

WHAT'S IN YOUR WATER? FLINT AND BEYOND

ANALYSIS OF EPA DATA REVEALS WIDESPREAD LEAD CRISIS POTENTIALLY AFFECTING MILLIONS OF AMERICANS

Executive Summary

WHAT HAPPENED IN FLINT?

The devastating lead contamination of the tap water in Flint, Michigan—a majority African American city with a poverty rate above 40 percent—has become a full-blown national scandal. In 2014, a state-appointed emergency manager decided to switch from the Lake Huron-supplied water from Detroit's water system to the highly corrosive and polluted water from the Flint River, without treatment to control the corrosion of lead pipes. Soon, citizens complained about dark-colored, foul-tasting, smelly water that residents say caused skin rashes and hair loss. Lead levels in the water also skyrocketed; independent tests found levels at double the “action level” for lead set by the U.S. Environmental Protection Agency (EPA)—and in some cases many times worse than that.¹ As citizens increasingly voiced their concerns, state officials were “callous and dismissive,” according to a recent report by the independent Flint Task Force, which was established by the governor in October 2015.²



Flint illustrates the broader problem of environmental injustice—meaning the disproportionate exposure of lower-income communities and communities of color to environmental hazards.

WHY IS LEAD SO HARMFUL?

No amount of exposure to lead is safe. The goal is to allow no exposure to lead at all, especially for children, who are both more susceptible to lead poisoning and suffer more severe impacts. Even at very low levels once considered safe, lead can cause serious, irreversible damage to the developing brains and nervous systems of babies and young children.³ Lead can decrease a child's cognitive capacity, cause behavior problems, and limit the ability to concentrate—all of which, in turn, affect the ability to learn in school.⁴ Children with serious lead-related brain impacts are less likely to graduate from high school and more prone to delinquency, teen pregnancy, violent crime, and incarceration.⁵

The World Health Organization (WHO) notes that “the consequences of brain injury from exposure to lead in early life are loss of intelligence, shortening of attention span and disruption of behaviour. Because the human brain has little capacity for repair, these effects are untreatable and irreversible. They cause diminution in brain function and reduction in achievement that last throughout life.”⁶ However, certain interventions after exposure, such as additional educational and nutritional support, may help to reduce the longer-term impacts.⁷



Pictured from left to right are a lead pipe, a corroded steel pipe, and a lead pipe treated with protective orthophosphate. Orthophosphate creates a film coating inside of lead pipes that can act as a barrier, reducing at least somewhat the amount of lead that gets into tap water.

Among pregnant women, lead exposure can cross the placental barrier of the womb and harm the fetus.⁸ As the Centers for Disease Control and Prevention (CDC) notes, “Even low-level lead exposures in developing babies have been found to affect behavior and intelligence. Lead exposure can cause miscarriage, stillbirths, and infertility (in both men and women).”⁹ Even in otherwise healthy adults, lead exposure can cause adverse cardiovascular and kidney effects, cognitive dysfunction, and elevated blood pressure.¹⁰

FLINT HIGHLIGHTS THAT THE U.S. DRINKING WATER PROGRAM AND LEAD RULES ARE INADEQUATE

Flint’s water crisis highlights potentially disastrous gaps in the provision of safe drinking water to all people, especially the most vulnerable. These shortcomings are complex, far-reaching, and unacceptable and include poor and unaccountable decision-making by public officials as well as deficiencies in the Safe Drinking Water Act and the Lead and Copper Rule, the EPA’s standard under the Act. Weak regulatory language and poor implementation and enforcement of the Lead and Copper Rule at the federal and state levels are at the heart of the problem.

The state of Michigan bears responsibility for its harmful decisions regarding Flint, and for neglecting its primary enforcement responsibilities. However, the EPA also failed to act promptly and appropriately to execute its obligations under the Safe Drinking Water Act. In fact, NRDC and the American Civil Liberties Union of Michigan (ACLU-MI) served upon EPA a petition on behalf of Flint residents on October 1, 2015, requesting an intervention many months before the agency issued an administrative order on January 21, 2016, directed at city and state officials.¹¹ Ultimately, NRDC and ACLU-MI also filed litigation on behalf of local citizens in an effort to address Flint’s water woes.

