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Lax oversight dilutes impact of water testing for lead

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PART ONE OF SPECIAL REPORT

By Brenda Goodman, Andy Miller, Erica Hensley, and Elizabeth Fite

Brenda Goodman is a senior news writer for WebMD and Andy Miller is editor and CEO of Georgia Health News. Freelance writers Erica Hensley and Elizabeth Fite also contributed to this report. This investigation was supported by a grant from the Arthur M. Blank Family Foundation.

In water, lead is a ghost poison. It has no taste or smell. It's usually invisible. And it can stay in plumbing for years, gradually dissolving and flaking off into water we use for cooking and drinking.

Lead was banned from plumbing decades ago, but as the crisis in Flint, Mich., has shown, the threat remains.

SPECIAL REPORT:

Hidden Lead Hazards

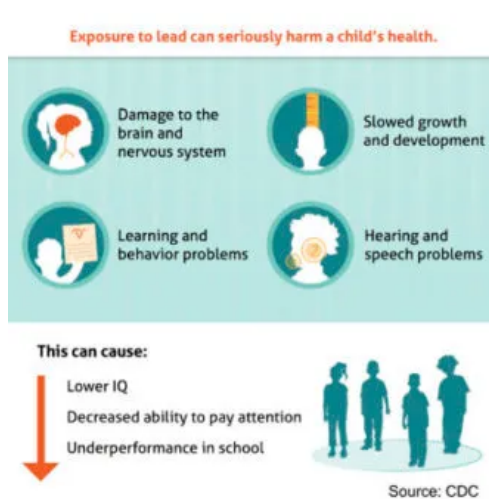
"It never even dawned on me that we would have lead in our pipes," says Allison, a homeowner in Sandy Springs, an affluent suburb of Atlanta, who asked us not to use her last name.

Allison's home, a stately brick residence, is valued by the real estate website Redfin at more than \$1 million.

In 2015, tests by the Atlanta Water Department – which supplies water to Sandy

Springs – found levels of lead in Allison's water that were over the EPA's limit.

While the lead in her water was not welcome news, Allison at least found out she had a problem, because the testing worked. In plenty of other water utilities around Georgia and the U.S., the system for testing lead in water is not working as it should, leaving people uninformed and unprotected.



We reviewed lead testing records obtained through the Open Records Act for water systems in Georgia serving at least 10,000 people. Together, they provide water to about three-quarters of the state's population. We then compared lead testing addresses to property records for the same locations.

We found a process hindered by poor record-keeping and an apparent failure to follow a federal rule that's been on the books for more than 25 years.

We reviewed lead testing records for 105 water systems:

** About half — 58 — have tested some sites at lower risk for lead problems instead of focusing solely on those at highest risk.

** 49 of those water departments had also labeled some lower-risk sites as higher-risk, giving the appearance they were following testing guidelines.

We asked the EPA what could happen to water system employees who mislabeled test sites. In an email, EPA press officer Dawn

Harris-Young said they could face punishments ranging from a written reprimand called an administrative order to fines and even jail time (if prosecuted) in cases where EPA can prove that a water system "purposefully and willfully falsified documentation."

Our results surprised one national expert.

"It's a very significant finding that, to my knowledge, has not yet been reported" on a statewide level, says Yanna Lambrinidou, PhD, an anthropologist in the civil and environmental engineering department at Virginia Tech in Blacksburg, Va. Lambrinidou has investigated lead problems in cities around the U.S.



Georgia's testing practices have attracted the attention of the EPA's Office of Inspector General (OIG), an independent watchdog that polices the agency, according to internal emails obtained under the Open Records Act. In a November 2016 email, the OIG asked state officials to explain how they "ensure that the high-risk homes are sampled for lead," and about other challenges with lead sampling.

The OIG's office confirmed that its questions were part of an evaluation of Georgia's program, and they said they expect to make their findings public later this year.

Here are some examples of what we found:

** The Northeast Georgia town of Demorest tested 30 addresses for lead in 2015. Only 10 were homes.

Others included a hair salon, convenience stores, two doctors' offices, a fire house, metal fabricator, a well driller, the police department and City Hall. We couldn't identify four other test addresses.

Although commercial sites may be tested under EPA rules, it's only allowed if a water system first runs out of highest-risk homes.

** That same year, the Southwest Georgia city of Albany tested seven businesses for lead but labeled them on test forms as single-family homes.

** The Notla Water Authority, which serves customers in Union County in North Georgia, tested the homes of at least seven people who were employees or board members of the water department in 2015, though only one had a home in the high-risk category. It also tested a gas station, a marina boathouse, and a service garage owned by the Water Authority, but labeled them as private homes.

** In Lawrenceville, a suburb of Atlanta, water system employees said that to the best of their knowledge, they have been testing their town's highest-risk homes, even though they admitted they don't have the records to verify those locations.

The Basics of Water Testing

- The EPA's rule requires water utilities to monitor drinking water for lead at customer taps.
- Those utilities (there are about 2,000 in Georgia) must identify homes at highest risk of lead contamination.
- Somewhere between 5 and 50 homes — depending on the size of the water system — are tested at regular intervals.
- Residents who agree let the water sit for at least 6 hours, draw a sample from a sink, then leave the bottles for the water system to pick up.
- Analysis of the samples is usually done by a state lab, and the results are sent to the water utility and the EPA.
- The water utility is required to send the results to customers tested within 30 days.
- If more than 10 percent of homes test at levels higher than the EPA threshold, the water system must tell all of its customers of that result, then take steps to correct the problem.

** Savannah, Georgia's oldest city, has also lost track of its highest-risk homes. Water officials said they could not determine with any certainty what kind of plumbing was in the homes they test because the records are lost.

Lead testing issues aren't unique to Georgia.

In 2015, local and state officials in Flint said they were testing homes at highest risk for lead problems, when many of the homes they tested were actually at lower risk. State regulators also asked a local water operator to drop high results from its testing, hiding the problem. As a result, the widespread contamination in Flint went undetected for months longer than it should have, delaying actions to fix the problem, according to MLive.com.

