PRIDE AND PREJUDICE AND ADMINISTRATIVE ZOMBIES: HOW ECONOMIC WOES, OUTDATED ENVIRONMENTAL REGULATIONS, AND STATE EXCEPTIONALISM FAILED FLINT, MICHIGAN

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It was just over forty years ago, shortly before the Safe Drinking Water Act was passed, that a group of mothers in the small, sleepy town of Woburn, Massachusetts realized there just may have been a connection between their children's leukemia and the town's water supply. They withstood the terrible smell and masked the water's rancid flavor with orange juice. For months they inquired, complained, and assembled in hopes that someone in a position of authority would notice what was so obvious to them. And for months they were dismissed and even ridiculed. Turns out they were right. It took a lawsuit and years of work by the Environmental Protection Agency, epidemiologists, and lawyers to shine a light on the seriousness of the contamination, the consequences, and the need for regulatory oversight.

Fast forward to 2014: a group of concerned mothers begin complaining about the taste and smell of the water in Flint, Michigan. Bringing bottles of brown water with them to assemblies in front of the town hall did little to prompt city and state officials to do anything. It took a caring pediatrician and a brave professor to wrangle city, state, and even federal officials into acknowledging the highly toxic levels of lead in the water supply. But this time, more than

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forty years later, it should have been different. With decades of perspective and what some say are "overreaching" regulations in place, the environmental disaster in Flint should not have happened.

This Article explores how and why the crisis occurred, despite the safeguards created by the Safe Drinking Water Act and the Lead and Copper Rule of 1991, which were meant to prevent this kind of disaster. This Article will then argue why the current "action level" for lead concentrations in tap water, which requires public water systems to act to protect the public, is unsafe according to current toxicological and epidemiological data. Finally, it will discuss how the current climate of "state exceptionalism" and lack of federal oversight contributed to the crisis, and suggest regulatory changes to provide a much needed public safety net.

INTRODUCTION

> *But isn't the human factor what connects us so deeply to our past? Will future generations care as much for chronologies and casualty statistics as they would for personal accounts of individuals not so different from themselves? By excluding the human factor, aren't we risking the kind of personal detachment from a history that may, heaven forbid, lead us one day to repeat it?*[1]

In 2014, mothers in Flint, Michigan, began to sound the alarm about the state of the drinking water in their town. They were met with resistance and continuous denials from city and state officials regarding their concerns about lead concentrations. This Article details those revelations, highlights the primary actors and their responses, and exposes the loopholes in the current regulatory structure that allowed individuals at local, state, and federal levels to manipulate data to comply with the Lead and Copper Rule and to shirk responsibilities in providing safe drinking water to communities. While the current regulatory structure was put in place to prevent a drinking water crisis that was much more common in communities like Woburn, Massachusetts, Flint, Michigan, provides a perfect example of how the regulatory structure can fail even our minimal expectations for safe drinking water.

Part I of the Article details the history behind the Flint crisis and Part II offers a historical perspective that is meant to demonstrate that despite our best efforts to regulate, history does, in fact, repeat itself. Part III provides the toxicology and scientific evidence of the detrimental effects of lead. Part IV highlights how environmental justice issues are evident in the Flint crisis. Part V provides an overview of the regulatory structure that was created to prevent this type of crisis from occurring. Part VI discusses how the dynamics of politics, state exceptionalism, and economic woes all worked together to thwart the protections provided under the Safe Drinking Water Act (SDWA). And finally, Part VII provides a set of suggested solutions for tightening reporting requirements and

1. MAX BROOKS, WORLD WAR Z: AN ORAL HISTORY OF THE ZOMBIE WAR 2 (2006).

eliminating loopholes in the SDWA and the Lead and Copper Rule that continue to allow for unreliable lead testing and poor communication between governmental agencies and insignificant efforts toward public education and outreach. Without these necessary requirements in place, it is possible that we may see another community poisoning that places a disproportionate impact upon vulnerable populations that the regulations are meant to protect.

I. THE POISONING

A raised, bumpy rash covered his body.[2] Every time he came into contact with water it reappeared or worsened.[3] His mother, long-time Flint resident LeeAnne Walters, first noticed a problem in the summer of 2014, when her four-year old son developed a rash that several doctors dismissed as dermatitis and even scabies.[4] LeeAnne finally connected the flare-ups to her son's contact with the tap water, either through baths or swimming in the backyard pool.[5] The Walters family quit drinking the water in December 2014, when their fourteen-year-old daughter got sick as the water coming out of their tap was brown; changing their water filter cartridge several times a month brought no relief.[6] At that point, there were surely a lot of citizens in Flint who knew that something was wrong with their water—its orangish-brown color and the taste were dead giveaways. But this particular mother started inquiring further.[7] What she found has rocked the city of Flint and the state of Michigan to the core. It was lead in her tap water—enough in fact, to classify the water as "hazardous waste" according to the EPA.[8] The administrative framework failed LeeAnne Walters and the citizens of Flint. The story of Flint dates back many decades to the beginnings of the town and its use of the Flint River. The following subsections of this Article

2. Lindsey Smith, *This Mom Helped Uncover What Was Really Going on with Flint's Water*, MICH. RADIO (Dec. 14, 2015), http://michiganradio.org/post/mom-helped-uncover-what-was-really-going-flint-s-water#stream/0 [https://perma.cc/B5DF-8ATG].

3. *Id.*

4. *Id.*

5. *Id.*

6. *Id.*

7. *See id.*

8. *Id.*

provide a brief history of how the water crisis in Flint began, which started long before 2014.

A. The Flint River's Toxic History

"It would be a mistake to conclude that Flint's predicament is simply the result of government mismanagement."[9] Rather, it all starts with historical dumping and pollution that contaminated the river decades earlier.[10] The Flint River is warmer and more stagnant than other water sources like Lake Huron.[11] And it has historically been used as a receptacle for biological waste, treated and untreated industrial and human waste, and salt and contaminants washed into the river by rain or snow melt.[12] The pollution dates back to the 1830s when lumber and paper mills introduced industrial waste into the river.[13] From 1900 to 1930, Flint saw an industrial and economic boom with its population reaching 150,000; and that's when the fish began to die.[14] After World War II, the city experienced another boom and the population rose to 200,000.[15] As a result, a 1955 report stated that the river could no longer service the industrial and residential needs of its citizens.[16] Five years later, the Michigan Water Resources Commission gave Flint a three-year deadline to "abate unlawful pollution" caused by landfills, factories, meatpacking plants, and the city's wastewater treatment plant.[17] In 1967,

9. Tim Carmody, *How the Flint River Got So Toxic*, VERGE (Feb. 26, 2016, 10:39 AM), http://www.theverge.com/2016/2/26/11117022/flint-michigan-water-crisis-lead-pollution-history [https://perma.cc/4ZBW-A96N] (quoting Andrew Highsmith, author of DEMOLITION MEANS PROGRESS: FLINT, MICHIGAN, AND THE FATE OF THE AMERICAN METROPOLIS (2015)).

10. *Id.*

11. *Id.*

12. *Id.*

13. *Id.*

14. *Id.* Carmody's historical research turned up correspondence in 1934 from Ivan Kester, Genesee County's conservation officer to the University of Michigan's newly formed Institute for Fisheries Research. *Id.* He wrote: "Enclosed you will find some fish and a sample of water taken from the Flint River in Flushing. There are thousands of fish dying in this river, and I am under the impression that Copper-Cyanide is the cause of these fish dying." *Id.* The university subsequently determined that pollution had lowered oxygen levels in the river, suffocating the fish. *Id.*

15. *Id.*

16. *Id.*

17. *Id.*

Flint switched to water processed by Detroit to secure more drinking water for the city's needs,[18] but that did not remedy the already-polluted river.[19]

It wasn't until 1974, two years after the passage of the Clean Water Act, that there were some reported improvements upstream in the Flint River, even though significant toxins remained downstream from raw sewage discharges, phenol from GM plants, ammonia from the wastewater facilities, and phosphates from fertilizer treatments.[20] Road salt used on the bridges during winter months had also been a historical culprit of the river's elevated chlorine levels, making the water more corrosive and damaging to pipes.[21] Between 1986 and 1988, high levels of coliform bacteria[22] were discovered in the Flint River.[23] The cities of Flint and Detroit blamed each other and the source of the bacteria was never found.[24] Eleven years later, in 1999, a subcontractor digging a trench hit the city's unmarked sewer line, causing over 22 million gallons of waste to spill into the river.[25] For the next year and a half, Flint officials prohibited any direct contact with the river, including swimming and fishing.[26] In 2000, Michigan passed a new law requiring municipal and county authorities to report sewage spills to the Michigan Department of Environmental Quality.[27]

18. *Id.*

19. *Id.*

20. *Id.* The author reports that these chemicals cause skin rashes, cardiovascular and gastrointestinal diseases, and other health problems when ingested. *Id.*

21. *Id.*

22. Coliform bacteria are types of bacteria found in the digestive tract of animals, including humans, and their wastes. The bacteria are also often found in plant and soil material. Most do not cause disease, however there are some rare strains that can cause serious illnesses. *Coliform Bacteria in Drinking Water*, N.Y. STATE DEP'T OF HEALTH, https://www.health.ny.gov/environmental/water/drinking/coliform_bacteria.htm (last visited Nov. 1, 2016) [https://perma.cc/RPK8-B39N]. The EPA requires public water systems to test for coliform bacteria as a reasonable indicator of whether pathogenic bacteria are present in the water. *See Revised Total Coliform Rule and Total Coliform Rule, Drinking Water Requirements for States and Public Water Systems*, EPA, https://www.epa.gov/dwreginfo/revised-total-coliform-rule-and-total-coliform-rule (last visited Nov. 1, 2016) [https://perma.cc/PS4F-V7LV].

23. Carmody, *supra* note 9.

24. *Id.*

25. *Id.*

26. *Id.*

27. *Id. See also* S.B. 1216, 90th Leg., Reg. Sess. (Mich. 2000) (amending the Natural Resources and Environmental Protection Act of 1994).

Flint declined to disclose any spills it had not already reported.[28] After the new law was passed, Flint experienced at least two more sewage spills, including an 8-million gallon spill in March 2006 and another 18.1-million gallon spill in 2008.[29] City officials continued to reassure the community by repeating the sentiment espoused by James Helmstetter, the county's director of environmental health in 1999, after the big spill in 1990:[30] "As far as we know, no [community] uses the Flint River for a drinking water source."[31]

Then, in 2012, the idea of using the Flint River as a water source for Flint came up as an option to ease economic woes. Ed Kurtz, the emergency manager appointed by Governor Snyder, initially rejected the idea after discussing the option with the Michigan Department of Environmental Quality.[32] Two years later, officials changed their minds.[33]

B. What Led to Flint's Use of the River as a Water Source

Flint had been experiencing real economic hardship since 2000.[34] A once-booming industrial city, Flint lost over twenty percent of its population due to the economic downturn and the fall of the auto industry.[35] Deindustrialization in Flint, a town located in the heart of the Rust Belt, began as early as the 1960s, resulting in the movement of predominantly affluent, white families into less racially diverse suburbs.[36] In 2002, and subsequently in 2011, the consequences of the financial crises hit Flint hard, sending the town into an economic tailspin that resulted in Governor Snyder declaring a state of financial emergency in Flint, which was, at that time, facing a $15

28. Carmody, *supra* note 9.
29. *Id.*
30. *Id.*
31. *Id.*
32. Curt Guyette, *Exclusive: Gov. Rick Snyder's Men Originally Rejected Using Flint's Toxic River*, DAILY BEAST (Jan. 24, 2016, 7:00 PM), http://www.thedailybeast.com/articles/2016/01/24/exclusive-gov-rick-snyder-s-men-originally-rejected-using-flint-s-toxic-river.html [https://perma.cc/TF7M-VGHC].
33. *See id.*
34. Lolita Brayman, *Why Haven't Flint Residents Fled?,* WASH. POST (Feb. 22, 2016), https://www.washingtonpost.com/news/monkey-cage/wp/2016/02/22/why-havent-flint-residents-fled/ [https://perma.cc/E9AE-8M97].
35. *Id.*
36. *Id.*

million dollar deficit.[37] He then appointed Ed Kurtz, the first of several "emergency managers," to run the city's finances for them.[38]

The real trouble began in the spring of 2013 when, in an effort to save money, the Flint City Council voted seven to one to buy water from a soon-to-be-built regional pipeline from Karegnondi Water Authority, supplying water from Lake Huron.[39] Former Flint Mayor Dayne Walling supported the move, and in June 2013, Ed Kurtz signed a contract to begin using the Flint River as a temporary solution until the pipeline to carry water from Lake Huron was built.[40] Effectively being stripped of its power, there was no vote by the Flint City Council, nor was there a public referendum on Kurtz's decision to use the Flint River as a temporary source of drinking water.[41] The Detroit Water and Sewer Department soon provided notice of termination of its water contract with the city, effective one year later, and on April 25, 2014, Flint began using water from the Flint River as its interim source.[42]

Glasses of the new Flint drinking water clinked as city officials, accompanied by the media, pressed the big, red button that would officially connect the city to the Flint River while publicly celebrating the move and the financial savings.[43] But there was one big problem: it did not occur to anybody to test the water, much less add the needed anti-corrosives to combat the caustic nature of the new water source.[44] Just how unfit the water was for drinking would soon be realized by an outbreak that posed serious risks for Flint's residents.

C. Legionnaires' Disease, Inaction, and Finger Pointing

The first signs of trouble became apparent when a boil-

37. Josh Sanburn, *The Toxic Tap*, TIME, Feb. 1, 2016, at 32, 36.

38. *Id.*

39. Guyette, *supra* note 32. At that time, the pipeline was expected to be completed and online by 2016. Sanburn, *supra* note 37, at 36.

40. Sanburn, *supra* note 37, at 36.

41. *Id.*

42. *Id.*

43. Steve Carmody, *Flint Nears Anniversary of Switch to Flint River for Tap Water*, MICH. RADIO (Apr. 24, 2015), http://michiganradio.org/post/flint-nears-anniversary-switch-flint-river-tap-water#stream/0 [https://perma.cc/WD63-47TK].