Flint illustrates the broader problem of environmental injustice—meaning the disproportionate exposure of lower-income communities and communities of color to environmental hazards. For more than a year, government officials callously downplayed or ignored Flint’s toxic water and the majority-black community’s cries for help. Federal EPA, state, and state-appointed local environmental officials belittled and refused to listen to Flint residents and their advocates. NRDC recommends ensuring that citizens have a seat at the table to make decisions about their drinking water, especially when it is obvious that their public officials won’t protect them.

While a full evaluation of the broader environmental justice implications of lead-contaminated drinking water is beyond the scope of this report, NRDC is analyzing data on lead and other drinking water contaminants to assess the degree to which low-income communities and communities of color are disproportionately impacted by drinking water contamination. A detailed report on this subject is forthcoming.

FLINT IS NOT ALONE: OVER 18 MILLION PEOPLE WERE SERVED BY SYSTEMS VIOLATING THE LEAD AND COPPER RULE IN 2015

While Flint represents a clear case of extreme lead contamination, it does not have a monopoly on serious lead problems. In order to evaluate the national extent of violations of the Lead and Copper Rule, NRDC has obtained official EPA violation and enforcement records. We have conducted extensive data analysis, using geographic information system (GIS) mapping software to highlight and map the scope of lead-related issues in drinking water systems across the United States.

Our analysis indicates that in 2015, over 18 million people were served by 5,363 community water systems that violated the Lead and Copper Rule.ⁱ These violations included failures to properly test the water for lead or conditions that could result in lead contamination, failures to report contamination to state officials or the public, and failures to treat the water appropriately to reduce corrosion. (See figures 1 and 2 for locations of these violations.) Additionally, in 2015, 1,110 community water systems serving 3.9 million people showed lead levels in excess of 15 parts per billion (ppb) in at least 10 percent of the homes tested, the action level established for lead under the Lead and Copper Rule (see figure 3).ⁱⁱ Figures 1, 2, and 3 highlight the extraordinary geographic scope of Lead and Copper Rule violations and lead action level exceedances.ⁱⁱⁱ

It may be surprising to many that the EPA's database does not list Flint among the systems in violation of the Lead and Copper Rule. In fact, despite the headlines and national outrage, Michigan's Department of Environmental Quality (MDEQ) apparently still has not officially reported Flint to be in violation of the Lead and Copper Rule. At the same time, the Michigan attorney general's recent criminal indictments of state and local officials who had a hand in the Flint crisis certainly acknowledge that the Rule was violated.¹² In addition, many lead violations across the country have undoubtedly been hidden by intentional use of monitoring techniques that avoid detecting lead problems—techniques that the EPA long allowed to continue unabated.¹³ The EPA issued a guidance document on February 29, 2016, saying three of these methods should not be used, after years of pressure to stop these practices.¹⁴

NRDC has documented underreporting problems in the EPA's drinking water database for 25 years; the EPA itself admits that "audits and assessments have shown that violation data [in the EPA's database] are substantially incomplete.

Underreporting of violations in the EPA's database can be attributed to a variety of causes. Sometimes, public water systems fail to properly monitor their water (e.g., by using testing methods or strategies that avoid detecting contamination, as was the case in Flint), so violations are not recorded and reported. In other cases, states fail to correctly document violations. States also fail to report known violations into the EPA's database as required by federal law. As highlighted by the Michigan attorney general's criminal charges against state and city officials for allegedly failing to accurately report Flint's lead problems, reporting failures may hide serious health threats.

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i Following methods used by EPA, we count violations as occurring in 2015 if they initially occurred in that year, or if they initiated in a previous year but EPA still considered them "open" (i.e. unresolved) by the end of 2015. This is how EPA generally counts violations in its reporting under the Government Performance & Results Act and its ECHO (Environmental Compliance History Online) database. Even if we limit the "open" violations to those that first occurred between January 1, 2013 and December 31, 2015, there were still 12,538,849 people served by 3,314 violating systems.

ii We include as lead action level exceedances all systems that had lead levels recorded as exceeding the action level in 2013-2015, which includes systems with exceedances that initiated prior to January 1, 2013. If we limit the data to include only water systems with an action level exceedance that began on or after January 1, 2013, 3.2 million people were served by 758 systems exceeding the lead action level.

iii It should be noted that not everyone served by a water system that is violating the Lead and Copper Rule or exceeding the lead action level is necessarily drinking water containing excessive lead. Data are not available to show what percentage of customers have excessive lead in their water.