One study found that the percentage of children with elevated lead in their blood doubled in Flint after lead levels climbed in the city's water supply. The increase was linked to a change in the city's water source, and a subsequent failure to properly treat the water to make it less corrosive.

The inaccurate records and falsified reports led Michigan's attorney general to charge three city and state officials with felony and misdemeanor crimes, including tampering with evidence. They dropped charges against one of them after he cooperated with prosecutors.

Chicago has also been testing homes at lower risk for lead problems. The Chicago Tribune recently reported the testing "likely misses problem areas."

"The more we look now, the more it seems that water utilities are by-and-large in the dark ... about whether the homes they sample, are, in fact, meeting regulatory requirements," says Lambrinidou, explaining a pattern she's noticed across the U.S.

The Lead and Copper Rule

In 1991, the EPA ordered public water systems to begin testing water for lead, a soft metal that's been a major component of plumbing around the world for generations. (The very word "plumbing" derives from the Latin word for lead.)

Because lead can leach into water as it travels through pipes, operators are required to collect samples from inside homes, usually from a bathroom or kitchen sink.

To make sure the testing works as intended, the rule requires them to test homes most likely to be in harm's way because they have lead in their plumbing.

Homes are considered to be at highest risk for lead if they meet one of three conditions:

- ** They are fed by lead service lines that carry water from the supply in the street to the house; these are typically found in homes built before the 1940s.
- ** They have lead pipes inside the house.
- ** They have copper pipes joined by melted lead solder installed between 1983 and 1988, the last year that high amounts of lead were allowed in new plumbing.



Once a water system has identified a large pool of highest-risk homes, they are supposed to test some of them regularly.

Glenn Page, general manager of the Marietta Water Authority in suburban Atlanta, says he remembers how they identified their high-risk homes. In the 1990s, they used kits that included a sharp tool to scrape samples from pipes to verify the metals used in the plumbing.

"I still remember practicing with those kits under the sink in our office break room," Page says.

Van Collins, assistant director of Water and Wastewater for the City of Statesboro in Southeast Georgia, says his department also works hard to test the same high-risk houses.

"It's the right thing to do, and also, it's the law," Collins says.

That's not the case in Demorest. The town that tested gas stations, doctors' offices, and an empty lot also failed to test any of the homes it had originally selected as high risk back in the 1990s. That's a concern because records show that all those homes had lead service lines.

Charlie McGugan, the city's director of wastewater, signed the lead testing forms in 2015. He said he didn't believe any homes in the city ever had lead service lines. He said he thought the homes originally identified as being at highest risk

had been mislabeled.

Asked why the original records kept by his predecessors were inaccurate, McGugan said, "Sometimes we get lazy, don't we?"



FINAL TARGETED SAMPLE SITES

Page 2 of 2

Site Number	Type of Structure	Location or address	Contact Person		LSL	Home Plumbing Material	Selected		Received Training Material (Y/N)
			Last Name, First Name	Phone			Routine	Optional	
15	SFR	780 Golf Course Rd	DAVIS, William		NO	A	✓		Y
16	SFR	7479 Dick's Hill Rd	Shirley, Jimmy		NO	A+D	✓		Y
17	SFR	590 Hist. 441	Gosnell, Hillary		NO	A	✓		Y
18	SFR	1007 Al...	...		NO	A	✓		Y

A testing site in Demorest.

He also said he thought the rule required testing a variety of different buildings, not just homes.

He admitted to testing his own home as well as the homes of several water department employees and a city councilmember. That’s not prohibited, as long as their homes are at risk for lead problems. McGugan acknowledged that most of those homes didn’t have the kind of plumbing that would make them eligible test sites.

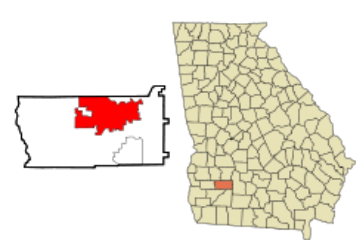
City Manager Kristi Shead said Demorest would conduct its own investigation and that the testing would be watched more closely going forward.

“Unfortunately somebody made a mistake,” Shead said.

Danny Young, the water system manager for Notla, in North Georgia, explained his decision to test employee homes this way: “We chose homes that it was easy for us to send out the sample bottles.” Young also said he doesn’t believe any of the homes in their district have lead in their plumbing.

Census data, however, show that more than 2,400 residences in Union County were built in the 1980s and could be the right age to have potentially risky plumbing.

Other water utilities said it was difficult to get people to agree to the tests.



Albany

Kurt Anthony, general supervisor for the Albany Water System, explained that they tested businesses after some residents declined to participate. He said the state granted permission to do that.

Jac Capp, chief of the Watershed Protection Branch at the Georgia Environmental Protection Division (EPD), confirmed the commercial sites Albany tested are on a list of approved sampling sites. He also noted that lower-risk commercial sites make up about one-quarter of the sites the state has given Albany the OK to test.

We asked Capp why a city the size of Albany, which has more than 77,000 residents and more than 4,000 homes built in the 1980s, should need to have any lower-risk sites in its sampling pool. In a written statement, he said, “The Rule allows the Water System to sample Tier 2 [lower-risk] sites.”

One water policy expert says that’s a very loose interpretation of the law.

“It is difficult to imagine how a utility of any size that has single-family homes older than 1986 can’t find enough highest-risk sites,” says Tom Neltner, an attorney and chemicals policy director for the Environmental Defense Fund.

Other water operators around the state and the U.S. also say it is hard to find enough customers who agree to do the testing, which requires residents not to use their water for at least 6 hours, typically overnight. They then fill sample bottles from a kitchen or bathroom tap and leave the bottles for pickup by

the water utility.

“You were literally going in the phone book begging people,” says Steve Stubblefield, water treatment operator for Lawrenceville. “It got to be that we’d test a lot of the City Council and city managers and stuff like that.”

Many of those employees’ homes were not at highest risk for lead, Stubblefield admits.

According to Census data, about one-third of 11,000 residences in Lawrenceville were built in the 1980s, making them the right age to potentially qualify as high-risk.

Yet in 2015, water records indicate none of the 30 homes they tested had lead in their plumbing. Property records reveal more than half the sites were built after 1988, the year high amounts of lead were banned from new plumbing.