44. *See id.*

water notice went into effect in the summer of 2014.[45] Flint residents were told to boil their water several times because of the high levels of E. coli in the tap water.[46] In order to combat the bacteria problem, the city treated the water with additional disinfectants, like chlorine, that can react with organic material in the water to produce carcinogenic byproducts such as trihalomethanes (THM).[47] THMs are a specific group of organic compounds which are derivatives of methane and include compounds like chloroform and bromoform.[48] The particular concern with THMs in tap water lies in the fact that chronic exposure to elevated levels may cause kidney, liver, or central nervous system problems and even a cancer risk.[49] Hence, public water suppliers are required to inform the public when levels are exceedingly high. Around this time, Flint residents complained of their hair falling out in clumps in the shower.[50] On January 2, 2015, a little over a year after the switch to the Flint River, the City of Flint finally released a notice, as required under the Michigan Safe Drinking Water Act,[51] alerting residents of the elevated levels of THMs.[52]

The THMs were a product of the increased disinfectant that Flint needed to address not only an increase in E. coli[53] but also an outbreak of Legionnaires' Disease, a deadly form of pneumonia caused by a certain bacteria that can multiply in

45. *Id.*

46. *Id.*

47. Carmody, *supra* note 9. The disinfection treatment also makes water more acidic, which corrodes pipes. *Id.*

48. 40 C.F.R. § 141.2 (2016).

49. 40 C.F.R. § 141.2 app. A to subpart O.

50. Carmody, *supra* note 43.

51. Michigan Safe Drinking Water Act, 1976 PA 399 § 325.1004.

52. *See* Michael Glasgow, *TTHM (Total Trihalomethanes) Notification*, CITY OF FLINT (Jan. 2, 2015), https://www.cityofflint.com/wp-content/uploads/TTHM-Notification-Final.pdf [https://perma.cc/W4VM-HFGE]. The notice specifically stated: "The average of the results at ANY of the eight locations must not exceed the maximum contaminant level (MCL) for TTHMs, otherwise our water system exceeds the Maximum Contaminant Level (MCL). The standard for TTHMs is 80 ug/L. The location reporting the highest TTHM level was 99 ug/L; thus, our water system exceeds the TTHM MCL." *Id.* The advice was simple: "There is nothing you need to do unless you have a severely compromised immune system, have an infant, or are elderly." *Id.*

53. Ron Fonger, *City Warns of Potential Health Risks after Flint Water Tests Revealed Too Much Disinfection Byproduct*, MLIVE (Jan. 2, 2015), http://www.mlive.com/news/flint/index.ssf/2015/01/flint_water_has_high_disinfect.html [https://perma.cc/668M-M5PK].

untreated water systems.[54] From June 2014 through October 2015, the outbreak sickened at least eighty-seven people in the Flint area, leaving nine dead.[55] In response to local concerns about the outbreak, state officials stated that they could not definitively link the outbreak of Legionnaires' to Flint's contaminated water supply, partly due to the fact that cultures were never collected from the sickened patients.[56] However, as early as October 2014, the possibility of a link was raised in internal government emails.[57] Yet state officials did not inform the public of the outbreak until January 2015—an omission that some experts have described as "bewildering and highly unusual," particularly given the number of cases.[58]

The slow reaction of the officials at that point was indicative of what was to come. The New York Times' recent examination of emails and interviews with Flint residents shows a pattern of the government's response throughout the crisis: "a failure to act swiftly to address a dangerous problem or warn the public."[59] State and local officials responded by finger-pointing.[60] According to Janet Stout, an expert on Legionnaires' disease at the University of Pittsburgh whom Genesee County officials asked for help, state and environmental officials even impeded the investigation by refusing to invite the CDC experts to assist it with the outbreak investigation.[61]

Meanwhile, Michigan blamed Genesee County for not following the advice it provided with regard to investigation requirements.[62] Similarly, county officials were blaming the City of Flint for not providing them with information about its

54. Abby Goodnough, *Legionnaires' Outbreak in Flint Was Met With Silence*, N.Y. TIMES (Feb. 22, 2016), http://www.nytimes.com/2016/02/23/us/legionnaires-outbreak-in-flint-was-met-with-silence.html [https://perma.cc/567R-RZNR].

55. *Id.*

56. *Id.*

57. *Id.*

58. *Id.*

59. *Id*. In fact, Ms. Goodnough reports that internal "emails [were] released by the Michigan Department of Health and Human Services and the health department in Genesee County, which includes Flint. Some at the state level seemed more concerned about following bureaucratic protocol, and not raising public alarm, than protecting residents." *Id.*

60. *See id.*

61. *Id.* ("'[We] tried to offer our services to Genesee and thus far have gotten very little information and/or willingness to receive assistance,' a state epidemiologist wrote in an Oct. 13 email." *Id.*)

62. *Id.*

water and later for suggesting a connection between the outbreak and the water.[63] In January 2015, as part of an email and public records request, Jim Henry, Genesee County's Environmental Health Supervisor, stated that he believed the increase in Legionnaires' cases "closely corresponds with the time frame of the switch to Flint River water."[64] Brad Wurfel, a spokesman for the State Department of Environmental Protection, forwarded Henry's email to several high-level state officials and called it "beyond irresponsible" for Mr. Henry to suggest such a connection.[65]

D. LeeAnne Walters' Toxic Water

LeeAnne Walters received the news of the lead levels in her water in 2015, but could not quite believe it.[66] She was trying to comprehend what 13,200 parts per billion (ppb) of lead in her water really meant.[67] Twice before, she had received news from Mike Glasgow, the Utilities Administrator for the City of Flint, that the lead levels in her water greatly exceeded the federally mandated "action level"[68] of fifteen ppb at 104 ppb and 397 ppb, respectively.[69] The result of the third test equated to more than twice the level of what the EPA considered hazardous waste.[70] Walters had her children tested for lead, and the test confirmed that her four-year-old had lead poisoning.[71] Even though she was assured by the City of Flint that her water was safe, Walters reached out to the EPA. She was aided by Miguel Del Toral, an EPA water specialist who immediately sent an internal memo to his boss after the EPA's

63. *Id.*
64. *Id.*
65. *Id.*
66. *Id.*
67. *Id.*
68. 40 C.F.R. § 141.80(C)(1) (2016). According to the EPA, the federally mandated action level for lead triggers the duty of local, state, and federal officials who must act to control corrosion caused by the water—and which has resulted in the elevated lead level—and to inform and educate the public. *Lead and Copper Rule*, EPA, http://www.epa.gov/dwreginfo/lead-and-copper-rule (last visited Mar. 4, 2016) [http://perma.cc/7CS6-7NGN].
69. Curt Guyette, *Scary: Leaded Water and One Flint Family's Toxic Nightmare*, DEADLINE DETROIT (July 9, 2015, 11:28 PM), http://www.deadlinedetroit.com/articles/12697/scary_leaded_water_and_one_flint_family_s_toxic_nightmare#.VsvQlpMrLMI [http://perma.cc/39PU-PR5N].
70. *Id.*
71. *Id.*

test revealed the 13,200 ppb concentration.[72]

II. WE'VE SEEN IT BEFORE AND WE'RE SEEING IT AGAIN

Change in legislative actions and policy-making often result from previous environmental disasters out of which the public demands a change.[73] In other words, we arguably learn from these disasters and effect changes to prevent them from occurring again. Even with this historical perspective, and our attempts to regulate based on what we have learned, we are still dealing with water contaminants that can drastically effect the health of our children.

A. Woburn, Massachusetts, 40 years earlier . . .

Anne Anderson's son, Jimmy, was diagnosed with acute lymphocytic leukemia in 1972, just a few years before the Safe Drinking Water Act was passed by Congress.[74] After learning of one childhood leukemia case after another in her neighborhood in Woburn, Massachusetts, Anne began writing in a spiral notebook the names of the children, their addresses, their ages, and their dates of diagnoses.[75] She had a notion that there was something they shared that could have caused this: the water.[76] It never smelled right, looked right, or tasted right.[77] Anne later recalled her experience with the water during a deposition:

> There were times when it was worse than others, usually during the summer, and then it was almost impossible to drink. My mother would bring some water from Somerville to the house on the weekends, probably about three quarts, which we used as drinking water. The rest of the time, when we could mask the flavor of it with Zarex or orange juice or coffee or whatever, then . . . we used water from the tap. But you couldn't even mask it. It ruined the dishwasher. The

72. Sanburn, *supra* note 37, at 37.

73. *See* Louis A. Di Leo, *The Polar Bear Ethic: From the Reactionary Trend in Environmental Lawmaking to the Climate Change Imperative*, 28 J. ENVTL. L. & LITIG. 347, 358–59 (2013).

74. PHIL BROWN & EDWIN J. MIKKELSEN, NO SAFE PLACE 11 (1997).

75. JONATHAN HARR, A CIVIL ACTION 21 (1995).

76. *Id.*

77. *Id.*

> door corroded to such a degree that it had to be replaced. The prongs that hold the dishes just gave way and broke off.[78]

Their water supply came from Wells G and H, which had both pumped water from the Aberjona Aquifer since 1967.[79] That summer, the city contemplated shutting down both wells due to the "poor bacterial quality" of the water.[80] The city soon began chlorination, which then led to residents' complaints about the taste, odor, and rust-colored appearance of the water.[81] The city engineer assured a city council committee that the water was "absolutely safe," stating that the taste came from the chlorine and the color from the water's naturally high manganese and iron content.[82] It turns out that the water wasn't safe. The subsequent trials against W.R. Grace, Beatrice, and other companies in the petrochemical industry located just upstream of the water source revealed toxic levels of trichloroethylene, among other contaminants, leading the EPA to designate the area as a Superfund site, placing it on the National Priorities List in 1982.[83]

B. Washington, D.C., in 2001: Cheap Disinfectants, Partial Line Replacements, and Flawed Reporting

More than thirty years later, after the Woburn tragedy and after the passage of the SDWA, children in Washington, D.C., were exposed to dangerously high levels of lead in their tap water. In 2001, Washington, D.C., decided to change its disinfection protocol for treating the bacteria in tap water, choosing to use chloramine instead of chlorine[84] for its water.[85]

78. *Id.* at 21.
79. *Id.* at 22–23.
80. *Id.* at 23.
81. *Id.*
82. *Id.* at 24.
83. *Wells G and H Fact Sheet, Waste Site Cleanup and Reuse in New England*, EPA, https://www3.epa.gov/region1/superfund/sites/wellsgh/factsh.html (last visited Mar. 2, 2016) [http://perma.cc/92XJ-6A4H].
84. Katherine Shaver & Dana Hedgpeth, *D.C.'s Decade-Old Problem of Lead in Water Gets New Attention During Flint Crisis*, WASH. POST (Mar. 17, 2016), https://www.washingtonpost.com/local/dcs-decade-old-problem-of-lead-in-water-gets-new-attention-during-flint-crisis/2016/03/17/79f8d476-ec64-11e5-b0fd-073d5930a7b7_story.html?utm_term=.161ddd207c89 [https://perma.cc/YN98-TX4D].
85. Michael Wines & John Schwartz, *Unsafe Lead Levels in Tap Water Not*

The cheaper alternative drove up lead concentrations in tap water as much as twenty times the federally approved level.[86] City officials did not notify residents for three years.[87] After that, city officials removed part of the pipes that supplied 7,600 homes, later realizing that the partial line replacements "may have made the problem worse."[88] While Washington, D.C., was working on correcting the crisis, Dr. Marc Edwards, an independent scientist from Virginia Tech who was studying the blood lead levels (BLLs) in D.C.'s children, was evaluating the blood lead level data that the CDC's Agency for Toxic Substances and Disease Registry (ATSDR) relied on when it assured D.C. residents in 2004 that their health had not been hurt by spikes in the lead levels in their drinking water.[89] The House Committee on Technology and Science investigated the matter and released a scathing report in May 2010, criticizing the CDC's use of flawed data to support its assertion.[90] The committee's investigation also revealed that the principal author of the CDC report knew that thousands of blood lead level test results were missing from its data for the years 2002 and 2003.[91] The CDC later revised its report and stated that it "found that children living in housing where a lead service line was partially replaced after 2003 were more likely to have [elevated blood lead levels] than children living in housing without a lead service line."[92] The CDC went on to say that

Limited to Flint, N.Y. TIMES (Feb. 8, 2016), http://www.nytimes.com/2016/02/09/us/regulatory-gaps-leave-unsafe-lead-levels-in-water-nationwide.html?_r=0 [http://perma.cc/CN2Y-HAJ9].

86. *Id.*

87. *Id.*

88. Ashley Halsey III & Mike DeBonis, *Water in Thousands of D.C. Homes Might Still be Contaminated by Lead, CDC Says*, WASH. POST (Dec. 2, 2010, 9:13 AM), http://www.washingtonpost.com/wp-dyn/content/article/2010/12/01/AR2010120107286.html [http://perma.cc/J68Z-YQ43].

89. H.R. COMM. ON SCI. & TECH. SUBCOMM. ON INVESTIGATIONS & OVERSIGHT, HEARING CHARTER, PREVENTING HARM—PROTECTING HEALTH: REFORMING CDC'S ENVIRONMENTAL PUBLIC HEALTH PRACTICES (2010), https://science.house.gov/sites/republicans.science.house.gov/files/documents/hearings/052010_charter.pdf [https://perma.cc/5G5S-EEPS]. The subcommittee noted that it found in its own investigation that the number of children with elevated blood lead levels in 2002–03 was at least *three* times greater than reported by the CDC. *Id.* at 4.

90. *Congress Questions CDC Report on Lead in DC Drinking Water,* US MED. (June 2010), http://www.usmedicine.com/2010-issues/june-2010/congress-questions-cdc-report-on-lead-in-dc-drinking-water/ [http://perma.cc/7MTT-YMQS].