NEARLY 90 PERCENT OF LEAD AND COPPER RULE VIOLATIONS ARE NOT SUBJECT TO FORMAL ENFORCEMENT

The lack of enforcement in Flint was not anomalous. In fact, according to the EPA's data, states and the EPA took formal enforcement action against just 11.2 percent of the over 8,000 violations that occurred in 2015—leaving 88.8 percent free from any formal enforcement action.^{iv} Formal enforcement actions were taken against less than one in five health-based violations (17.6 percent). Furthermore, penalties were sought or assessed for only a tiny fraction (3 percent) of violations.^v This lack of accountability sends a clear message to water suppliers that knowingly violate the Lead and Copper Rule, with state and federal complicity: There is no cop on the beat.

In the Flint lead crisis (from 2014 to the present) and previously in Washington, D.C. (from 2001 to 2004), the EPA failed to act, downplayed the problem, and emboldened the actions of some water systems and primacy agencies. These experiences and the data showing widespread lack of enforcement highlight a need for a culture change at the EPA and among state regulatory bodies to ensure that violations are taken seriously and public health threats are addressed promptly.

WHAT DO WE DO NOW?

Corrective action is long overdue. First and foremost, Flint's water infrastructure—in particular thousands of lead service lines (the lead pipes that connect water mains in the street to residences) and any badly corroded pipes and fittings—must be replaced immediately. Safe, reliable water must be supplied to Flint residents in the meantime. Flint must also ensure that those who have been exposed to lead are carefully tracked and that they receive the support they need, now and in the future.

Next, we need significant investment in national water infrastructure. This will address urgent public health needs and create well-paid jobs. Necessary water infrastructure improvements include replacing the more than six million lead service lines nationwide, replacing or repairing decaying or outdated parts of distribution systems, and improving drinking water treatment plants. Professional civil engineers estimate that we need at least \$1 trillion over the next 25 years to bring our infrastructure to functionality. The current congressional funding of \$2.37 billion per year for drinking water and clean water infrastructure funds is paltry at best and should at least be restored to the approximately \$8 billion per year stipulated under the 2009 American Recovery and Reinvestment Act.¹⁸

Flint's crisis is unusual and disturbing because those responsible for creating the problem were caught only because of an unlikely coalition of strong, well-organized local citizens and a physician, who brought in outside experts to help document and expose the problem and fight the EPA and the MDEQ.

While replacing this infrastructure is critical, we also must set about fortifying our legislation and rules to protect against future "Flints." Flint's crisis is unusual and disturbing because those responsible for creating the problem were caught only because of an unlikely coalition of strong, well-organized local citizens and a physician, who brought in outside experts to help document and expose the problem and fight the EPA and the MDEQ. We cannot expect such an unlikely set of watchdogs to emerge in the face of every lead crisis.

The EPA's Lead and Copper Rule—including its weak language, implementation, and enforcement—needs a major overhaul. The Rule must be amended to: (1) require the full replacement of all lead service lines; (2) more fully

and fairly monitor lead levels, and prohibit water systems from using testing strategies that circumvent the detection or reporting of lead contamination; and (3) require clear, ongoing, timely, and culturally appropriate public education and notification of lead problems. Furthermore, at the state and federal levels, resources for the enforcement of the Safe Drinking Water Act have been decimated by poor funding, lack of management support, and bureaucratic indifference or fear of recrimination by the EPA. This fear may be partially due to haranguing by many members of the congressional leadership who have continually criticized the EPA for supposedly overzealous regulation and enforcement. These resources must be restored, and members of Congress should recognize that it is the EPA's job to enforce the law.

iv Following methods used by EPA, we count violations as occurring in 2015 if they initially occurred in that year, or if they initiated in a previous year but EPA still considered them "open" (i.e. unresolved) by the end of 2015. If we limit the "open" violations to those first occurring on or after January 1, 2013, an even lower percentage of the violations recorded (6.3 percent) were subject to formal enforcement.