Customer reluctance is a problem

Other water utilities agree that customer participation is a major barrier to doing the testing correctly.



Cross section of lead pipes

In Philadelphia, officials estimate the city has 40,000 to 50,000 homes with lead service lines. Still, the city says it can’t get enough people in these homes to participate in lead testing.

“The reasons for low participation are many, and are not exclusive to Philadelphia. Some homeowners don’t want the inconvenience of collecting samples, others fear government intrusion of any sort,” says Mike Dunn, deputy communications director for the city.

Because of problems with low participation, the city last year offered a \$50 credit on water bills for people who agreed to test. “We hope this incentive boosts participation levels going forward,” Dunn says.

For its part, the EPA has been meeting with water utilities, lead experts, environmentalists, and regulators in an effort to improve the lead testing process.

Internal emails show those meetings, along with the Flint water crisis, have prompted some soul-searching at the agency.

Brian Smith, an environmental engineer in the EPA’s Region 4 Southeast office, said he has learned two key lessons from those discussions:

First, “The rule alone does not adequately protect public health by preventing exposure to lead in drinking water,” he wrote in a widely distributed email sent on Jan. 28, 2016.

Second, the rule gives the EPA and the states the authority to act in ways that could be more protective to public health, rather than “defaulting to the easiest alternative to implement,” he wrote.

Turning a blind eye to test sites

Since the 2015 Flint water crisis, the EPA has been paying more attention to how states enforce the Lead and Copper Rule.

In an October 2016 memo, the EPA asked its regional offices to be sure that water utilities in their areas were testing sites that were truly high risk and that this information be “well documented.”



The Lead and Copper Rule offers water utilities guidance about ways to identify high-risk homes.

But Lewis Hays, manager of Georgia’s Environmental Protection Division’s Watershed Compliance Program, says in a written statement to us that “there is no specific verification requirement” for choosing lead testing sites. As a result, the state has relied on an honor system, trusting utilities to test homes that qualify under federal rules.

Often, they don’t, and the problem is not new. Emails show state officials talking about it in 2012.

“We have no real way of routinely knowing/verifying what the plumbing material at any of the sites really is ... so we just have to ‘trust’ and take the word of the operators/systems reps,” wrote Tamara Frank, an EPD water compliance officer, in an email to a co-worker. As of January, Frank was one of just two state employees who managed the requirements of the rule for more than 2,000 water systems in the state.

When the test finds lead

Every three years, the city of Atlanta tests about 50 homes it considers at high risk for lead. In 2015, the water department asked Allison if she would participate.

When she got her results back, there was a surprise:

Her house was 17 parts per billion for lead, just over the EPA’s limit of 15.

Allison says she got a letter in the mail with the result, but very little guidance about what to do.

“There wasn’t any perspective, really, about what does this mean and how can this affect your health, how dangerous it is and what’s the science behind it,” says Allison, who’s lived in the house for 20 years.

Renee Hepler, who lives in the Atlanta suburb of Roswell, noticed black soot had started to collect in the top of her filtered water pitcher.

She asked her water system to test for lead, and hers was one of 50 homes the North Fulton system tested in 2015. She says she finally got her results, but “I had to stay on top of it.”

PROTECT YOURSELF FROM LEAD IN YOUR TAP WATER

Lead in tap water can be a health hazard, especially to children. The only sure way to eliminate the threat is to get rid of any pipes and fixtures that contain lead. But finding sources of lead and getting rid of them can be difficult and expensive. Here are practical steps the CDC recommends to minimize your risk.

1	FLUSH Run the kitchen faucet for 1 to 2 minutes anytime water hasn't been used for several hours. If you suspect there might be a lead pipe at the street, take the extra step of flushing a high-volume tap, like a shower, on cold for 5 minutes before flushing the kitchen faucet.	
2	GO FOR THE COLD Always use cold water for cooking, drinking, and preparing baby formula. Lead dissolves more easily in hot water, making it riskier to drink. Boiling does not remove lead.	
3	KEEP FAUCET AERATORS CLEAN Give them a good scrub every few months.	
4	FILTER IT Use water filters that carry an NSF 53 or NSF 58 rating to remove lead.	
5	DON'T FEAR THE TUB It's OK to bathe or shower in household water since lead is not absorbed through the skin.	

"That test basically did show there was lead in our water," she says. "I was really alarmed, but they said, 'It's below the EPA's action limit, so we're not required to do anything about it.'"

Hepler lives in a house that was built in the 1980s. She has two young children at home. Records show her lead level was 2.5 parts per billion.

"I thought I heard them say, 'it's a safe level of lead,' but I asked my pediatrics office and they said, 'there's no safe level.'"

The answer to the question of what is safe isn't easy to come by. No one knows exactly how much lead in water starts to cause harm. The CDC says no amount of lead in blood is safe.

Lead is especially dangerous to children, who absorb as much as 90 percent more lead into their bodies than adults. Researchers have found that even at low levels, lead can damage a child's brain, lowering intelligence and damaging their ability to control their behavior and attention.

At higher levels, lead can affect growth, and it can replace iron in the blood, leading to anemia and fatigue.

In adults, lead poisoning can cause high blood pressure and damage the nerves and kidneys. It also can cause miscarriages.

The EPA limits, though, are not based on these health risks. Instead, the limit only lets water utilities know whether they're treating water correctly to minimize harm.

The agency is in the process of setting a "household action level" for health that might trigger intervention. In February, the EPA asked scientists to comment on studies estimating how much lead in water might raise a child's risk of having elevated lead in their blood.

For babies who are fed formula, the danger level in water could be as low as 4 parts per billion, according to an analysis of the studies by the Environmental Defense Fund.

Kathy, a Roswell resident, lives in a home that tested high for lead in 2016. She says she received a letter so generic, she didn't even realize there was a problem. Her test result was 21 parts per billion.

"You would think if your home was over the limit that you would get some kind of

letter that would warn you about the dangers, but that's not the kind of letter we got," says Kathy, who also asked that her last name not be used, to protect her home's value.