91. *Id.*

92. Ashley Halsey III & Mike DeBonis, *Lead May be Leaching into Thousands*

"partial lead service line replacement was not effective in decreasing risk for [higher blood lead levels]," meaning that the risk was similar for those people who never had their lead service lines replaced.[93]

During the hearing, testimony about the Government Accountability Office's review of the ATSDR revealed that the policies and procedures established for public health product preparation "lack some of the critical controls needed to provide some reasonable assurance of product quality."[94] Members of the panel questioned why the ATSDR's findings were exempt from the peer review process, to which the ATSDR official noted that the length of peer review could impede its ability to quickly disseminate information.[95] Dr. Marc Edwards concluded that previous studies minimized the effect of the elevated level of lead in the water.[96] He also testified before the subcommittee that he believed that the new analysis the CDC published was still flawed because it only corrected data from 2003 and did not correct other data.[97]

In his own study, Edwards reported that the previous research had been based on some outdated assumptions, and there was a delay in actual blood sampling because the city had not notified the residents for a few months up to a full year after the discovery of hazardous water lead levels.[98] Dr. Edwards observed that elevated blood lead levels (more than 10 μg/dL) in children younger than 1.3 years increased more than four times over a four year period from 2001–2004 when lead in the D.C. water was higher.[99]

The D.C. incident provided crucial lessons about the

of D.C. Homes, WASH. POST (Dec. 2, 2010), http://www.washingtonpost.com/wp-dyn/content/article/2010/12/01/AR2010120107182.html [https://perma.cc/6DX9-4RP6]

93. *Id.*

94. *Id.*

95. *Id.*

96. Marc Edwards et al., *Elevated Blood Lead in Young Children Due to Lead-Contaminated Drinking Water: Washington, DC, 2001–2004*, 43 ENV. SCI. TECH. 1618, 1618 (2009).

97. *Congress Questions CDC Report on Lead in DC Drinking Water*, *supra* note 90.

98. Edwards et al., *supra* note 96, at 1622.

99. *Id.* at 1618. Blood lead levels (BLLs) are measured in μg/dL (micrograms per deciliter), which is a unit that indicates the amount of lead circulating in the blood stream. Substance Data Sheet for Occupational Exposure to Lead, 29 CFR § 1926.62 App. A (1993).

importance of prompt notification and obtaining accurate testing data.[100] Since the half-life[101] of lead in blood is twenty-six to thirty-eight days, any testing that occurred after the notice was provided arguably did not adequately account for the highest blood lead levels experienced by children.[102] If the goal of the Lead and Copper Rule is to protect public health by requiring that utilities employ techniques to minimize lead and copper levels in drinking water, then revised timelines regarding notice to the public regarding water treatment and lead test results is crucial. This failure isn't limited to Flint, Michigan. Other cities like Sebring, Ohio, are now experiencing similar dilemmas with lead in drinking water.

C. Sebring, Ohio, 2016: Failure at the Local and State Levels

On the heels of the lead crisis in Flint, Michigan, the health officials in Sebring, Ohio, a town of around 8,100 people, announced that lead levels in the water had gone unchecked—a local official had failed to perform the mandatory testing, submitted inadequate paperwork, and possibly even falsified documents.[103] Sebring water officials had conducted lead water tests in August and September 2015, with lead levels measuring between 21 ppb and 34 ppb, in some cases more than double the federal action level of 15 ppb, and failed to report it to the public until early January 2016.[104]

Letters from the Ohio EPA to James Bates, the operator of the Sebring treatment plant, and others, evidenced the agency's knowledge and failure to act on the situation.[105] The

100. *See* Edwards et al., *supra* note 96, at 1622.

101. *See* MICHAEL TRUSH, ABSORPTION, DISTRIBUTION, AND EXCRETION, LECTURE, JOHNS HOPKINS BLOOMBERG SCHOOL OF PUBLIC HEALTH 39 (2008), http://ocw.jhsph.edu/courses/publichealthtoxicology/PDFs/Lecture1_Trush.pdf [http://perma.cc/SZ98-YFEA]. The biological half-life (T1/2) is the time required for some measure of the amount of a chemical in the body (for example, body burden, tissue concentration) to decrease to 1/2 its value at the beginning of the observational interval. *Id.*

102. Edwards et al., *supra* note 96, at 1622.

103. Richard Pérez-Peña, *Lead in Ohio Villages' Water Went Uncurbed for Months, State Says*, N.Y. TIMES (Jan. 26, 2016), http://www.nytimes.com/2016/01/27/us/lead-in-ohio-villages-water-went-uncurbed-for-months-state-says.html [http://perma.cc/M688-GER5].

104. *Id.*

105. *Id.*

letters notified the water agency that it violated state requirements by failing to notify the state of the test results, failing to include the water sampling data, failing to notify its consumers within thirty days of the results, and submitting inadequate paperwork.[106] The Ohio EPA even set a deadline of November 29, 2015, to notify the public of the threat, which went unheeded by the Sebring treatment plant.[107] "It has become apparent that our field office was too patient in dealing with the village of Sebring's cat-and-mouse game and should have had closer scrutiny on the water system meeting its deadlines."[108] The Ohio EPA, in realizing the lax enforcement of its field office, further commented that "we are in the process of developing new protocols and appropriate personnel actions to ensure that our field staff takes action when it appears that a water system is not complying and taking their review seriously."[109] On January 25, 2015, the Ohio EPA issued an emergency order effectively barring Bates from working at the plant.[110] The EPA has also reported that Bates falsified records that he submitted to the EPA, which is now calling for a criminal investigation.[111] As of February 2016, the Ohio EPA had conducted new testing and reported that lead levels were within federal limits; it also conducted an internal administrative review.[112] The state agency found that an employee had failed to ensure that the original lead tests were sent to the agency's field office.[113] The employee contends that

106. *Id.*

107. Laura Arenschield, *Ohio EPA Knew of Lead Contamination in Sebring for Months*, COLUMBUS DISPATCH (Jan. 26, 2016), http://www.dispatch.com/content/stories/local/2016/01/26/Ohio-EPA-knew-about-lead-issues-in-Sebring.html [http://perma.cc/8SBW-XNYV].

108. Pérez-Peña, *supra* note 103.

109. *Id.*

110. Laura Arenschield, *supra* note 107.

111. *Id.* Ms. Arenschield reported the following response from Mr. Bates for her story: "He said the plant sent some public notifications in December. 'We did 40 samples, and we sent all the information to the 40 people who actually (lived) where the water was tested.' The test period was June 1 to Sept[ember] 30. When asked why notifications didn't go out sooner, Bates said he could not answer that yet." *Id.*

112. Laura Arenschield, *Ohio EPA Fires Two Over Sebring Contamination*, COLUMBUS DISPATCH (Feb. 17, 2016), http://www.dispatch.com/content/stories/local/2016/02/17/ohio-epa-fires-two-over-sebring-contamination.html [http://perma.cc/7QK2-5VSW].

113. *Id.*

he was responsible for review of 600 to 700 water systems[114] and "[y]ou can only do so much in a given day."[115] The evidence of alleged fraud and, at the very least, an overwhelmed staff who were not fully equipped to handle mandatory review, is unacceptable given the immediate and unforgiving effects of lead exposure in children. While the EPA regularly deals with the release of toxicants in the environment, few impact children in a way that is as immediate and consequential as lead.[116]

III. THE PROBLEM WITH LEAD

The lead problem in children was first discovered and exposed by a local pediatrician in Flint, Michigan named Dr. Mona Hanna-Attisha.[117] As a pediatrician, she knew of the dangerous effects of lead in children.[118] On a hunch, she began testing children in Flint for lead—the results of the test demonstrated that the children were being exposed to dangerous levels of lead.[119] Aside from the shock of finding a prevalence of lead exposure in her patients, she was forced to deal with contentions that her results were flawed:[120]

> I was physically ill. I think my heart rate went up to 200. You know, you check and you double-check, and you know your research is right. The numbers didn't lie, but when the state is telling you you're wrong, it's hard not to second-guess yourself.[121]

114. *Id.*
115. *Id.*
116. *Preventing Lead Poisoning in Young Children: Chapter 2*, CDC, https://www.cdc.gov/nceh/lead/publications/books/plpyc/chapter2.htm#Effectsoflead (last visited Jan. 29, 2017) [https://perma.cc/68G7-P6FW].
117. Sanjay Gupta et al., *'Our Mouths Were Ajar': Doctor's Fight to Expose Flint's Water Crisis*, CNN (Jan. 22, 2016), http://www.cnn.com/2016/01/21/health/flint-water-mona-hanna-attish/ [http://perma.cc/8R5V-MT33].
118. *Id.*
119. *Id.*
120. *Id.*
121. *Id.* (emphasis added).

A. A Heroic Professor's Study and A Local Pediatrician's Revelation

Dr. Mona Hanna-Attisha, a pediatrician at a public hospital in Flint, was never in the business of wanting to be famous.[122] In fact, had it not been for a fateful dinner party one evening in August 2015, her revelations and scientific data on the lead levels in her tiny patients from Flint, Michigan, might not ever have happened.[123] That evening, her guest and friend, who also happened to be a water expert with the EPA, commented that she heard that "Flint wasn't doing corrosion control" to prevent the old pipes from leaching lead into the water supply.[124] "When pediatricians hear anything about lead, we absolutely freak out," said Hanna-Attisha.[125] In fact, "lead is a potent known neurotoxin[] [and] [t]he CDC, the AAP,[126] everybody tells us that there is no safe level of lead."[127]

Dr. Hanna-Attisha had been equally concerned when Marc Edwards released the results of his own independent water tests of Flint area homes.[128] Edwards sent 300 sample kits to various Flint residents and received 252 samples back.[129] A little over forty percent (101 of 252 samples) showed that a first-draw sampling of the water was over 5 μg/dL, while the even more worrisome overall results indicated that the lead in the water was at twenty-five ppb, easily exceeding the Lead and Copper Rule's "action level" of fifteen ppb and directly contradicting the city's own results.[130] Hanna-Attisha conducted her own analysis in her patients and found that the blood lead levels in Flint children had doubled and nearly even

122. *Id.*
123. *Id.*
124. *Id.*
125. *Id.*
126. AAP stands for American Academy of Pediatrics.
127. Gupta et al., *supra* note 117.
128. Chris D'Angelo, *How a Stubborn Pediatrician Forced the State to Take Flint's Water Crisis Seriously*, HUFFINGTON POST (Jan. 21, 2016), http://www.huffingtonpost.com/entry/pediatrician-forced-state-to-take-flint-crisis-seriously_us_569febbfe4b076aadcc5014e [http://perma.cc/J8ER-LXAC].
129. Marc Edwards, *Our Sampling of 252 Homes Demonstrates a High Lead in Water Risk: Flint Should be Failing to Meet the EPA Lead and Copper Rule*, FLINT WATER STUDY (Sept. 8, 2015), http://flintwaterstudy.org/2015/09/our-sampling-of-252-homes-demonstrates-a-high-lead-in-water-risk-flint-should-be-failing-to-meet-the-epa-lead-and-copper-rule/ [https://perma.cc/4S93-W95L].
130. *Id.* Edwards also noted that several samples even exceeded 100 ppb. *Id.*

tripled since the city had switched to the Flint River.[131] Concerned about the public's safety, she immediately held a press conference regarding her findings and was subsequently denounced by the state of Michigan as an "unfortunate researcher" who was causing "mass hysteria."[132] "We knew the numbers were right. We checked and we double checked," Hanna-Attisha said.[133] "We knew that lead in that water was getting into the bodies of children. So we stood our ground."[134] The state finally admitted that the water was corroding the pipes.[135] Pipe corrosion can lead to vastly elevated levels of lead in the drinking water and, as the CDC has stated that there is no safe level of lead in children, the failure to maintain pipe integrity violates the most important step in protecting children and that is to prevent exposure before it occurs.[136]

B. The Toxicology of Lead

Lead is a naturally occurring metal found in small amounts throughout the earth's crust.[137] However, the biggest source of exposure is from anthropogenic activities and products such as lead batteries, paint,[138] lead pipes and solder, and even lead-containing brass plumbing fixtures.[139] Lead is released into drinking water when it leaches from lead pipes or solder because of the chemistry of the water flowing through it.[140]

Lead can enter the body through inhalation, ingestion, maternal-fetal transfer, or even dermal exposure.[141] Once lead

131. D'Angelo, *supra* note 128.
132. *Id.*
133. *Id.*
134. *Id.*
135. *Id.*
136. *See New Blood Lead Level Information*, CTRS. FOR DISEASE CONTROL & PREVENTION (Mar. 15, 2016), https://www.cdc.gov/nceh/lead/acclpp/blood_lead_levels.htm [https://perma.cc/R9SU-BGEH].
137. *ToxFAQs for Lead*, AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, (Aug. 2007), http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=93&tid=22 [https://perma.cc/43PJ-5AC5].
138. ROBERT H. FRIIS, ESSENTIALS OF ENVIRONMENTAL HEALTH 34 (Richard Riegelman ed., 2d ed. 2012).
139. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, U.S. DEP'T OF HEALTH AND HUMAN SERVICES, TOXICOLOGICAL PROFILE FOR LEAD 3 (Aug. 2007), http://www.atsdr.cdc.gov/toxprofiles/tp13.pdf [https://perma.cc/7R29-VFD3].
140. *See id.*
141. *Id.* at 7.

enters the system, it travels via the blood to soft tissues and organs such as the brain, kidneys, muscles, lung, spleen, and heart.[142] After several weeks, the lead then moves to and is stored in the bones and teeth.[143]

According to the EPA, "[l]ead is particularly dangerous to children because their growing bodies absorb more lead than adults and their brains and nervous systems are more sensitive to the damaging effects of lead."[144] Even low exposures to lead can result in developmental and life-long problems for children such as behavior and learning problems, lower IQ, hyperactivity, slowed growth, hearing problems, and anemia.[145] Scientific studies show that the blood lead "level of concern" for children keeps trending downward from a previous 10 μg/dL[146] concentration in a child's blood sample to 5 μg/dL, further reinforcing what is already known: there is no "safe level" of lead.[147]

Children are more vulnerable to lead poisoning and can be exposed to lead all through their lives.[148] They can be exposed to lead in the womb and babies can ingest lead when they breast feed, eat other foods, and drink water that contains lead.[149] Among lead's numerous detrimental health effects, one of the most important is the impairment of cognitive function in children and adults.[150] Children are much more vulnerable than adults due, in part, to differences in toxicokinetics, as children absorb a larger fraction of ingested lead than adults.[151] Even more important is the fact that children's brains and nervous systems are still developing, making

142. *Id.*

143. *Id.*

144. *Learn About Lead*, EPA, http://www.epa.gov/lead/learn-about-lead (last visited Mar. 2, 2016) [https://perma.cc/42QW-6W2C].