v It should be noted that often states (or in rare cases the EPA) will take what they call "informal enforcement" actions, such as sending a letter or calling an offending water system. The EPA reports that in 76.3 percent of violations and 75.7 percent of health-based violations, at least an informal action such as a call or letter occurred. However, in the case nearly 2,000 violations (including health-based violations) not even informal action was taken. And importantly, as is discussed above, such "informal" actions often failed to bring systems back into compliance. The lack of formal enforcement sends a clear signal that breaking the law is unlikely to result in meaningful enforcement or penalties.

Additionally, drinking water in schools, day care centers, and other public locations frequented by young children must be tested for lead. A federal law passed in 1988 requiring water testing in schools and day care centers for lead was struck down by a court ruling that a drafting error rendered it unconstitutional.¹⁹ The error was never corrected. This law should be fixed, and water fountains should be tested and those that are found to supply lead-contaminated water should be repaired or replaced.

As long as we have this culture of hiding violations and attacking staff members who do their jobs, more Flints can be expected.

As mentioned earlier, a cultural change at the EPA and in some state regulatory agencies is ultimately needed. For example, Miguel Del Toral, an EPA staffer in the Chicago regional office, blew the whistle on Flint’s lead problem in early 2015. Del Toral visited the city to test the water and wrote a detailed report in June 2015 highlighting the city’s water problems. Rather than receiving accolades for doing his job well, he was chastised and labeled a “rogue employee.”²⁰ MDEQ staff worked to undermine Del Toral

and declined for many months to address Flint’s serious water problems. As of June 2016, the DEQ has failed to initiate any enforcement action in Flint. The state attorney general’s criminal enforcement action against a few DEQ and city employees, taken after a special prosecutor’s investigation, is important and helpful. But it does not remedy the underlying lack of enforcement emphasis within the responsible agencies. As long as we have this culture of hiding violations and attacking staff members who do their jobs, more Flints can be expected.

In the meantime, the Safe Drinking Water Act should be amended so that citizens whose water may present an imminent and substantial health threat are authorized to immediately sue for relief. They should not have to wait for state or federal officials to act.

Last, the EPA and state environmental officials must take environmental justice concerns seriously and prioritize them when it comes to all permits, enforcement, resource allocation, and regulatory protections. The EPA, states, and local officials should focus on empowering local communities and ensuring that they participate in decisions about their drinking water. We need a community-participatory model, in which community members are included in respectful, inclusive, and open discussions of local drinking water problems and infrastructure needs. Only with such broad participation can we ensure community buy-in and, ultimately, full protection of the health of our citizens.

FIGURE I: 18 MILLION PEOPLE SERVED BY COMMUNITY WATER SYSTEMS WITH REPORTED VIOLATIONS OF THE LEAD AND COPPER RULE (2015)