The letter never explicitly states that Kathy's home tested high for lead. An accompanying report shows her results, and then mentions the EPA's action level in the fine print.

"We're not isolated here. All these other houses in our neighborhood were built around the same time. How many other homes have lead in their plumbing, and what's being done about it?" Kathy says. "People are not being sent to the hospital in droves, so there's nothing to worry about here? I don't think so."

A belated discovery

Allison, in Sandy Springs, ended up calling a plumber. He installed a water filter at the point where the water service line enters her house. She uses a filter on her refrigerator, too. She has a water pitcher with a filter on her counter.

But they took those precautions only last year. Her family has lived in the house for 20 years. Her children grew up there "not knowing a thing," she says.

Allison's son is now 22 and though doing well in college, has ADHD (attention deficit hyperactivity disorder). He grew up in the house where she still lives.

No one can say whether lead in their drinking water played a role in his ADHD, though, because none of her kids ever had a blood test to check, and lead is just one of many things that have been associated with the condition.



In 2015, more than 2,500 preschool-aged children in Georgia had elevated levels of lead in their blood, according to state data, though not all children were tested.

Most of the time, when a child's test shows high levels, families never find out what caused it.

That's because the state doesn't do an investigation until a child's blood lead level reaches 10 milligrams per deciliter. That's the standard in other states, too. Only about 1 in 6 kids in Georgia whose tests for lead are high reach that level.

The Georgia Department of Public Health says federal funds for lead programs have been reduced and are restricted to testing and prevention, not investigations. The agency says it is also working on measures to provide guidance and education to families with children whose lead levels fall between 5 and 9.

Children exposed to lead at lower levels often don't have immediate symptoms, but studies have found that they do suffer from damaged intellects and attention, and that those effects linger for decades.

"What you end up with is many hundreds of thousands or millions of children whose IQ is lower, who are, to use the colloquialism, "more stupid" than they needed to be because of this lead poisoning," says Jeffrey Griffiths, MD, a professor of public health and community medicine at Tufts University School of Medicine in Boston and an expert in waterborne diseases and toxins.

He says while there are plenty of water utilities doing things right, "there are a number of utilities where they haven't really followed the spirit of the law, and this is what you see."

Chris Rustin, DrPH, used to oversee lead programs for the Georgia Department of Public Health as its environmental health director. When informed of our results, he said the widespread water testing problems in the state were startling.

Rustin, now a professor at Georgia Southern University, said, "I think now that we know that there's a potential issue, there's an opportunity to do something about it."

COMING TUESDAY: Searching for Georgia's lead service lines

COMING WEDNESDAY: Her home showed high lead; she wasn't told

HOW WE DID IT

- We reviewed records kept by the Georgia Environmental Protection Division (EPD) for water systems serving at least 10,000 people.
- We searched these files for lead testing records.
- We compared lead testing addresses with public property tax records.
- We also reviewed thousands of EPD emails regarding lead testing.

Some caveats:

- The law requires the state to keep records of all lead testing sites; the state's records were incomplete. The records we retrieved were from years 2011 to 2016. Some were undated.
- Property records can have errors. County assessors do not guarantee that their records are correct.
- We could not account for home renovations; for example, a case where a tax record says a home was built in 1960, but the owners installed new plumbing in the 1980s.

SOURCES:

Yanna Lambrinidou, PhD, anthropologist, civil and environmental engineering department, Virginia Tech, Blacksburg, VA.

Glenn Page, general manager, Cobb County-Marietta Water Authority, Marietta, GA.

Kathy, homeowner with elevated lead in her water, Roswell, GA.

Lewis Hays, manager, Watershed Compliance, Georgia Division of Environmental Protection, Atlanta.

Steve Stubblefield, water treatment operator, Lawrenceville, GA.

Allison, homeowner with elevated lead in her water, Sandy Springs, GA.

Renee Hepler, Roswell, GA.

Chris Rustin, DrPH, assistant professor, environmental health science, Georgia Southern University, Statesboro, GA.

Dawn Harris-Young, press officer, U.S. Environmental Protection Agency, Atlanta.

Kurt Anthony, general supervisor, water quality, Albany Utility Board, Albany, GA.

Danny Young, system manager, Notla Water Authority, Blairsville, GA.

Van Collins, assistant director of water and wastewater, Statesboro, GA.

Charlie McGugan, superintendent of wastewater, Demorest, GA.

Jeffrey Griffiths, MD, professor of public health and community medicine, Tufts University School of Medicine, Boston.

American Journal of Public Health, February 2016.

"Documents show Flint Filed False Reports about Testing Lead in Water," MLive.com, Nov. 12, 2015.

Water testing records for 118 public water systems in Georgia.

"Charges dismissed against Flint water official," Detroit News, May 4, 2017.

Kristi Shead, city manager, Demorest, GA.

James Capp, chief, Watershed Protection Branch, Georgia Environmental Protection Division.

Mike Dunn, deputy communications director, Philadelphia.

Brian Smith, environmental engineer, Region 4, Environmental Protection Agency.

Tom Neltner, chemicals policy director, Environmental Defense Fund

SPECIAL REPORT:
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Looking for Georgia's lead service lines

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PART TWO OF A SPECIAL REPORT

By Brenda Goodman, Andy Miller, Erica Hensley, and Elizabeth Fite

Brenda Goodman is a senior news writer for WebMD and Andy Miller is editor and CEO of Georgia Health News. Freelance writers Erica Hensley and Elizabeth Fite also contributed to this report. This investigation was supported by a grant from the Arthur M. Blank Family Foundation.

Many older cities used lead pipes to deliver water to homes.

These pipes —known as service lines— became infamous after their role in the Flint, Mich., water disaster.