145. *Id.*

146. *See Blood Lead Levels in Children*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/nceh/lead/acclpp/lead_levels_in_children_fact_sheet.pdf (last visited Mar. 3, 2017) [https://perma.cc/Y4MC-W6WA]. In fact, experts are now using a 5 μg/dL reference to identify children with blood lead levels that are greatly elevated. This level is based on the U.S. population of children ages 1-5 who are ranked in the highest 2.5 percent for lead levels. *Id.*

147. *See Learn About Lead*, *supra* note 144.

148. AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, *supra* note 139, at 9–10.

149. *Id.*

150. *Id.* at 24.

151. *Id.*

children's anatomy especially susceptible to lead toxicity.[152] Lead has the capacity to mimic minerals such as calcium and cross the placental barrier, potentially causing fetal damage,[153] and lead can cross the blood brain barrier, concentrating in the still developing brain of a child.[154] Lead neurotoxicity occurs when lead interferes with central nervous system development and processes through programed cell death, interference with the storage of neurotransmitter storage and release, and direct effects on mitochondria and cerebrovascular endothelial cells.[155] When children are exposed to elevated levels of lead, the effects may be irreversible.[156] Acutely elevated blood lead levels in children, defined as 70 μg/dL or higher, are associated with severe neurological effects as well as coma and even death.[157] Earlier studies have documented the symptoms that can appear immediately after exposure, and those symptoms may be delayed.[158] Symptoms may include loss of vision, memory, cognitive and behavioral problems, brain damage, and mental retardation.[159] In children who have measured blood lead levels above 15 μg/dL, lead toxicity has been associated with maladaptive behavior.[160] More recent epidemiological studies have evidenced worrying long-term effects of childhood lead exposure like delinquency, antisocial behavior, and even violence.[161]

152. *Id.*

153. *See* FRIIS, *supra* note 138, at 141.

154. Talia Sanders, et al., *Neurotoxic Effects and Biomarkers of Lead Exposure: A Review*, 24 REV. ENV. HEALTH 15, 18 (2009), http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2858639/ [https://perma.cc/3STP-NPWA].

155. *Id.* at 19. The cerebrovascular and endothelial cells make up the Blood Brain Barrier, which is a selectively permeable barrier that protects the brain and central nervous system. *See* Danielle N. Doll, *Mitochondrial Crisis in Cerebrovascular Endothelial Cells Opens the Blood-Brain Barrier*, 46(6) STROKE 1681, 1681 (2015).

156. FRIIS, *supra* note 138, at 134.

157. *Id.* at 141.

158. *Id.*

159. *Id.*

160. *Id.* at 142. Maladaptive behavior can include dysfunctional behaviors in children such as increased distractibility, inability to inhibit inappropriate behavioral response, and perseveration in inappropriate behavior. *See* Sanders et al., supra note 154.

161. Sanders et al., *supra* note 154.

C. Epidemiological Implications of Lead Exposure in Children

In January 2012, the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) released the report,[162] *Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention*, and had this to say:

> Because no measurable level of blood lead is known to be without deleterious effects, and because once engendered, the effects appear to be irreversible in the absence of any other interventions, public health, environmental and housing policies should encourage prevention of all exposure to lead.[163]

In other words, there is no safe level of lead for children.[164] The ACCLPP recommended removing the long-referenced "blood lead level of concern" based on a growing number of scientific studies concluding that BLLs of less than 10 μg/dL unquestionably harm children.[165] Specifically, the committee noted:

> New findings suggest that the adverse health effects of BLLs less than 10 μg/dL in children extend beyond cognitive function to include cardiovascular, immunological, and endocrine effects. Additionally, such effects do not appear to be confined to lower socioeconomic status populations. Therefore, the absence of an identified BLL without deleterious effects combined with the evidence that these effects, in the absence of other interventions, appear to be irreversible, underscores the critical importance of primary prevention.[166]

What the ACCLPP did not mention is that studies are now

162. ADVISORY COMM. ON CHILDHOOD LEAD POISONING PREVENTION, CTR. FOR DISEASE CONTROL & PREVENTION, LOW LEVEL LEAD EXPOSURES HARM CHILDREN: A RENEWED CALL FOR PRIMARY PREVENTION (Jan. 4, 2012), http://www.cdc.gov/nceh/lead/acclpp/final_document_030712.pdf [https://perma.cc/J7XK-HFDW].

163. *Id.* at 5.

164. *Id.*

165. *Id.* at ix.

166. *Id.*

finding that even very low-level lead exposures can cause reading and IQ deficits.[167] In 2000, one researcher reported measurable learning deficits in children with BLLs at less than 5 μg/dL.[168] Further, another epidemiological study conducted in 2003 found a 7.4-point reduction in measured IQ with a BLL increase from 1 μg/dL to 10 μg/dL, meaning that the relationship between BLLs and a decrease in IQ points is not linear.[169] Rather, the finding suggests a more important focus on the first small elevation in a child's BLL, which causes most of the neurological damage.[170] There is epidemiological evidence that lead exposures disproportionately impact inner-city pregnant women, non-pregnant women of childbearing age, and their children.[171] Because the stakes are so disproportionately high for these particular demographics, states like Michigan receive funding from the CDC to monitor and prevent lead exposure. Just how effective the monitoring program is depends on the state's ability to test for lead exposure and respond in a meaningful way that translates into notification and educational programs that reach affected communities.

D. How Michigan is Monitoring its Children

According to the CDC's website, Michigan has received three year's funding from the CDC for lead poisoning programmatic activities.[172] In the 2014 fiscal year, the state received a total of $327,353 in direct funding for these activities.[173] The Michigan Department of Health and Human Services (MDHHS) has utilized this money in its "Healthy Homes and Lead Poisoning Prevention (HHLPP)," which

167. Richard Maas, *Reducing Lead Exposure from Drinking Water: Recent History and Current Status*, 120 PUB. HEALTH REP. 316, 318 (2005).

168. *Id.*

169. *Id.* at 319.

170. *Id.*

171. George D. Flanigan et al., *Studies on Lead Exposure in Patients of a Neighborhood Health Center: Part II. A Comparison of Women of Childbearing Age and Children*, 84 J. NAT'L MED. ASSOC. 23, 23 (1992), http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2637711/pdf/jnma00860-0015.pdf [https://perma.cc/QGK2-BWML].

172. *Michigan*, CTRS. FOR DISEASE CONTROL & PREVENTION, LEAD/STATE PROGRAMS/MICHIGAN, http://www.cdc.gov/nceh/lead/programs/mi.htm (last visited Mar. 1, 2016) [https://perma.cc/S8YX-2ZXL].

173. *Id.*

"supports the 'coordination of lead poisoning prevention and surveillance services for children in Michigan,'" and the funding of pilot sites for primary prevention of lead poisoning through the identification of lead hazards in housing and the use of special environmental cleaning techniques to minimize lead hazards."[174] The program description on the website boasts its state-local agency approach, with a special reference to Genesee County,[175] among a few others, which receive funding for community-based prevention activities including the identification of young children at risk for lead poisoning.[176] Michigan's Childhood Lead Poisoning Prevention Program (CLPPP), which is funded by a CDC grant, also notes that "the majority of local health departments which have childhood lead poisoning prevention programs provide environmental investigations . . . , nursing, health and nutritional assessment . . . , and follow-up via local funding and Medicaid."[177] As of January 8, 2016, a new link was added to the website, titled "Michigan Statewide Testing Screening Plan."[178] What is interesting about this document, aside from the date, is that it was specifically written for Flint, Michigan, and no other geographical area in the state:

> *Testing Criteria—Geography*: Children who live in the City of Flint, live in a home using City of Flint water, or who attend school, childcare or often spend time with a caregiver

174. Letter from Frank Pallone, Jr., Ranking Member of House of Rep., Gene Green, Ranking Member of House of Rep. Subcomm. on Health, Diana DeGette, Ranking Member of House of Rep. Subcomm. on Oversight & Investigations, and Paul D. Tonko, Ranking Member of House of Rep. Subcomm. on Env't & Econ., to Nick Lyon, Dir., Dep't of Health & Human Services (Feb. 22, 2016), https://democrats-energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/Michigan%20Flint%20Lead%20Letter.2016.2.22.pdf [https://perma.cc/HW2K-JSEZ]. *See also Childhood Lead Poisoning Prevention and Control Commission*, Mich. Dep't of Health & Human Serv., http://www.michigan.gov/mdhhs/0,5885,7-339-73971_4911_4913---,00.html (last visited Mar. 1, 2016) [https://perma.cc/Z9NT-HFZF].

175. The county where Flint is located.

176. MICH. DEP'T OF HEALTH & HUMAN SERV., CHILDHOOD LEAD POISONING PREVENTION PROGRAM DESCRIPTION, http://www.michigan.gov/documents/CLPPPgeninfo_155622_7.pdf [https://perma.cc/PZA3-5QLM].

177. *Id.*

178. CHILDHOOD LEAD POISONING PREVENTION PROGRAM, MICH. DEP'T OF HEALTH & HUMAN SERV., LEAD TESTING/LEAD SCREENING PLAN FOR FLINT, MICHIGAN (revised Jan. 8, 2016), http://www.michigan.gov/documents/mdch/testing-screening071009_287511_7.pdf [https://perma.cc/X94Z-CGD5].

> in the City of Flint. *Specifics*: MDHHS strongly recommends that all children meeting one or more of these criteria have a blood lead test.[179]

And, as of February 28, 2016, the MDHHS website listed data reports on child BLLs from 2004–2013.[180] The 2013 Michigan Data Report on Childhood Lead Testing and Elevated Levels, finalized on July 28, 2014, tested 147,841 of the estimated 720,994 children under the age of six who resided in Michigan.[181] A total of 0.4 percent of the 147,841 children in Michigan tested whose BLLs exceeded the 10 μg/dL.[182] In stark contrast, 9 percent of children from Flint's 48502 zip code had BLLs that exceeded 10 μg/dL—twenty-two-and-a-half times higher than any other zip code in Michigan.[183] During that year, the blood lead levels for this zip code were the highest in the state; however, it was not until January 2016 that the state issued the testing plan for Flint.[184]

E. Michigan's Lead Poisoning Prevention Activities

Because of Michigan's limited resources, nearly half of the local health departments did not offer the services necessary for eliminating lead poisoning, including blood lead testing, environmental investigation and proper case management.[185] In 2007, researchers conducted a telephone survey of forty-two local health departments in Michigan to better understand how the officers prioritized lead poisoning prevention activities and

179. *Id.*

180. CHILDHOOD LEAD POISONING PREVENTION PROGRAM, MICH. DEP'T OF HEALTH & HUMAN SERVICES, 2013 DATA REPORT ON CHILDHOOD LEAD TESTING AND ELEVATED LEVELS (2014), http://www.michigan.gov/documents/mdhhs/2013_Child_Lead_Testing_and_Elevated_Levels_Report_515288_7.pdf [https://perma.cc/KK7N-SUAZ]. Since February 28, 2016, Michigan has updated its website to provide weekly reports of blood lead levels in Flint. *See Taking Action on Flint Water*, MICHIGAN.GOV, http://www.michigan.gov/flintwater/0,6092,7-345-76292_76294_76297---,00.html (last visited Jan. 29, 2017) [https://perma.cc/BN5J-T2MS].

181. *Id.* at 39.

182. *Id.* The children tested were categorized according to zip code. *Id.* Flint, Michigan has a total of seventeen zip codes in the study: 48501–07; 48531; 48550–57. *Id.*

183. *Id.* at 27.

184. CHILDHOOD LEAD POISONING PREVENTION PROGRAM, *supra* note 178.

185. Alex Kemper, *Childhood Lead Poisoning Prevention Activities Within Michigan Local Public Health Departments*, 122 PUB. HEALTH REP. 88, 91 (2007).

the obstacles to delivery of the services to Michigan citizens.[186] When asked about how they determine the priority of lead poisoning prevention activities, they prioritized based on their subjective perception of the local prevalence of lead poisoning, not actual local risk.[187] Blood lead testing was offered by 79 percent (thirty-three of forty-two) of the local departments, as was environmental investigation for identified children in the community with elevated blood lead levels.[188] Those departments that did not offer environmental investigations reported lack of trained staff and necessary equipment.[189]

A large majority—74 percent of public health officers—believed that lack of funding limited the effectiveness of their prevention activities, with one officer lamenting that Michigan did not believe it was a priority because of the lack of specific allocated funding.[190] In addition to the funding provided by the state, the local departments with more outside funding from federal agencies, such as the Department of Housing and Urban Development, the CDC, and non-profit organizations were more likely to provide services to citizens of a state with a comparably high rate of childhood lead poisoning.[191] This was of particular concern to the researchers given that in previous research, they found a low rate of lead testing among Michigan Medicaid-enrolled children, a population with a high risk of lead poisoning.[192] They also found that children in this group with known elevated blood lead levels did not have follow-up testing, a key component of case management for the state.[193] Decreased transparency and accountability, coupled with a lack of resources, disproportionately affects vulnerable populations creating ongoing environmental justice concerns. Given the extensive media attention on the Flint case, the publicity will hopefully provide an incentive for both the federal and state government to provide funding to monitor children with elevated blood lead levels.

