTED BY

ROBERT VINSON BRANNUM
158 ADAMS STREET, NW
WASHINGTON, DC 20001
202-232-5850

Good morning ***Chairman Davis, Congressman Waxman, Congresswoman Norton, and other members of the Committee.*** My name is ***Robert Vinson Brannum.*** I am a parent of an eleven-year-old son and a proud native Washingtonian. I am also a concerned resident of Ward 5 and the historic African American Bloomingdale community along the North Capitol Corridor. I have served three terms as president of the Bloomingdale Civic Association. As a member of this African American and greater Washington community, I believe in the spirit of volunteerism and community service. As a concerned resident, I am happy to submit this statement for the Committee's official record and review.

It is disturbing in the year 2004 to have questions raised about the quality of the drinking water in my home city - the Nation's Capitol. I would rather have a conversation about full voting rights rather than talking about how long to let my faucet run each morning when I rise and each evening when I return from work. Good and safe drinking water not only sounds good, but also it serves as an indicator of a healthy society.

The results of my water tests determine the lead levels in my water to be 51 ppb from an undetermined service line. There are many District of Columbia residents who wonder what happened, how did it happened and why it took so long for the information to become public? What did our federal and local officials know about the lead levels, when did they know it, and what did they do when they learned about it? Most importantly, what has been learned?

Mr. Chairman, the clear, obvious, and main lesson learned continues to be the lack of governmental accountability and the overall instincts to place blame before resolving the problem.

As I, the public, and the Committee search for answers, I do hope we do lose focus on the critical issue of solving the problem while directing our sights to responsibility and accountability. As a parent and a teacher, I am naturally concerned about the impact of high lead levels on the physical and cognitive development of our children, particularly African American children. As a community activist, I am concerned about the increased cost of maintaining safe water for daily consumption by those who are on low and fixed incomes.

There are many who do not trust DCWASA to perform ongoing tests. Like so many other concerned parents, I am not a scientist or a chemist. Yet, from all I have read it appears the issue is not the actual tests conducted, but rather the apparent delay in the notification of the public by DCWASA and EPA. From what I have been able to read and have been told, lead is not being exposed to the water at the Aqueduct and distributed by DCWASA. By most accounts, the water becomes exposed to lead via the lead service lines or lead soldered joints. If it becomes necessary to repair or replace all the lead service lines, I do not feel the costs should be borne by the residents of the District of Columbia or the Government of the District. It is my expectation the federal government would bear the complete cost of the service line replacement.

Mr. Chairman, I strongly urge the Committee to support an appropriation to cover the federal government's responsibility in this crisis. ***H.R. 4268, the "Lead-Free Drinking Water Act of 2004,*** jointly introduced by ***Representative Eleanor Holmes Norton and Senator James Jeffords*** effectively responds to many District of Columbia residents' questions.

Mr. Chairman, on two occasions I had the pleasure of meeting with ***members of Congress, the Mayor of the District of Columbia and other District of Columbia government officials*** about lead in the water. I want extend a personal thanks to ***Congresswoman Norton, Senator Jeffords and Deputy Mayor and City Administrator Robert Bobb*** for meeting in my home with me and concerned residents of this historic grand African American Bloomingdale community.

At this community information meeting residents focused on resolutions and moving forward to protect the people of this City and to ensure the safety of the water supply and its delivery system. ***H.R. 4268*** responsibly and appropriately deals with service line replacement, lead water testing, public notice and education, in-home filters, non-lead service line replacement fund and schools.

To this day no one is able to state with presumptive certainty how the lead got into the water. However, this fact has not diminished those who are critical of the District of Columbia government, while ignoring the lack of responsibility of the appropriate federal agencies. In addition, I, personally find it incredulous for Environmental Protection Agency to assert the lead notification problem has been the sole responsibility of DCWASA and EPA bears no accountability.

The water distribution in the District of Columbia is the responsibility of DCWASA. There are some, as an expression of their disappointment in the conduct of DCWASA during this lead crisis who feel the governance of DCWASA has to be re-structured to exclude any local District government involvement. As a resident of the District, I cannot support the idea of a federal takeover of

DCWASA to the agency that may have contributed to the current crisis and may seeking recreate history to absolve itself of any responsibility or accountability.

In my discussion with students, their questions to me regarding the lead issue are simple. How did the lead get into the water? Why did it take so long to get information out to the people? How can you ever know if the water is truly safe to drink?

Mr. Chairman, this committee along with DCWASA, EPA, and the DC Department of Health has a duty to assure the public and our young people the water is safe to drink. This can only happen when all entities stop finger pointing and worked closely to solve the problem. I do not shrink to no one on the urgency to solve this matter. However, I am troubled by the rush to judgment and the push for the concept of a "federal takeover" of DCWASA.

Mr. Chairman, everyone wants to have safe drinkable water. At present, no one is able to identify the source of the lead. Our immediate efforts should be to find out the cause and solve the problem before casting blame.

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