<https://www.georgiahealthnews.com/2017/06/georgias-lead-service-lines/>

SPECIAL REPORT:

Hidden Lead Hazards

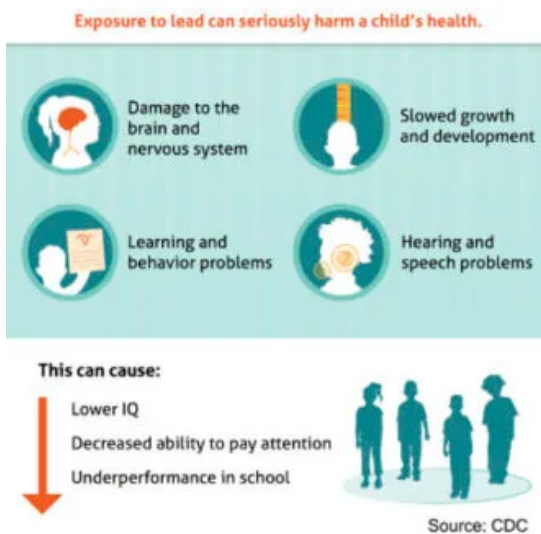
Getting water through these pipes is like sipping water through a straw made of pure lead. They are considered by the EPA to be the greatest lead hazard to drinking water.

Lead can cause irreversible damage to the brain and other organs of young children.

The problem is that many utilities have lost track of where their lead

service lines are, and they aren't actively looking for them.

Last year, a national survey of water utilities estimated that Georgia could have as many 86,000 lead service lines. Even state regulators charged with protecting the public from high levels of lead in water don't know where they are.



"We do not keep records on the number or locations of lead service lines in the state," said Kevin Chambers, communications director for the Georgia Environmental Protection Division, in an email.

Our investigation uncovered some clues to where these dangerous pipes might be.

We reviewed water records for more than 100 water systems in the state. Five water systems had records showing they had lead service lines:

** Athens-Clarke County

** Demorest

** Perry

** Richmond Hill

** Statesboro

Statesboro and Athens confirmed that their records were correct. The others say their records are wrong, and that they don't believe they've ever had any lead service

lines.

"I have personally dug up lines in these neighborhoods, and by and large they are all PVC service lines," said Charles Heino, director of municipal operations for the Richmond Hill water system in Southeast Georgia. "I have yet to dig up a [lead] gooseneck or lead service line; but that's not to say they can't exist; I simply cannot verify it with my own experience," said Heino.

In Statesboro, where water records show testing addresses have lead service lines, Van Collins, assistant director of water and wastewater, confirmed that the records are correct. "We sure do have them in the older parts of town," he said, when we asked about his records.

Cities rediscover their lead pipes

Tom Neltner, an attorney and chemicals policy director with the Environmental Defense Fund, says it's not uncommon for water systems to think they don't have lead service lines.

"The state of Washington swore... they always said, 'we don't have any lead service lines,' then they started finding them as Flint came out and people started paying attention," Neltner says.

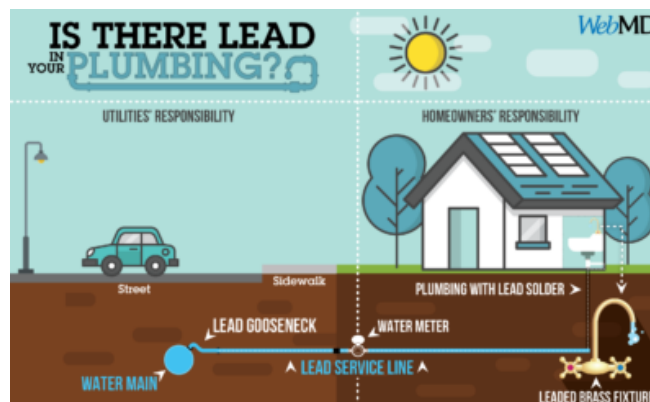
In May 2016, Washington Gov. Jay Inslee directed water utilities to look for lead pipes in their water systems. As of February, they've found more than 7,500 lead pipes through a voluntary survey. "They found them in Tacoma, Seattle, and Spokane," says Neltner, who is a founding member of the Lead Service Line Replacement Collaborative, a group of 23 organizations that are working to encourage water utilities to find and replace their lead service lines.

The Environmental Defense Fund recently graded all 50 states on their lead pipe disclosure policies. Georgia was one of 12 states that got an F, because the state doesn't require water systems to tell customers if they have lead pipes.

In Georgia, the part of the service line that runs between the water meter and the house is considered to be the homeowner's property. Many water utilities told us they don't feel they should be responsible for pipes they don't own—a position that was recently stated by the National Rural Water Association in a letter to the EPA.

The Basics of Water Testing

- The EPA's rule requires water utilities to monitor drinking water for lead at customer taps.
- Those utilities (there are about 2,000 in Georgia) must identify homes at highest risk of lead contamination.
- Somewhere between 5 and 50 homes – depending on the size of the water system – are tested at regular intervals.
- Residents who agree let the water sit for at least 6 hours, draw a sample from a sink, then leave the bottles for the water system to pick up.
- Analysis of the samples is usually done by a state lab, and the results are sent to the water utility and the EPA.
- The water utility is required to send the results to customers tested within 30 days.
- If more than 10 percent of homes test at levels higher than the EPA threshold, the water system must tell all of its customers of that result, then take steps to correct the problem.



“The property owner has to assume responsibility for his/her infrastructure,” the letter reads.

The problem is that water utilities originally installed service lines to homes, and many kept records on the kinds of materials that were used to do it. So water utilities are in the best position to inform the public about where lead pipes are.

Yet many water systems say those records have been lost.

“There’s no public water system that has such bad records they don’t know if they have a lead pipe or not,” says Marc Edwards, PhD, professor of civil and environmental engineering at Virginia Tech in Blacksburg.

Atlanta’s history of lead in plumbing

What about Georgia’s capital, Atlanta?

In the early 1900s, historical records show Atlanta was one of the 50 most populous cities in the U.S. using lead service lines.



The city has been telling customers and regulators for years that those pipes are all gone.

Given that many cities across the U.S. are only just now rediscovering how many lead pipes are still in their water systems, we wanted to know how Atlanta could be sure that was still true.

At first, the city didn't answer that question.

So we did a little digging. We filed an Open Records Request for records called tap cards.

Workers for the water department filled out these forms when they connected homes to the city's water. They list the materials used to "tap," or connect, a house to the main water pipe in the street.