186. *Id.*
187. *Id.*
188. *Id.* at 90.
189. *Id.*
190. *Id.*
191. Pamela Meyer et al., *Surveillance for Elevated Blood Lead Levels Among Children*, 52 MMWR SURVEILL. SUMM. 1 (2003), http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5210a1.htm [https://perma.cc/B3V6-65GU].
192. Kemper, *supra* note 185, at 89.
193. *Id.*

IV. PRIDE, PREJUDICE, AND ENVIRONMENTAL JUSTICE

> *Everyone in this country deserves and expects safe drinking water, regardless of your race, economic status or zip code. The residents of Flint were stripped of their democratically elected authority and, in the name of saving a few dollars, have been forced to sacrifice their health in the process. This community deserves accountability, transparency, and justice, in addition to water that is safe to drink.*
>
> —Pastor Allen Overton of Concerned Pastors for Social Action.[194]

Environmental justice issues continue to plague the country. Although the EPA has touted its inclusion of environmental justice principles into some guidance documents, it seems as if little has been done to effect these principles and to implement them at the state and local levels. Flint provides a picture perfect example of the lack of effective implementation of these principles.

A. Environmental Justice and Michigan's Financial Crisis

The concept of environmental justice is easier to discuss in a theoretical sense as opposed to applying it. The EPA is also similarly struggling with integrating this concept into its rulemaking process, acknowledging that, aside from the more robust environmental justice considerations developed under the National Environmental Policy Act (NEPA),[195] there is

194. Press Release, Nat. Res. Def. Council, A Fix for Flint: Groups File Federal Lawsuit to Secure Safe Drinking Water in Flint (Jan. 27, 2016), http://www.nrdc.org/media/2016/160127.asp [https://perma.cc/F9JL-VDG7] [hereinafter NRDC].

195. 42 U.S.C. § 4321 (2012). *See also Environmental Justice Guidance for National Environmental Policy Act Reviews*, EPA, https://www.epa.gov/nepa/environmental-justice-guidance-national-environmental-policy-act-reviews (last updated May 16, 2016) [https://perma.cc/ZET4-2YVK]. The EPA's 1998 guidance on how it and other agencies can incorporate environmental justice goals into the NEPA process is specifically targeted toward heightening awareness of environmental justice issues during Environmental Assessment and Environmental Impact Statement (EIS) preparation. EPA, GUIDANCE FOR INCORPORATING ENVIRONMENTAL JUSTICE CONCERN IN EPA'S NEPA COMPLIANCE ANALYSES 7 (April 1998), https://www.epa.gov/sites/production/

little "precedent for how to conduct an environmental justice analysis in the context of a national rulemaking."[196] According to the EPA, "environmental justice [means] the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[197] The concepts of fair treatment and meaningful involvement are purposefully addressed in the EPA's process of preparing an Environmental Impact Statement under NEPA,[198] however these concepts seem to be more of an afterthought when state and local agencies are addressing citizen concerns surrounding existing environmental problems. Socioeconomically disadvantaged communities have all of the burdens, but lack most of the amenities.[199] While environmental health problems can affect wealthier and whiter communities, "the connection of race and class to the distribution of harm is wholly unacceptable in a society that purports to be democratic and egalitarian."[200] This is evidenced in Flint, where appointed officials made hasty decisions based on economics, giving little thought to the disproportionate impact to the community.[201]

Once Ed Kurtz was appointed by Governor Snyder as the "emergency manager," the City of Flint, including the city council and mayor, were subject to his authority.[202] As emergency manager, Kurtz had the power to sell off assets, break collective bargaining agreements, and even cut the

files/2014-08/documents/ej_guidance_nepa_epa0498.pdf [https://perma.cc/BRU2-9DXF].

196. Shannon M. Roesler, *Addressing Environmental Injustices: A Capability Approach to Rulemaking*, 114 W. VA. L. REV. 49, 52–53 (2011). *See also* OFFICE OF SOLID WASTE & EMERGENCY RESPONSE, EPA, DRAFT ENVIRONMENTAL JUSTICE METHODOLOGY FOR THE DEFINITION OF SOLID WASTE FINAL RULE (Jan. 13, 2009), http://www.regulations.gov/#!documentDetail;D=EPA-HQ-RCRA-2009-0315-0264 [https://perma.cc/VVA4-MAZ5].

197. OFFICE OF SOLID WASTE & EMERGENCY RESPONSE, *supra* note 196, at 1.

198. *Id.*

199. Majora Carter et. al., *Whose Survival? Environmental Justice as a Civil Rights Issue*, 13 N.Y. CITY L. REV. 257, 279 (2010).

200. *Id.* at 268.

201. *See* Curt Guyette, *Poisoned Democracy: How an Unelected Official Contaminated Flint's Water to Save Money*, DEMOCRACY NOW (Jan. 8, 2016), http://www.democracynow.org/2016/1/8/poisoned_democracy_how_an_unelected_official [https://perma.cc/EN52-HESX].

202. *Id.*

healthcare benefits of retirees in the name of saving money.[203] Those powers included the authority to switch Flint's water source to the Flint River with the hope of saving about $5 million a year.[204] Of all of the school districts and cities in Michigan where emergency managers were appointed, it has been estimated that all except one are majority African-American cities and school districts.[205] These cities and districts also make up a very high percentage of people living in poverty in Michigan.[206]

According to Michigan Congressman John Conyers, Michigan's law that authorizes emergency managers is different than most.[207] Under Public Act 436,[208] emergency managers gain almost total control over a variety of city functions, as opposed to other state laws that allow control over spending.[209] Certainly, the water switch did fall under the category of spending; however, the statistics in Michigan imply that there is a disproportionate impact of these powers on minority communities—with over half of Michigan's African American communities population living under emergency management as compared to about two percent of the white population.[210] In 2014, a United States district court judge agreed, stating that the Michigan law gives "enormous discretion to state decision makers and creates a significant potential for discriminatory decisions."[211] While the motivation of the emergency manager is to provide financial stability, the scope of power allowed for this role should be carefully considered because short-term cost cutting measures by an emergency manager can not only fail under its own framework of cost savings, but also cause a devastating result for minority and low-income populations.

203. *Id.*
204. *Id.*
205. *Id.*
206. *Id.*
207. David Z. Morris, *Did Michigan's Emergency Manager Law Cause the Flint Water Crisis?*, FORTUNE (Feb. 18, 2016), http://fortune.com/2016/02/18/michigan-public-act-436-flint/ [https://perma.cc/CNB8-L7JC].
208. MICH. COMP. LAWS §§ 141.1541–1575 (2013).
209. *See* Morris*, supra* note 207.
210. *Id.*
211. Chad Livengood & Christine Ferretti, *Judge: EM Lawsuit Can Proceed on Racial Grounds*, DETROIT NEWS (Nov. 19, 2014), http://www.detroitnews.com/story/news/politics/2014/11/19/judge-michigan-em-lawsuit-can-proceed-racial-grounds/19273435/ [https://perma.cc/93SH-5GXU].

B. Environmental Justice and Myths About Flint

The people who remained in Flint after the financial downturn essentially have nowhere to go. The median income of a Flint resident is $24,834/year—$20,000 below Michigan's state average.[212] A staggering forty percent of Flint's residents, most of whom are African American, live in poverty.[213] To put it simply, most people who still reside in Flint could not afford to move, even to nearby Detroit, where the cost of living would likely be higher.[214] Flint residents had become accustomed to a crumbling infrastructure, and the water contamination is just another in a series of affronts to city residents, which include an increasing crime rate and an "underfunded and nonresponsive city government."[215] Certainly, concerns about environmental justice are prevalent in a poverty-stricken city, but dismissive suggestions and misunderstandings about the problems, somewhat fueled by the media, have worked to undercut the seriousness of the problem.

Marc Edwards's team has stated that "overall, the media has done a great job explaining the corrosion control problems in Flint, providing simple but scientifically accurate explanations—but misunderstandings still arise here and there."[216] These myths, among others, were discussed by Dr. Marc Edwards and his team at Virginia Tech:[217]

> Myth 1: "Flint residents got what they paid for . . ." or "Flint could not afford to treat their water correctly."[218]

The truth: Edwards's team says that the Michigan Department of Environmental Quality's (MDEQ's) decision to not install corrosion control after switching to the corrosive Flint River source amounts to a financial disaster that will eventually cost Flint consumers and the city close to one

212. Brayman, *supra* note 34.
213. *See* NRDC, *supra* note 194.
214. Brayman, *supra* note 34.
215. *Id.*
216. Siddhartha Roy, *Some Common Misunderstandings of Flint's Lead in Water Problem*, FLINT WATER STUDY (Dec. 28, 2015), http://flintwaterstudy.org/2015/12/some-common-misunderstandings-of-flints-water-lead-problem/ [https://perma.cc/4A54-MUTC].
217. *Id.*
218. *Id.*

hundred million dollars. Had the city paid for corrosion control treatment, every dollar invested would have saved approximately five to ten dollars in plumbing.[219] In fact, from the most important perspective—that of public health—the return on investment for corrosion control in Flint would have been much higher.[220] Edwards's team opined that Flint's failure to install corrosion control amounted to the equivalent of "pulling the plug" on a city that was already on life support.[221]

> Myth 2: "Each city has the power to decide the quality of water they receive . . . ."[222]

The Truth: There are federal laws[223] that set enforceable minimum standards that every city must follow. They include specific requirements directing the city to implement corrosion control and continually monitor for lead.[224] These laws were not followed in Flint.

> Myth 3: Until recently, the MDEQ and the city of Flint have always met the required EPA standards[225] for lead in water.[226]

The Truth: Edwards's team reports that the "MDEQ violated the letter and spirit of the Federal Lead and Copper Rule in at least three different ways in Flint—each of which made it falsely appear that Flint's water was safe when it was not."[227] Following reports by ACLU-Michigan, the City of Flint finally acknowledged that it did not sample enough of the required homes with lead pipes. This means that Flint has possibly not had an adequate EPA-mandated water lead sampling event since switching to the Flint River (and possibly even before that).[228]

219. *Id.*
220. *Id.*
221. *Id.*
222. *Id.*
223. 40 C.F.R. § 141 (2016).
224. *Id.*
225. *Id.*
226. Roy, *supra* note 216.
227. *Id.*
228. *Id.*

> Myth 4: "If the city of Flint . . . had been investing and 'upgrading their infrastructure' . . . [it] would not be having a lead in water problem."

The Truth: Edwards's team says that it is extremely costly for any city to upgrade its infrastructure, which often includes the following:

> 1) pure lead service pipes (often city owned);
> 2) pipes with lead solder (legal and the standard until 1986);
> 3) galvanized iron pipes (often contain lead); and
> 4) brass plumbing devices containing lead (standard until January 2014).[229]

"Very few consumers, cities, and schools have 'upgraded' their infrastructure" in a way that could have prevented this problem.[230] "If federal laws that require corrosion control were violated, as they were in Flint, most major U.S. cities also would have had a very serious lead-in-water problem."[231]

> Myth 5: Lead in water is only a "minor source of lead in blood," or, in other words, contributes "less than 20% of lead in blood."[232]

Fact: The "less than 20%" language that has been cited by various municipalities, and even the EPA at one point, is an urban legend.[233] The actual language is that lead in water contributes "20% or more"[234] to blood lead, not "20% or less."[235] Interestingly, Edwards's team traced the genesis of the "20% or less" language and found that it all started with a typo in public education materials of the Massachusetts Water

229. *Id.*
230. *Id.*
231. *Id.*
232. *Id.*
233. *Id.*
234. *Id. See also Basic Information About Lead in Drinking Water*, EPA, http://www.epa.gov/your-drinking-water/basic-information-about-lead-drinking-water (last visited Feb. 23, 2016) [https://perma.cc/7DHL-4EK6].
235. Marc Edwards, *Some Common Misunderstandings of Flint's Lead in Water Problem*, FLINT WATER STUDY (Dec. 28, 2015), http://flintwaterstudy.org/2015/12/some-common-misunderstandings-of-flints-water-lead-problem/ [https://perma.cc/PD8T-4YDJ].

Resources Authority,[236] and then the EPA started citing the language with the typo, and the erroneous language was attributed to the EPA.[237] Once Edwards's team brought the mistake to the attention of the EPA, it was finally corrected.[238] The "less than 20%" language has arguably been cited by the CDC, utilities, the EPA, and public health departments as a result of poor research or to downplay water lead dangers to children, and it was also cited by the MDEQ in December 2015, *after* the discovery and media coverage of the lead crisis in Flint.[239]

V. REGULATING COMMUNITY WATER SYSTEMS

> *You think our roads and bridges aren't being fixed? The stuff underground is just totally ignored. We're mostly living off the investment of our parents and grandparents for our drinking water supply.*
>
> —Erik D. Olson, head of the Health and Environment Program at the Natural Resources Defense Council.[240]

From a public health perspective, safe drinking water has been an issue for hundreds of years.[241] However, it was not until the introduction of chlorination in 1908 that the public began to trust that their source of drinking water was safe.[242] With the advent of the Safe Drinking Water Act, the focus shifted to protecting the public from unsafe levels of contaminants in drinking water. The following section provides

236. Roy, *supra* note 216, at tbl.1. *See also* MASSACHUSETTS WATER RESOURCES AUTHORITY, 2001 DRINKING WATER TEST RESULTS 8 (June 20, 2002), http://www.mwra.state.ma.us/04water/html/boston.pdf [https://perma.cc/TD8W-4X3A]. In this publication, the Massachusetts Water Resources Authority (MWRA) changed the federally mandated language of "20% or more" to "up to 20%" and removed the additional language about a higher risk for infants who drink formulas or juices mixed with water. *Id.*

237. Roy, *supra* note 216.

238. *Id.*

239. *Id. See also* Kila Peeples, *Professor: Emails Show State Knew of High Lead Levels in Flint Water*, NBC 25 NEWS (Dec. 22, 2015), http://nbc25news.com/news/local/professor-emails-show-state-knew-of-high-lead-levels-in-flint-water [https://perma.cc/MU3S-AX5F].