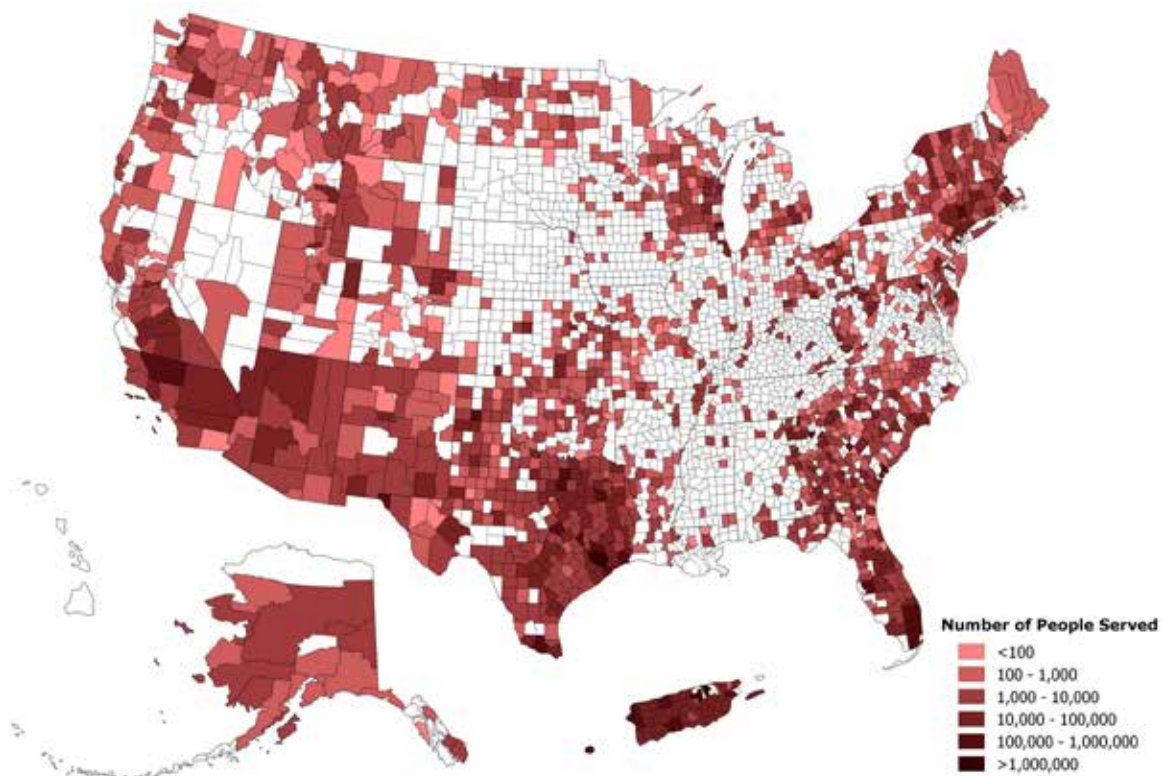


FIGURE 2: POPULATIONS SERVED BY COMMUNITY WATER SYSTEMS WITH REPORTED HEALTH-BASED VIOLATIONS OF THE LEAD AND COPPER RULE (2015)

Note that due to an epidemic of underreporting, many water systems that may be violating the health standard for lead are not represented on the map (see text).