Around the country, records like these are helping water utilities find the old lead pipes they still have. Boston, Tacoma, Washington, D.C., and Flint, Mich., have used tap cards to create maps so residents can find out if their home might get water through lead pipes. Ohio even passed a law last year that requires water systems to find and map their lead pipes.

After a couple of tries, the Atlanta Department of Watershed Management re-discovered their tap cards. Now yellowed and brittle with age, they are handwritten, in pencil.

At the top of the list of materials used to build these taps: Lead.

Form W.W. 3711
Tapping, Distribution, Repairs and Maintenance
 ATLANTA WATER WORKS
 Workman's Time Card. 3-20 1925
 Foreman Shop Department: _____
 I have Made 13 per. pav.
tops on
 Tap _____ No. Anton Street _____
 Meter No. _____
 Time on Job and Material Used as Follows:

MATERIAL	No.	SIZE	FEET	LBS.	COST
Lead Connections	13	3/4	230		2.25
Pipe, Gal.					23.50
Curb Cocks	13				1.75
Valves					2.80
Main Cocks	13				2.75

Anton Street tap card shows lead connection.

One record shows there were 13 homes attached with "lead connections" on Anton Street in 1925, for example. There were 19 homes attached with lead connections on Arlington Place in 1922, according to another record. We found examples of these records dating to the 1940s.

We asked plumbing experts what "lead connection" might refer to.

"It's usually a gooseneck," says Scott Murphy, a project manager for ESG Operations, a company that runs municipal water systems across the state. "It's about a 2-foot section of tubing that connects that water main to the pipe that goes to the house."

Water departments used these s-shaped pipes, Murphy says, because they could be easily bent to direct the service line to the house. Murphy says he still occasionally runs across them on jobs. When he finds these lead goosenecks, he replaces them.

Typically cities didn't have a coordinated plan to remove goosenecks or any other kinds of lead pipes. Some have been replaced over the years when they've leaked, or when workers have run across them in the course of road repairs.

In 2016, Atlanta told its water customers in a water quality report that "The City of Atlanta has no lead service lines, but does have some lead joints."



A cross section of lead pipes

After we pressed city officials about the tap cards, their story changed.

"Lead service lines may still exist in some older areas of the city," says Cameo Garrett, external communications manager for the City of Atlanta in an email, but they should amount "to less than 1 percent of the total length of pipe in the Atlanta Water Distribution System."

Garrett says the city had a lead pipe replacement program in the 1980s. As the city replaced lead water mains, it also replaced the lead service lines connected to them, she says, but they can't be sure they're all gone, especially in the older parts of the city.

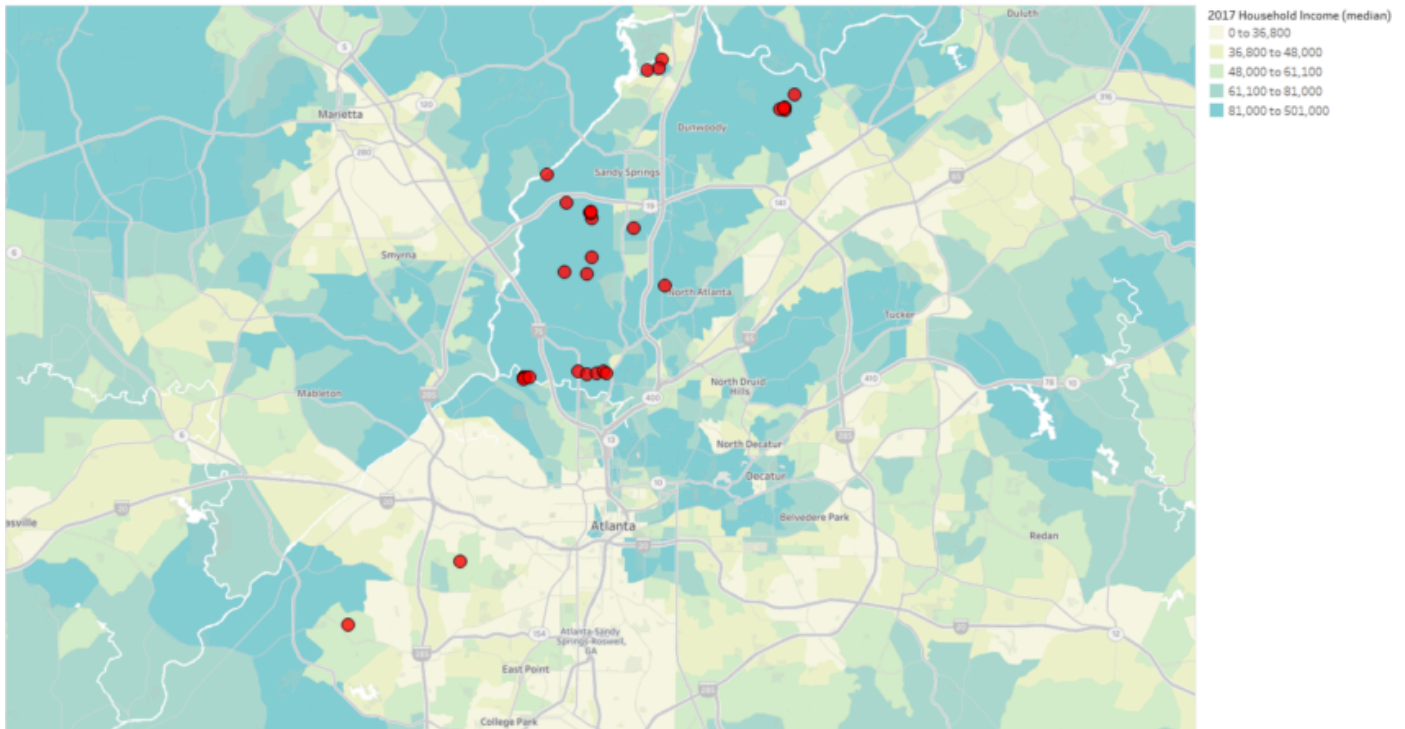
Atlanta's Water Department, however, is generally not testing for lead in the older parts of the city—where they say lead service lines could still exist.

The EPA's Lead and Copper Rule for monitoring lead in water calls on utilities to test homes with lead service lines before any other kinds of sites are used.