240. Wines & Schwartz, *supra* note 85.

241. FREDERICK W. PONTIUS, HISTORY OF THE SAFE DRINKING WATER ACT, DRINKING WATER REGULATION & HEALTH 73 (2003).

242. *Id.*

a brief overview of the Safe Drinking Water Act, the subsequent laws that were meant to protect the public from dangerous levels of lead, and what Flint, Michigan, was doing to comply with these laws when residents started to suspect that there was something wrong. While the Act has drastically improved the quality of drinking water, it ultimately failed the citizens of Flint, evidencing the need to revise the Act and the lead and copper rule to strengthen protections for citizens.

A. The Safe Drinking Water Act

In 1974, Congress passed the Safe Drinking Water Act (SDWA), the key federal law that is meant to protect public health and public water supplies from harmful contaminants.[243] To achieve this goal, the SDWA requires both owners and operators of public drinking water systems to test their water for specific contaminants, treat their water to control for those contaminants, and provide notice of these actions to those residents who receive the water.[244] Each of these requirements is crucial to monitoring for and reducing lead levels in tap water as well as notifying the public about the associated health risks when there is a problem.[245]

The SDWA requires municipal water systems to not only periodically test their water for harmful contaminants, but to then treat the water to control for contamination.[246] Despite the current confusion as to the agency roles in the Flint, Michigan, crisis, the SDWA sets out the specific roles of the federal, state, and local governments in ensuring safe drinking water and protecting public health.[247] In fact, over the years, a number of amendments to the SDWA were aimed at reducing lead in drinking water by limiting lead in plumbing materials.[248] In 1986, the Act was amended to prohibit the use of pipes, fittings, or fixtures in a residential or non-residential facility providing water for human consumption, allowing for

243. Safe Drinking Water Act, 42 U.S.C. §§ 300f–300j (1974).

244. *See, e.g.*, 42 U.S.C. § 300g-1; 40 C.F.R. §§ 141.22–.26, 141.31, 141.61–.66, 141.151, 141.201.

245. *See* 42 U.S.C. § 300g-1(b)(1)(A).

246. *Id.*

247. PONTIUS, *supra* note 241.

248. *See* Lead Contamination Control Act of 1988, Pub. L. No. 100-572 (1988); Reduction of Lead in Drinking Water Act, Pub. L. No. 111-380 (2011); Community Fire Safety Act of 2013, Pub. L. No. 113-64 (2013).

no more than 0.2 percent lead in solder and flux and no more than eight percent lead in pipes.[249] However, there have been numerous criticisms of the SDWA; not only in its somewhat minimal standards, but also its lack of coverage. In particular, the SDWA's exemption of rural communities with less than fifteen service connections or twenty-five people puts smaller, often socioeconomically disadvantaged communities in a more vulnerable position.[250]

Over the years, the EPA has sought to improve the implementation of drinking water standards designed to be protective of public health, particularly through its 1991 Lead and Copper Rule, which is now criticized as outdated and in need of significant revisions, particularly in light of the crisis in Flint.[251]

B. The 1991 Lead and Copper Rule

Under the SDWA, public water systems must control for lead through regulations implemented under the act known as the Lead and Copper Rule (LCR).[252] The rule, promulgated by the EPA in 1991,[253] requires public water systems to treat water to prevent corrosion and the resulting leaching of lead from lead pipes and lead solder.[254] It is generally known as a "treatment technique rule," which implies that there are triggers in place for federal, state, and local agencies to take action to treat and remedy water that is unsafe for public consumption.[255] Not only must the water system treat the water to protect its consumers from the lead, but it must also

249. Safe Drinking Water Act Amendments of 1986, S. Res. 124, 99th Cong. (1986).

250. 42 U.S.C. § 300f.

251. *See generally* Siddartha Roy, *Dr. Yanna Lambrinidou's Dissenting Opinion on the Upcoming Lead and Copper Rule (LCR) Long-Term Revisions*, FLINT WATER STUDY (Nov. 8, 2015), http://flintwaterstudy.org/2015/11/dr-yanna-lambrinidous-dissenting-opinion-on-the-upcoming-lead-and-copper-rule-lcr-long-term-revisions/#opinion [https://perma.cc/GV75-YNKJ].

252. 40 C.F.R. §§ 141.80–.91.

253. *See* Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper, 56 Fed. Reg. 26,460 (June 7, 1991).

254. *See* 40 C.F.R. § 141.80(b), (d).

255. Letter from Jill D. Jonas, Chair, Nat'l Drinking Water Advisory Council, to Gina McCarthy, Adm'r, EPA (Dec. 15, 2015), http://www.epa.gov/sites/production/files/2016-01/documents/ndwacrecommtoadmin121515.pdf [https://perma.cc/SCK6-7MSX].

continue its operation, monitor the system, and provide the required public notice—all of which are critical to protecting the public. The intent behind enacting this rule was to compel those charged with overseeing public water systems to remain aware of and be proactive in addressing a contamination scenario of the kind Flint residents now face.[256]

1. The 15 ppb Action Level

Under the SDWA, the LCR sets an "action level" for lead of 15 ppb,[257] even though there is no safe level of lead.[258] "If lead concentrations exceed an action level of 15 ppb . . . in more than 10% of customer taps sampled, the public water system must undertake a number of additional actions to control corrosion."[259]

An action level is different from a maximum contaminant level (MCL), from which the EPA sets a maximum contaminant level goal (MCLG) or maximum level of a contaminant in drinking water at which no known or anticipated adverse health effect would occur, allowing an adequate margin of safety.[260] The MCL is based on health effects and economic and technical feasibility, whereas the action level is used as a screening tool to determine when treatments are needed to remedy a high lead or copper concentration that is detrimental to the public health.[261] The LCR action level is based on a balance between what is a "safe" level of lead and the practical feasibility of reducing lead through controlling corrosion in lead service lines.

Millions of American homes and buildings still receive water from service lines that are at least partially lead, despite

256. *See* Maximum Containment Level Goals and National Primary Drinking Water Regulations for Lead and Copper, 56 Fed. Reg., at 26,481–82.

257. ppb = parts per billion which also equates to .001 mg/L. *See* Terrie K. Boguski, *Understanding Units of Measurement*, ENVTL. SCI. & TECH. BRIEFS FOR CITIZENS, Oct. 2006, at 1, 1–2, https://www.engg.ksu.edu/CHSR/outreach/resources/docs/2UnitsofMeasure022508.pdf [https://perma.cc/K8JV-EN8M].

258. Centers for Disease Control (CDC), National Center for Environmental Health, *Lead*, https://www.cdc.gov/nceh/lead/ (last visited Dec. 15, 2016) [https://perma.cc/HE43-Y5V6].

259. *Lead and Copper Rule*, *supra* note 68.

260. *How EPA Regulates Drinking Water Contaminants*, EPA, http://www.epa.gov/dwregdev/how-epa-regulates-drinking-water-contaminants (last visited Mar. 2, 2016) [https://perma.cc/V46T-RTLS].

261. Letter from Jill D. Jonas to Gina McCarthy, *supra* note 255, at 2.

the fact that Congress explicitly banned lead pipes more than three decades ago.[262] The 15 ppb lead action level was never intended to be a concentration that is protective of health; rather, the number was derived from a calculation that water from at least nine out of ten homes susceptible to lead exposure would fall below that level when tested.[263]

2. Corrosion Control

One of the most fundamental tenets of the LCR is the requirement that all large public water systems are required to implement an optimal treatment or "optimal corrosion control" program to reduce the leaching of lead into a water system.[264] "Optimal corrosion control treatment" is defined as a treatment that minimizes lead concentrations in the consumers' tap water, which involves adding certain chemicals like phosphates in order to form a protective coating inside of the pipes.[265] This coating takes many years to form, and when highly corrosive untreated water flows through the pipes, the protective coating is eventually destroyed, allowing lead to leach through the pipes into the drinking water.[266] This corrosive untreated water can irreversibly damage water pipes.[267] Once the water system has optimized its corrosion control treatment program, it is required to "continue to operate and maintain optimal corrosion control treatment" in order to maintain the protective nature of the treatment to the pipes.[268]

Treating or replacing Flint's already corroded pipes will take a considerable amount of time and money.[269] No one knows how long it would take to rebuild the protective coating

262. Wines & Schwartz, *supra* note 85.

263. *Id.*

264. *See* 40 C.F.R. § 141.81(d)(4) (2016).

265. 40 C.F.R. §141.2 (2016).

266. Complaint for Declaratory and Injunctive Relief at 18, Concerned Pastors for Social Action et al. v. Nick Khouri, No. 16-10277, U.S. Dist. LEXIS 156088, (E.D. Mich. 2016), http://docs.nrdc.org/legislation/files/leg_16012701a.pdf [https://perma.cc/24FA-796S].

267. *Id.*

268. *See* 40 C.F.R. § 141.82(g).

269. *See* Ari Shapiro, *Flint Begins the Long Process of Fixing Its Water Problem*, NPR: ALL THINGS CONSIDERED (Feb. 10, 2016), http://www.npr.org/2016/02/01/465150617/flint-begins-the-long-process-of-fixing-its-water-problem [https://perma.cc/MFT6-SFFD].

on the pipes.[270] Laura Sullivan, professor of mechanical engineering at Kettering University in Flint who was recently appointed by Michigan to a committee addressing the pipes, says, "[w]e've never encountered a situation where the pipes in a city are corroded to the extent these are."[271] The reality is that all of the pipes will eventually need to be replaced, but disturbing the pipes in the interim could cause further damage by knocking off the protective film that is being rebuilt.[272] The LCR does not include a provision that allows for a municipality to interrupt or stop measures used for corrosion control in lead pipes; and for good reason—the devastating result is lead-tainted water.[273] At no time during the process of the switchover to the Flint River did the MDEQ require the city to implement any corrosion control program or set any water quality parameters for the Flint River.[274] Additionally, Flint officials were not really aware of the age or content of its water distribution service lines. Professor Marty Kaufman, who is currently contracted with the City of Flint to construct an accurate map of the pipes, initially approached the city and asked for the records which showed which lines contain lead.[275] "We were taken aback when they showed us a big file drawer that had 45,000 cards," Kaufman recalls.[276] The 45,000 index cards that he was referring to had smeared, penciled-in notes, indicating which pipes were lead and which were copper.[277] The other source of information came from a set of parcel maps, circa 1980s, which included big, blank areas.[278] Nobody knows how accurate or current those maps are.[279] Kaufman is currently working to piece together a clearly antiquated system.[280] Without knowing which homes are at risk, arguably all homes being serviced by those lines should have been

270. *Id.*
271. *Id.*
272. *Id.*
273. Siddartha Roy, *Commentary: MDEQ Mistakes and Deception Created the Flint Water Crisis*, FLINT WATER STUDY (Sept. 30, 2015), http://flintwaterstudy.org/2015/09/commentary-mdeq-mistakes-deception-flint-water-crisis/ [https://perma.cc/3KYM-2BE9].
274. *Id.*
275. Shapiro, *supra* note 269.
276. *Id.*
277. *Id.*
278. *Id.*
279. *Id.*
280. *Id.*

considered "worst-case scenario" homes, which meant that the MDEQ should have been more vigilant and inclusive in its normal testing protocol. This risk factor alone supports an argument that the LCR should be revised to require that all municipalities update record-keeping for service lines. Although there would likely be significant costs and resources associated with the process, certainly a greater knowledge of the lines will allow cities to make more informed decisions about providing safe drinking water.

3. Testing Protocol, Monitoring, and Reporting

The LCR's monitoring requirements are theoretically designed to help a municipality identify and prevent lead exposure, targeting the most at-risk populations.[281] The focus is and should be on water supplies serving larger populations,[282] particularly those with homes that are serviced by lead pipes or pipes containing lead solder.[283] The point of this provision is to target the "worst-case scenario" homes, which technically includes any home serviced by pipes containing lead.[284] In fact, the EPA has commented that "[t]argeting monitoring to worst-case conditions will help systems and States evaluate the reductions in contaminant levels achieved through treatment and determine when 'optimal' treatment is being maintained to the degree most protective of public health."[285] Water systems are also required to calculate whether more than ten percent of its water samples, which are collected every six months, contain a lead concentration of more than 15 ppb, which is considered the "action level."[286] In other words, if the ninetieth percentile of

281. *See* 40 C.F.R. § 141.86(a) (2016); *see also* Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper, 56 Fed. Reg. at 26,514.

282. 40 C.F.R. § 141.86(c), (d)(1). Larger populations are defined as those with 100,000 people or more. *Id.*

283. 40 C.F.R. § 141.86(a); *see also* 56 Fed. Reg. at 26,514. The rule requires systems serving at least 100,000 people to collect a set of at least 100 tap water samples two times a year. 40 C.F.R. § 141.86(c).

284. Mark Brush, *Expert Says Michigan Officials Changed a Flint Lead Report to Avoid Federal Action*, MICH. RADIO (Nov. 5, 2015), http://michiganradio.org/post/expert-says-michigan-officials-changed-flint-lead-report-avoid-federal-action#stream/0 [https://perma.cc/RQ9T-HQAY].

285. 56 Fed. Reg. at 26,514.

286. 40 C.F.R. §§ 141.80(c), 141.90(a)(1)(iv); *see also* 56 Fed. Reg. at

lead levels in the water samples is over 15 ppb, state and local officials must implement additional treatments and notify the public, both of which are crucial in protecting public health.[287]

The MDEQ's initial testing of lead levels in the Flint water samples was suspect in its sampling and calculation methods.[288] For over a year, the MDEQ had reassured Flint residents that their water was, in fact, safe.[289] In February 2015, samples with high lead concentrations were reported by the University of Michigan Flint Campus.[290] Shortly after that, on February 26, 2015, Mike Glasgow, the Utilities Administrator for the City of Flint, responded to concerns voiced by LeeAnne Walters by sampling her water, which tested at over 100 ppb.[291]

When Flint officials started testing the water for lead, Flint residents were being asked to "pre-flush" their water lines before the samples were collected by the city, a practice commonly employed by other municipalities before conducting lead testing.[292] That was concerning, when, as an EPA internal memo noted, "[t]he practice of pre-flushing[293] before collecting compliance samples has been shown to result in the *minimization* of lead capture and significant underestimation of lead levels in drinking water."[294] Although state officials

26,490. A concentration of 15 ppb or less from tap water samples indicates that corrosion controls are working properly. *See* 40 C.F.R. § 141.80(d)(2).