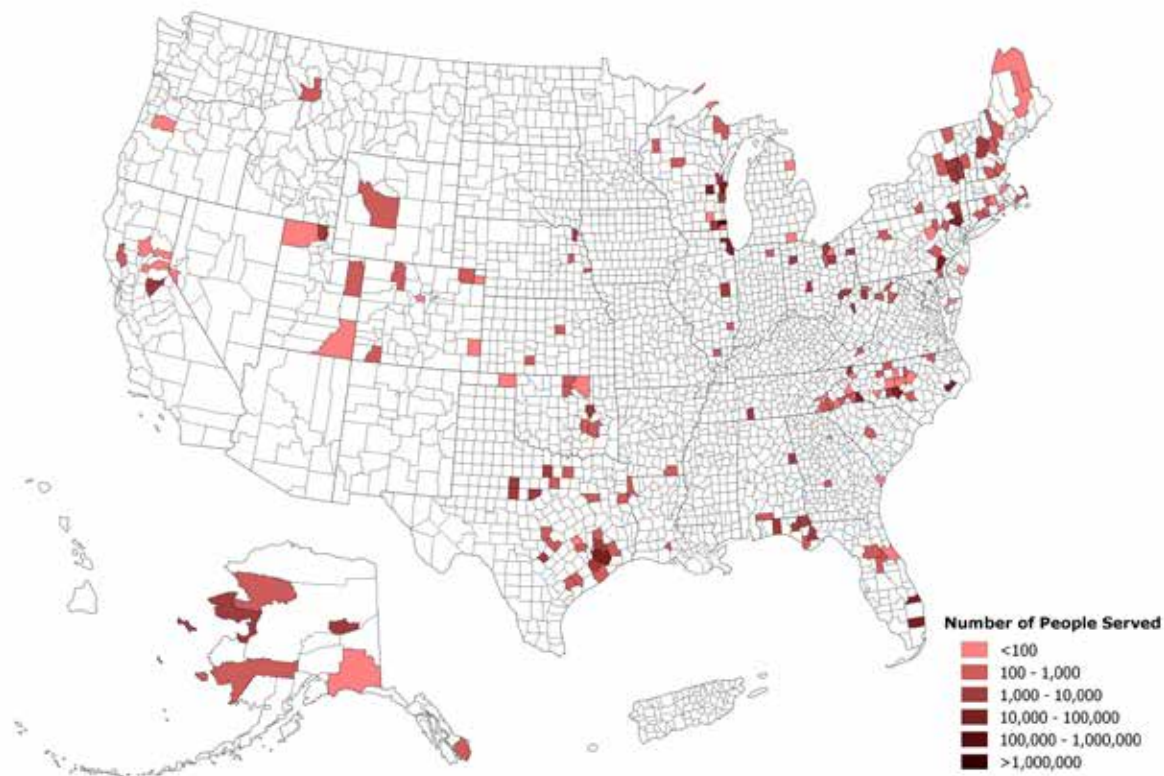
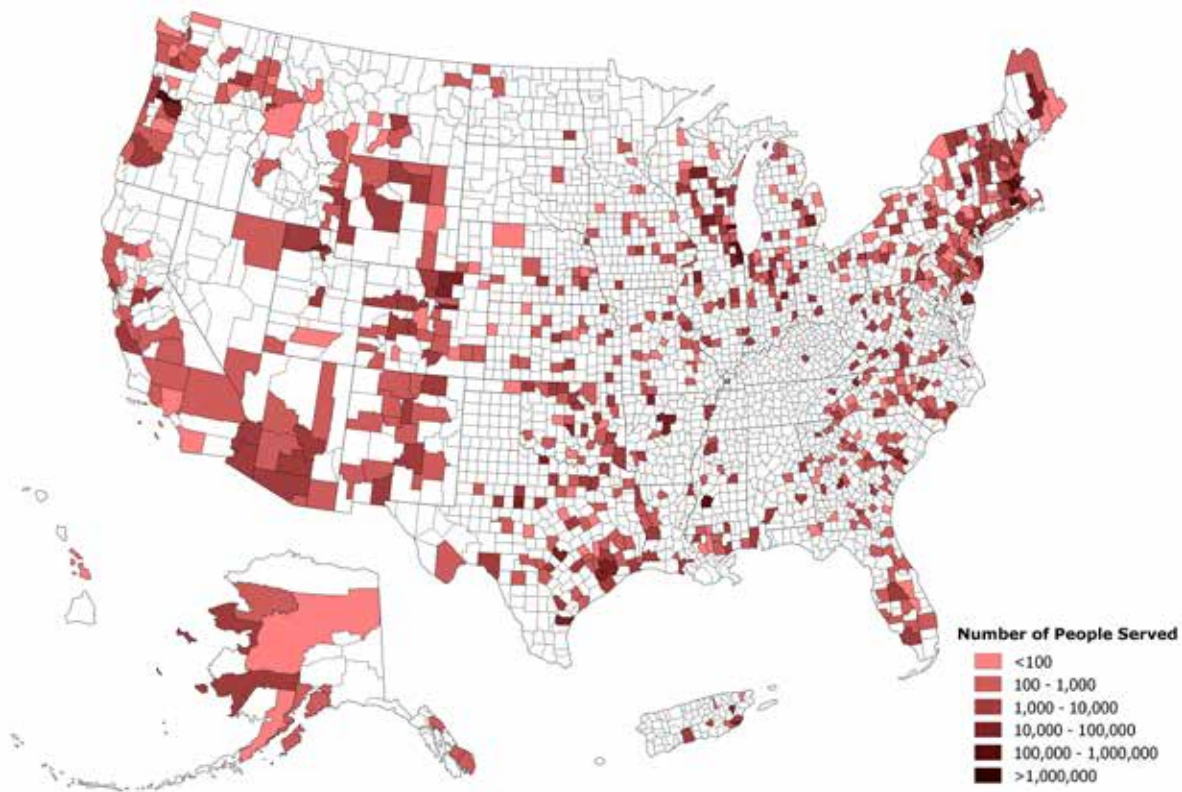


FIGURE 3: COMMUNITY WATER SYSTEMS WITH ACTION LEVEL EXCEEDANCES (ALES)



ENDNOTES

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