But under that Rule, if a utility claims they don't have any lead service lines in their service area, they can move to a different kind of high-risk home — houses with copper pipes and lead solder installed between 1982 and 1988 — and still satisfy testing requirements.

In 2015, most of the homes Atlanta tested were in the affluent northern areas—Brookhaven, Buckhead, Sandy Springs, and Dunwoody. A check of the test addresses revealed most of those homes were built in the 1980s.

When asked how they choose homes for lead testing, Garrett said in an email that the city follows criteria set out in EPA guidelines. Sites in downtown or older neighborhoods may not meet this criteria, she said.

Atlanta's Lead Test Sites 2015

Atlanta's current lead testing strategy troubled one local health expert.

Harry Heiman, MD, of the Morehouse School of Medicine, an expert on health disparities, says neighborhood conditions play a major role in our health, leading to the recognition that zip code is a more important predictor of health than one's genetic code.



Heiman

"The map you shared suggests that home surveillance is operating with either a blind eye or intentional disregard to ensuring protection of low-income minority communities," says Heiman. "The areas in which homes are being tested appear to be disproportionately white and more affluent; those not being sampled, disproportionately in low-income minority communities," says Heiman, referring to lower-income neighborhoods on Atlanta's south and southwest sides.

Another local water expert says now that the city has acknowledged its lead pipes, they should work to get them out of the water system.

"I am not surprised that a water system as old as Atlanta's still has lead in network," says Chris Manganiello, water policy director for the Chattahoochee Riverkeeper. "Ideally, the city would identify and prioritize replacement. To ease any public health concerns, the city could offer to test the water in older areas where lead materials are identified."

COMING WEDNESDAY: Her home showed high lead; she wasn't told

PART ONE: Lax oversight dilutes impact of testing water for lead ([Here's the link](#))

SOURCES:

Kevin Chambers, communications director, Georgia Environmental Protection Division, Atlanta, Ga.

Charles Heino, director of municipal operations, Richmond Hill Water System, Richmond Hill, Ga.

Van Collins, assistant director of water and wastewater, City of Statesboro, Statesboro, Ga.

Tom Neltner, chemicals policy director, Environmental Defense Fund, Washington, D.C.

Marc Edwards, PhD, professor, Civil and Environmental Engineering, Virginia Tech, Blacksburg, Va.

Scott Murphy, project manager, ESG Operations, Macon, Ga.

Cameo Garrett, external communications manager, City of Atlanta, Atlanta, Ga.

Harry Heiman, MD, director of health policy, Satcher Health Leadership Institute, Morehouse School of Medicine, Atlanta, Ga.

Chris Manganiello, water policy director, Chattahoochee Riverkeeper, Atlanta, Ga.

Lead Testing Records for 105 water systems, obtained through a Georgia Open Records Act request.

Tap cards for the City of Atlanta water system, obtained through a Georgia Open Records Act Request.

SPECIAL REPORT:

Hidden Lead Hazards

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There's lead in that?!

🕒 September 13, 2017 🧑 Brenda Goodman and Andy Miller

PART FIVE OF SPECIAL REPORT

By Brenda Goodman, Elizabeth Fite and Andy Miller

Brenda Goodman is a senior news writer for WebMD. Elizabeth Fite is a health care journalist based in Chattanooga, and Andy Miller is editor and CEO of Georgia Health News. This investigation was supported by a grant from The Arthur M. Blank Family Foundation.

Shortly before midnight, Tamara Rubin was roaming the aisles of a local big-box store in Portland, OR, with her friend Carissa Berg Bonham, armed with a handheld X-ray gun and a smartphone.

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products advocate.

They were looking for lead.

They started with garden hoses. The hoses were OK, but some brass connectors and nozzles had high lead levels.

“Unfortunately, they were doing inventory that night and there were tons of employees everywhere telling us not to film,” says Rubin, an independent consumer

When they got shooed out of garden supplies, they headed for the fishing gear. It was 11:07 p.m. They broadcast their findings live on Rubin's Facebook page: "Lead Safe Mama."

Sure enough, the sinker weights were almost pure lead.



Rubin

"My husband remembers when he was little boy buying a handful of these for a penny and chewing on them all day long. You see that little line on them? You put them in your mouth and bite down on them. That's what every fisherman does," Rubin says.

Weights of another type, dropline sinkers, tested even higher, about 800,000 parts per million (ppm) of lead. To put that in perspective, the federal Consumer Product Safety Commission says household paint and products for kids are unsafe if they have over 90 ppm on their surfaces.

"Each one of these is enough to kill a child," says Rubin. "If your child swallowed even one of these, they would have seizures and die," she says.

Rubin has made it her mission to point out how widespread a poison lead can be and how easily it can be found. Two of her four boys were lead-poisoned when a contractor used an unsafe

way to remove lead paint on the outside of their house.

Lead, which is both a common element and a potent neurotoxin, is especially dangerous for young children. It can permanently damage their attention and intelligence. It can also harm adults, causing high blood pressure, kidney damage, and, possibly, cancer.

Children most often get poisoned through lead paint or from lead in water.

"It's rare that a kid is poisoned by a consumer good," Rubin says, "And if they are, it's really hard to prove."

But as long as lead remains in products, the risk still exists. The CDC says no level of lead is safe for kids.

An ongoing risk

Jennifer Lowry, MD, a toxicologist and pediatrician with Children's Mercy Hospital in Kansas City, MO, investigates cases of severe lead poisoning in kids. One involved an autistic child who was soothed by holding and rubbing together lead fishing weights. The child's blood lead level was 48 micrograms per deciliter, a level high enough to cause immediate health problems like anemia, fatigue, headaches, and severe abdominal pain. Lead also causes long-term harm. It forever damages brain cells, robbing a child of IQ points and the ability to pay attention.



Toy shovel with excessive lead levels was recalled

"When you find a child that already has an elevated blood lead, you're already behind the eight ball," Lowry says. "The most rapid brain growth is from 0 to 3 years of age. It's going to affect how the brain basically gets set."