287. *See* 56 Fed. Reg. at 26,491.

288. Brush, *supra* note 284.

289. *Id.*

290. Roy, *supra* note 273.

291. *Id.*

292. Guyette, *supra* note 69; *see also* Cameron McWhirter et al., *Flint Crisis Puts U.S. Water-Testing Methods Under Scrutiny*, WALL ST. J. (Feb. 4, 2016), http://www.wsj.com/articles/flint-crisis-puts-u-s-water-testing-methods-under-scrutiny-1454607587 [https://perma.cc/46YL-XWPA].

293. As of January 2016, under pressure from various organizations, the Michigan Department of Environmental Quality removed its "pre-flushing" requirement from its state water testing rules, which instructs residents to "turn on the cold faucet of your kitchen or main bathroom sink and let it run for three to four minutes" the night before the test. *See* Oliver Milman, *Michigan Removes 'Pre-Flushing' Practice From State Water Testing Rules*, GUARDIAN (Jan. 27, 2016), https://www.theguardian.com/us-news/2016/jan/27/michigan-water-testing-rules-pre-flushing-taps-flint-lead [https://perma.cc/NBK9-HL7K].

294. *Id.*; *see also* Memorandum from Miguel del Toral, Regulations Manager, Ground Water and Drinking Water Branch, Envtl. Prot. Agency, to Thomas Poy, Chief, Ground Water and Drinking Water Branch, Envtl. Prot. Agency on High Lead Levels in Flint, Michigan—Interim Report (June 24, 2015), http://www.aclumich.org/sites/default/files/Original%20EPA%20memo.%20062514

maintained that their testing methods were accurate in sampling Flint's water source, Marc Edwards disagrees.[295] He argues that, essentially, the MDEQ failed to meet the testing protocol required by the LCR in several ways. Even though the MDEQ also failed to identify and sample the homes at the highest risk, the initial data collected by the MDEQ indicated that the water samples exceeded the lead action level.[296]

On July 28, 2015, Glasgow submitted a sample pool to the MDEQ that contained seventy-one samples,[297] where the ninetieth percentile measured at 18.8 ppb, 3.8 ppb *higher* than the federal action level.[298] The draft was subsequently altered on August 20, 2015, when Glasgow removed two of the highest data points after a conference call with the MDEQ, claiming a "sampling error," from the city's original pool of data.[299] As a result of the removal of those two data points, the ninetieth percentile was then reduced to 12.2 ppb, 2.8 ppb *lower* than the federal action level, and thus avoided any subsequent actions required by federal law.[300] Arguably, the effect of this data manipulation downplayed the severity of the lead exposure risks affecting Flint by allowing officials to shirk their responsibilities to address the situation.

4. Public Notice and Education

Had the LCR been revised to provide more stringent

.pdf [https://perma.cc/JC79-SRFQ].

295. Brush, *supra* note 284.

296. *Id.*

297. *Id.* The draft report documents submitted by the City of Flint indicate a population of 99,673, just shy of the 100,000 population minimum which would have required more sampling. *Id.*

298. *Id. See also* Mich. Radio, *How to Calculate Flint's 90th Percentile Lead Level with EMU Math Professor Chris Gardiner*, YOUTUBE (Nov. 4, 2015), https://www.youtube.com/watch?v=9pql00zr700. Professor Gardner explains that when calculating the 90th percentile from Flint's 2015 lead sampling data, the data points should be arranged in ascending order, including repeat concentrations, and then solve for I, which represents the position in the ordered data points. (I = number of samples x percentile/100 = 0.5) 71 x 90/100 + 0.5 = 64.4. The numbers between the 64th and 65th position are 18 and 20 ppb. 18 (1-0.4) + 20 + 0.4 = 18.8 ppb (3.8 ppb high than the action levels). *Id.*

299. Brush, *supra* note 284.

300. Mich. Radio, *supra* note 298. Professor Gardner calculates the new concentration with the reduced sample size in the following way: i = 69 x 90/100 + 0.5 = 62.6 position in the ascending order of the data points. 11 (1-6) + 0.6 = 12.2 ppb, now 3.8 ppb lower than the federal action level. *Id.*

guidelines with regard to the action level and reporting requirements prior to the Flint crisis, it is possible that governmental action and inaction may have been the same regardless. Despite continual pressure from the community and later, well-respected scientists, governmental agencies failed at all levels to acknowledge the situation, providing adequate notice and education to Flint. Providing notice is a key component in addressing necessary environmental justice issues and should be a fundamental consideration at the local government levels when addressing concerns about drinking water quality.[301] The LCR has always required that tap water test results are reported to the state agency[302] and that the public is informed when individual testing is performed on tap water samples collected from homes.[303] However, in Flint, this requirement did not protect the public because agency officials at all levels were aware of the crisis yet failed time and again to notify the citizens of Flint.[304]

In response to the Flint crisis, the U.S. House of Representatives passed bipartisan legislation in February 2016.[305] The legislation requires the EPA to alert residents within twenty-four hours of when the EPA Administrator is notified when lead concentrations exceed 15 ppb in ten percent of the samples, if the state and local utility fail to do so.[306] The new notification provision is a step in the right direction; however, it fails to address what a state should do when it is presented with independent testing that should also trigger that the EPA be notified among other actions. This is exactly what happened in Flint when the MDEQ was reluctant to

301. *See* EPA, GUIDANCE FOR INCORPORATING ENVIRONMENTAL JUSTICE CONCERN IN EPA'S NEPA COMPLIANCE ANALYSES 7 (1998), https://www.epa.gov/sites/production/files/2014-08/documents/ej_guidance_nepa_epa0498.pdf [https://perma.cc/32RQ-RXMT]. The EPA guidance places a great amount of emphasis on providing communities with information throughout the EIS process. *Id.* This concept should ideally be highlighted in exigent circumstances like those in Flint.

302. 40 C.F.R. § 141.90 (2016).

303. 40 C.F.R. § 141.85(d)(1)–(2).

304. *See* Todd Spangler, *Bill Would Put Lead Notification Responsibility on EPA,* DETROIT FREE PRESS (Feb. 10, 2016), http://www.freep.com/story/news/local/michigan/flint-water-crisis/2016/02/10/flint-lead-water-epa/80190726/ [https://perma.cc/7H38-4VDN].

305. Safe Drinking Water Act Improved Compliance Awareness Act, H.R. Res. 4470, 114th Cong. (as passed by House, Feb. 11, 2016).

306. *Id.*

accept independent testing which indicated lead levels surpassing the 15 ppb threshold and directly contradicted the MDEQ's own lead testing.[307] The result of which led to confusion and lack of action that was necessary to protect the citizens of Flint.

VI. ECONOMIC WOES, STATE EXCEPTIONALISM, AND FEDERAL ADMINISTRATIVE FAILURES

> *Flint is Exhibit A for what happens when a state suspends democracy and installs unaccountable bean counters to run a city.*
>
> —Michael J. Steinberg, legal director of the ACLU of Michigan.[308]

Cost-cutting measures implemented by the State of Michigan, along with an attitude of exceptionalism, allowed the bungled handling of the water crisis in Flint to go unchecked for months. The failure of governmental agencies at the local, state, and national level indicate the need for revisiting a plan rooted in cooperative federalism instead of finger-pointing, particularly in light of a public health crisis of this magnitude.

A. Flint's Financial Crisis and a Convenient Source of Water

Federal, state, and local departments charged with protecting our water have all suffered from the recent great recession and the resulting financial crisis. While the EPA has been answering to Congress for a lackluster response to the Flint crisis, its office and resources have continued to shrink since 2006.[309] Many state budgets have suffered, as well: As of 2013, the Association of State Drinking Water Administrators reported that federal water grant money available to states decreased, while seventeen states simultaneously cut their

307. *See* Spangler, *supra* note 304.

308. NRDC, *supra* note 194.

309. Wines & Schwartz, *supra* note 85. Specifically, the $100 million budget has shrunk by 15 percent and the EPA has lost more than one-tenth of its staff. *Id.*

drinking water budgets and full-time staffing.[310] The group concluded that "[t]he cumulative effect of the resource gap has serious implications for states' ability to protect public health."[311]

For Flint, things got serious on November 8, 2011, when Ed Kurtz, the first of four Emergency Managers who were charged with overseeing the financial crisis and effectively running the City of Flint, switched its water source to the Flint River to save money.[312] In addition to the devastating health consequences and damage to the water system in Flint, the mayor of Flint now says that it could cost as much as $1.5 billion to fix the city's water infrastructure.[313] Marc Edwards and his team, who have been testing Flint water, said "the city could have corrected the problem by better treating the water at a cost of as little as $100 a day."[314]

B. Consolidation of the Power at the State Level

When Governor Rick Snyder took office on March 11, 2011, he signed Public Act 4 into law,[315] giving him the power to appoint an emergency manager to oversee and manage the financial crisis that Michigan was experiencing, which included the power to make or cancel labor agreements.[316] In a statewide referendum in 2012, voters rejected this law.[317] State lawmakers responded by enacting Public Act 436,[318] restoring power to the emergency manager with an added appropriation that made it nearly impossible for the public to repeal the

310. *Id.*
311. *Id.*
312. Sanburn, *supra* note 37, at 36.
313. Guyette, *supra* note 202.
314. *Id.*
315. Local Government and School District Fiscal Accountability Act, 2011 Mich. Pub. Act 4, 96th Leg., Regular Session (Mich. 2011), https://www.legislature.mi.gov/documents/2011-2012/publicact/htm/2011-PA-0004.htm [https://perma.cc/EZ9P-R6M9].
316. Shiney Varghese, *Drinking Water and Democracy: Tale of Two Cities*, INST. FOR AGRIC. & TRADE POLICY: THINKING FORWARD BLOG (Feb. 25, 2016), http://www.iatp.org/blog/201602/drinking-water-and-democracy-tale-of-two-cities [https://perma.cc/KR93-BEFK].
317. *Id.*
318. Local Financial Stability and Choice Act, Pub. L. No. 436, 2012 Mich. Pub. Act 436, 96th Leg., Regular Session (Mich. 2012), http://www.legislature.mi.gov/documents/2011-2012/publicact/pdf/2012-PA-0436.pdf [https://perma.cc/TEH2-5P7G].

law.[319] This act arguably stripped the power from locally-elected officials, took the power out of the hands of the voters, and allowed an unelected emergency manager to make financial decisions for local government.[320] A centralized source of power to make financial decisions might make sense given the financial state of the town; however, the result can mean unilateral decision making without accountability to the people.

C. Early Warnings Reach the Governor's Office

In October 2014, Valerie Brader and Mike Gadola,[321] both top aides to Governor Snyder at that time, exchanged emails with concerns about the water in Flint, Michigan.[322] In the 1,600 pages of emails that were voluntarily released by Governor Snyder's office, there were multiple instances where his staff expressed concerns, but apparently failed to act on them.[323] The concerns began in early fall 2014, as Flint residents were advised to boil their tap water because of an E. coli outbreak due to the Flint River water source.[324] Gadola even referenced his mother, who resides in Flint in one of his emails: "Nice to know she's drinking water with elevated chlorine levels and fecal coliform," Gadola said. "I agree with Valerie. They should try to get back on the Detroit system as a stopgap ASAP before this thing gets too far out of control."[325] Several months later, the MDEQ issued a SDWA violation to Flint for the high levels of THMs in the water.[326] The issuance

319. Rick Pluta, *Michigan's Governor Signs Revised Emergency Manager Law*, MICH. RADIO (Dec. 27, 2012), http://michiganradio.org/post/michigans-governor-signs-revised-emergency-manager-law#stream/0 [https://perma.cc/5F3U-32P2].

320. Varghese, *supra* note 316.

321. Valerie Brader was Governor Snyder's environmental policy advisor and Mike Gadola was his chief legal counsel. Matthew Dolan & Paul Egan, *Top Snyder Aides Urged Going Back to Detroit Water***,** DETROIT FREE PRESS (Feb. 26, 2016), http://www.freep.com/story/news/local/michigan/flint-water-crisis/2016/02/26/flint-water-crisis-snyder-detroit/80926138/ [https://perma.cc/4R3T-3HE2].

322. Chad Livengood, *Emails: Flint Water Warnings Reached Gov's Inner Circle*, DETROIT NEWS (Feb. 26, 2016), http://www.detroitnews.com/story/news/michigan/flint-water-crisis/2016/02/26/snyder-aides-urged-switching-flints-water-oct/80967048/ [https://perma.cc/WN8R-2CM2].

323. *Id.*

324. *Id.*

325. *Id.*

326. CITY OF FLINT, TTHM NOTIFICATION FINAL (2015), https://www.cityofflint.com/wp-content/uploads/TTHM-Notification-Final.pdf

of the SDWA violation was indicative of a larger institutional problem in responding to the crisis, which took on a defensive tone and did little to address public concerns.

D. Michigan's Responses to the Lead Problem in Flint

While the residents complained and independent scientists began releasing their results, the MDEQ's response was apathetic, at best. The following chronology highlights some of the MDEQ's documented responses to the public's concern and media questions once the Flint story broke:

April 11, 2014: Flint Has the Authority to Switch and is Racing to do so

> After making the decision to switch to the Flint River, Brad Wurfel, former spokesman for the MDEQ, says that Flint has the necessary permits and they are "racing to get all this work done."[327]

August 14, 2014: Residents Begin to Complain

> As Flint's water and sewer rates total about $140 per month,[328] more than any municipality in Genesee County,[329] residents begin complaining about the color of

[https://perma.cc/X88S-3SRG].

327. Marc Edwards, *Wurfelisms-Web*, FLINT WATER STUDY (2015), http://flintwaterstudy.org/wp-content/uploads/2015/12/Wurfelisms-Web.pdf [https://perma.cc/WY7H-2DBD]; *see also* NBC25 Newsroom, *Flint Residents to Start Receiving Water from Flint River on April 17* (Apr. 11, 2014), http://nbc25news.com/news/local/flint-residents-to-start-receiving-water-from-flint-river-on-april-17?id=1030164 [https://perma.cc/RTL5-HPG7].