It's been more than a decade since a 4-year-old boy died of lead poisoning in Minneapolis after swallowing a piece of a bracelet that was given away with children's shoes. His case spurred Congress to pass new limits on lead in products intended for children.

Manufacturers of toys and children's items must now prove to the Consumer Product Safety Commission that their products have been tested and certified to be under the legal limit.

The law has cut the number of cases of lead poisoning tied to consumer products, but the risk remains.

That's because there are no lead limits on products sold primarily for adults, and that's where kids can get into trouble.



Teething bracelet

So far, in 2017, the Consumer Product Safety Commission has recalled wicker furniture, a piano bench, a metal-top dining table, a toy garden shovel, and M&M's-branded earrings for having high lead levels.

The CDC said recently that a 9-month old girl in Connecticut was poisoned in 2016 after her parents bought her a handmade bracelet at a local art fair to soothe her teething pain. Unfortunately, the bracelet was made with lead beads that contained high levels of lead—17,000 ppm. The child had a blood lead of 41, a level high enough to cause anemia.

No warning signs

Rubin says people always ask her if there are warning signs that something might contain lead. She says there really aren't any reliable tipoffs, such as the country of origin.



Jewelry had high lead levels

Researchers say she's right. Pamela Turner, PhD, studies the link between health and housing at the University of Georgia.

"You really don't know most of the time," she says. "That made-in-England coffee cup with a glaze on it? I actually had one at a conference that tested high for lead."

Turner says what Rubin is doing is rare.

"Consumers can't easily have products tested," she says. "This kind of testing is less available."

For her testing, Rubin uses an XRF gun, which stands for X-ray fluorescence spectrometer. The instrument retails for \$40,000-\$50,000. Rubin rents one for her "testing parties."

Turner says the XRF is the gold standard for testing, but she cautions that what Rubin is doing isn't strictly scientific because it involves one test of one product at a time, not the averaged results of a group of products or items.

The XRF also can't determine how much of the lead in a product is coming off of it.

Lead is only dangerous if it is released from a product and inhaled or ingested, says Tom Neltner, chemicals policy director of the Environmental Defense Fund.

Rubin often makes the same point, saying that even when she finds an item that has a lot of lead in it, that doesn't necessarily mean the lead is getting into your body or making anyone sick. But it's there.

And she doesn't claim to be doing scientific studies. She says she is really just trying to make people aware of how much lead is in the stuff that's around them.

She also has another important goal in her work: to let people know that for every lead-laden product she finds, there are safer choices. In the fishing weights aisle, for example, she also finds lead-free weights made out of steel and zinc.



Toy kit, which was recalled, had high levels of lead.

Among the many products she's tested, Rubin has found lead in popular brands of eco-friendly baby bottles and sippy cups, vintage dishes, old books, modern painted ceramics, enameled cast-iron pans, leaded crystal, ammunition, faux pearls, commemorative drinking glasses, costume jewelry, leather couches, and even trumpet mouthpieces.

In one recent test of 31 kinds of fidget spinners, the popular spinning toys, Rubin found nearly half had higher levels of lead than are legally allowed in products sold to children. Most troubling, she says, was that there was no way to tell which spinners had lead and which ones did not. The problem was often a center wheel made of heavily leaded brass.

"It's right where you put your fingers," Rubin says.



"They're being marketed to children with autism and ADHD, special needs kids," she says. "My kids — the first thing they do is spin it and put it up against their mouths."

She remembers one mom, in St. Louis, who had a child with unexplained lead poisoning. State health department inspectors couldn't find the source. Rubin says she spent an afternoon at the woman's "pristine" home patiently testing everything they could think of.

The woman had a large, new leather sofa with three seat cushions. The middle cushion tested positive for lead. The other parts of the couch were negative.

"That's how random it is. Someone, in one batch of leather that was tanning it, used lead. The others didn't," she says.

When leather is tainted, it's usually because of a chemical called lead acetate, which is used to tan and color leather and vinyl. Lead acetate has a sweet taste that encourages babies and toddlers to

suck and chew the poisonous items.

In 2009, the Center for Environmental Health, a private nonprofit, began testing faux leather purses and accessories. They found lead in items at 16 of the 21 stores they visited. After their findings made headlines, hundreds of

manufacturers signed a legal settlement agreeing to get lead out of their products. That helped, but it didn't solve the problem. In follow-up testing, the group has continued to find purses, shoes, and belts with high lead levels.

Yellow and green items were the most likely to have high lead levels, says Judy Braiman, president of the Empire State Consumer Project, a nonprofit group that lab-tests consumer products for lead and other heavy metals. They did some of the testing for the Center for Environmental Health project.

Lead acetate is also in some men's hair dyes that fade away gray. This year, a coalition of consumer groups filed a petition with the FDA, asking the agency to ban lead in hair dyes. The petition cites cases of men who had numbness and tingling in their hands and feet, high blood pressure, and hair loss after using lead-based dyes.

Food can also be a source of lead. Earlier this year, the Environmental Defense Fund found that 20 percent of baby foods and juices had detectable levels of lead. And [a new report from the Pew Charitable Trusts and the Robert Wood Johnson Foundation highlights the risk to kids from that imported candies and spices.](#)



The best way to stay safe, Rubin says, is to be more informed.

“Stop being a consumer without knowing for sure that it's safe,” she says. She advises her readers to research products as much as they can before they purchase.

The other piece of advice she gives is to buy plain things.

“Buy things that are undecorated and unadorned,” she says. “Your pans don't need to be red. Buy clear, simple glasses and simple plates that aren't decorated.”

But buy those simple things new. When it comes to household items you will actually use, she says, “Get rid of anything vintage. Anything over 40 years old probably has lead in it.”

Do you have a child with an elevated blood lead level in Georgia?

We want to hear your story. Email us at amiller@georgiahealthnews.com or bgoodman@webmd.net

PART ONE: [Lax oversight dilutes impact of testing water for lead](#)

PART TWO: [Looking for Georgia's lead service lines](#)

PART THREE: [Her home showed high lead; she wasn't told](#)

PART FOUR: [As lead poisoned a child, a slow state response](#)

Sources:

Tamara Rubin, Consumer Advocate, Portland, Ore.

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