328. Water and sewer rates across the country have continued to increase, up 41 percent since 2010, further adding to the environmental justice issues present in terms of affordability. *See* Brett Walton, *Price of Water 2015: Up 6 Percent in 30 Major U.S. Cities; 41 Percent Rise Since 2010*, CIRCLE OF BLUE (Apr. 22, 2015), http://www.circleofblue.org/2015/world/price-of-water-2015-up-6-percent-in-30-major-u-s-cities-41-percent-rise-since-2010/ [https://perma.cc/XXN2-EHLF].

329. Flint's $140 water bill was the highest rate in Genesee County at that time, although officials seem to be moving toward now providing a water bill credit. *See* Jiquanda Johnson, *Flint Water Bill Credits on Customer Bills Expected Soon, Officials Say*, MLIVE (Apr. 14, 2016), http://www.mlive.com/news/flint/index.ssf/2016/04/flint_officials_ready_to_roll.html [https://perma.cc/ZHP6-PPZB].

the water.[330]

> The hydrant flushing is in response to localized complaints of discolored water. Residents in the affected areas may see increased water cloudiness for a short time, but the water will be safe to drink. The water throughout the City meets all (state Department of Environmental Quality) required drinking standards.[331]

July 13, 2015: Miguel Del Toral's Internal Memo Has Been Leaked

> An unofficial EPA memo is leaked to the ACLU, detailing an EPA staffer's concern about how the city tests for lead and results from Marc Edwards's lab at Virginia Tech that show elevated levels of lead at LeeAnne Walters's home; high enough to be considered hazardous waste.[332]

> "'Let me start here—anyone who is concerned about lead in the drinking water in Flint can relax,' said Brad Wurfel, spokesman for Michigan's Department of Environmental Quality."[333] Wurfel goes on to state that "preliminary tests of at least 170 homes in the past year show the [Walters's] home was an outlier," and that "those reports should be finalized in a few weeks."[334]

September 6, 2015: Preliminary Testing by Edwards's Team Released

> Preliminary testing of 300 water samples by Marc

330. Edwards, *supra* note 327; *see also* Ryan Felton, *Flint Residents Raise Concerns Over Discolored Water*, DETROIT METRO TIMES (Aug. 13, 2014), http://www.metrotimes.com/detroit/flint-residents-raise-concerns-over-discolored-water/Content?oid=2231724 [https://perma.cc/FD3L-GP49].

331. Felton, *supra* note 330.

332. Edwards, *supra* note 327; *see also* Lindsey Smith, *Leaked Internal Memo Shows Federal Regulator's Concerns About Lead in Flint's Water*, MICH. RADIO (July 13, 2015), http://michiganradio.org/post/leaked-internal-memo-shows-federal-regulator-s-concerns-about-lead-flint-s-water#stream/0 [https://perma.cc/8PU2-8Y4C].

333. Smith, *supra* note 332.

334. *Id.*

> Edwards's team shows "serious" levels of lead.[335] "'The levels that we have seen in Flint are some of the worst that I have seen in more than 25 years working in the field,' says Edwards. Edwards blames a high 'corrosiveness' in the water the city gets from the Flint River."[336] Edwards's "tests have shown lead levels as high as 15 parts per billion" and he urges "young children and pregnant women not to drink Flint water."[337]
>
> "'The samples don't match the testing that we've been doing in the same kind of neighborhoods all over the city for the past year,' says Brad Wurfel."[338]

September 9, 2015: Brad Wurfel's Email to Journalist Ron Fong Discussing Edwards's results:

> [W]hile the state appreciates academic participation in this discussion, offering broad, dire public health advice based on some quick testing could be seen as fanning political flames irresponsibly. Residents of Flint concerned about the health of their community don't need more of that.[339]

September 28, 2015: Doctors Share Their Results

> Doctors, including Dr. Hanna-Attisha, shared their test results and urged the city to stop using the Flint River.
>
> "Brad Wurfel, spokesman at the Department of Environmental Quality, said the water controversy is becoming 'near-hysteria.' 'I wouldn't call them irresponsible. I would call them unfortunate,' Wurfel said of the doctors' comments."[340]

335. Edwards, *supra* note 327; *see also* Steve Carmody, *Team Testing Flint Water for Lead Sample by Sample*, MICH. RADIO (Sept. 6, 2015), http://michiganradio.org/post/team-testing-flint-water-lead-sample-sample#stream/0 [https://perma.cc/NC6T-7BP6].

336. Carmody, *supra* note 335.

337. *Id.*

338. *Id.*

339. *Id.*

340. *Id.*; *see also* The Associated Press, *Doctors Urge Flint to Stop Using Water From Flint River*, CRAIN'S DETROIT BUS. (Sept. 28, 2015),

E. Michigan Questions the EPA's Authority

Once the EPA had decided to step in and mandate action by the State of Michigan, it was met with hostility and arrogance by some state officials. In a letter to Governor Snyder on January 21, 2016, EPA Administrator Gina McCarthy issued an emergency order[341] directing Michigan and the City of Flint to take immediate action "to address serious and ongoing concerns with the safety of Flint's drinking water system."[342] In the letter, she expressed concerns over "inadequate transparency and accountability with regard to provision of test results and actions taken."[343] The response by the State of Michigan was not one of compliance, but rather defiance, with MDEQ Director Keith Creagh challenging whether the EPA "has the legal authority" to require a state to take actions that are outlined in the EPA's order.[344]

> We would note that under [s]ection 1431, the Administrator has the authority to "consult with the State and local authorities in order to confirm the correctness of the information on which [the order] is based and to ascertain the action which such authorities are or will be taking." We welcome such a consultation.[345]

Three days later, the EPA sent a paragraph-long letter, disagreeing with the MDEQ's legal interpretation, stating:

> We do not agree with the issues you raise about the agency's legal authority. During the coming days and weeks, we need to focus on the important steps needed to protect the health of persons currently using, or who may use, the City's public

http://www.crainsdetroit.com/article/20150928/NEWS01/150929872/doctors-urge-flint-to-stop-using-water-from-flint-river [https://perma.cc/87U7-2Z4R].

341. Letter from Gina McCarthy, Adm'r, EPA, to Rick Snyder, Governor of Mich. (Jan. 21, 2016), http://www.epa.gov/sites/production/files/2016-01/documents/letter_to_governor_snyder_1-21-16.pdf [https://perma.cc/5HPU-7P82]. The order was issued pursuant to Section 1431 of the Safe Drinking Water Act. *Id.*

342. *Id.*

343. *Id.*

344. Letter from Keith Creagh, Dir., Mich. Dep't of Envtl. Quality, to Gina McCarthy, Adm'r, EPA (Jan. 22, 2016), http://www.epa.gov/sites/production/files/2016-01/documents/mdeq-response_0.pdf [https://perma.cc/84X2-L9LX].

345. *Id.*

water system.[346]

Contrary to what the MDEQ letter implied, the Emergency Powers provision of the SDWA gives the EPA Administrator the broad authority to protect public health[347] when there may be imminent and substantial endangerment. Specifically, section (a) provides:

> To the extent he determines it to be practicable in light of such imminent endangerment, he [or she] shall *consult* with the State and local authorities in order *to confirm the correctness of the information* on which action proposed to be taken under this subsection is based and to ascertain the action which such authorities are or will be taking.[348]

More importantly, the section goes on to say:

> The action which the Administrator may take may include (but shall not be limited to) (1) *issuing such orders* as may be necessary to protect the health of persons who are or may be users of such system (including travelers), including orders requiring the provision of alternative water supplies by persons who caused or contributed to the endangerment, and (2) *commencing a civil action for appropriate relief*, including a restraining order or permanent or temporary injunction.[349]

The MDEQ's assertion that the EPA lacked authority to enforce under section 1431 seems odd in that this section has long been recognized as an enforcement mechanism under the SDWA.[350] In fact, the EPA need only conclude that the state or local authorities have not adequately acted to protect public health and that the particular contaminant of concern may

346. Letter from Mark Pollins, Dir., Water Enf't Div., EPA, to Keith Creagh, Dir., Mich. Dep't of Envtl. Quality (Jan. 24, 2016), http://www.epa.gov/sites/production/files/2016-01/documents/usepa_response_to_michigan_re_flint_1-24-16.pdf [https://perma.cc/X5BV-DYNE].

347. 42 U.S.C. § 300 i(a) (2016) (emphasis added).

348. *Id.* (emphasis added).

349. *Id.* (emphasis added).

350. Varu Chilakamarri, *A New Instrument in National Security: The Legislative Attempt to Combat Terrorism Via the Safe Drinking Water Act*, 91 GEO. L.J. 927, 929 (2003).

cause an imminent and substantial endangerment to health.[351] Once the EPA reaches this conclusion, it can use section 1431 to address and respond to potentially dangerous situations that could go unaddressed due to the gaps in enforcement authority.[352] This means that the EPA essentially has broad authority under section 1431 to issue administrative orders against states and innocent third parties, subject to the "arbitrary and capricious" standard of review.[353] In fact, the Fourth Circuit has interpreted the EPA's authority under section 1431 as a power which overrides any limitations found elsewhere in the SDWA.[354] The court stated that the EPA is "unlimited by other constraints, [to] giv[e] paramount importance to the sole objective of the public health."[355]

Congress's intent is also made clear by a House Report discussing the emergency powers provision.[356] This power is broad as the EPA may issue any order "as may be necessary to protect the health of persons who are or may be users" of a public drinking water system.[357] Based on the House Committee's Report, the Fourth Circuit even went so far as to say that courts must ensure that the EPA's power under the SDWA should remain "relatively untrammeled."[358] Accordingly, even the judiciary has acknowledged that it must approach any challenges to an EPA emergency order with circumspection, recognizing that such challenges result in a "diversion of time and resources as well as the risk that a court will err in evaluating the positions of [the EPA] . . . on technological and scientific questions at the outer limits of a court's competence."[359]

The MDEQ's somewhat defiant response to the EPA seems to be a popular sentiment, particularly with the dissatisfaction of a majority of citizens with how the federal government

351. *Id.*
352. *Id.*
353. *Id.* at 942.
354. Trinity Am. Corp. v. EPA, 150 F.3d 389, 395 (4th Cir. 1998); *see* Chilakamarri, *supra* note 350, at 948.
355. *Trinity Am. Corp.*, 150 F.3d at 394–95.
356. H.R. REP. NO. 93-1185 (1974), at 35–36; *see also Trinity Am. Corp.*, 150 F.3d at 395.
357. 42 U.S.C. § 300i(a) (2016).
358. *Trinity Am. Corp.*, 150 F.3d at 395.
359. *Id.*

operates.[360] This concept of "state exceptionalism" draws not only from the definition of exceptionalism,[361] but also from the very roots of federalism. In 1986, once Rehnquist became Chief Justice, Antonin Scalia joined the Court and became a vigorous advocate for revitalizing the Tenth Amendment.[362] As a result of the Rehnquist Court's renewed emphasis on federalism, constitutional challenges to federal environmental regulations were raised much more often by states.[363] These challenges included ones where a federal regulatory scheme somehow "commandeered" state regulatory authority in violation of the Tenth Amendment.[364]

The notion of federalism, as it interacts with environmental regulatory issues, lends to a decentralized policy-making process where it is not uncommon that business interests "hold most of the cards not dealt to establishment environmentalists."[365] Therefore, environmental justice must often contend with various aspects of federalism such as the federal level separation of powers or even private sector activities and policies operating at both state and local level governments.[366]

The overarching presumption of environmental justice assumes that advocates simply want equality or "equalized pollution," meaning that all cases should be treated alike.[367] Instead, the focus should be on the community and toward particularized environmental solutions.[368] A truer meaning of

360. According to a CNN/ORC poll taken in December 2015, 75 percent of Americans said they were dissatisfied with the way the nation is being governed. *Full Results: CNN/ORC Poll on Views of Government*, CNN POLITICS (Dec. 29, 2015), http://www.cnn.com/2015/12/29/politics/cnn-orc-poll-full-results-obama-approval/index.html [https://perma.cc/76L4-ECGX].

361. Merriam Webster defines "exceptionalism" as "the condition of being different from the norm; also: a theory expounding the exceptionalism especially of a nation or region." *Exceptionalism*, MERRIAM WEBSTER'S DICTIONARY (2016), http://www.merriam-webster.com/dictionary/exceptionalism [https://perma.cc/4HH5-T23K].

362. Robert V. Percival, *Environmental Implications of the Rehnquist Court's New Federalism,* 20 GPSOLO 38 (Mar. 2003).

363. *Id.* at 38–39.

364. *Id.*

365. CHRISTOPHER H. FOREMAN, THE PROMISE AND PERIL OF ENVIRONMENTAL JUSTICE 7 (1998). Arguably, this decentralized policy-making leads to decisions with little regard to environmental justice concepts. *See id.*

366. *Id.*

367. *Id.*

368. *Id.*

federalism enables a state to come up with resolutions for its own citizens rather than allowing a one-size-fits-all approach implemented by a large federal government. However, when local and state governments fail to recognize and address an imminently dangerous public health issue like excessively high lead levels in drinking water, it then becomes difficult to make the argument that states are better equipped to handle such problems. Flint suffered as a result of this confusing web of responsibilities and powers. In the midst of a crisis, there should be a safety net or default responsibility for alerting residents and taking proactive measures to protect them. Arguably, that responsibility should be assumed by the EPA.

F. The EPA's Lack of Urgency

The EPA's lack of urgency, coupled with the exceptionalist stance by the state of Michigan, did little to help the citizens of Flint. For months, the EPA knew of the alarmingly high results, but stalled in its response. Whether it was due to internal politics at the EPA or deference to the MDEQ, the EPA did not immediately respond the crisis. When the EPA finally began to address the lack of responsiveness with the MDEQ, it was met with hostility. Beginning in February 2015, the EPA started a six-month, behind-the-scene battle with the MDEQ over whether Flint should have even been using anti-corrosive treatments for its new water source.[369] It was also during this same month that Miguel Del Toral personally alerted LeeAnne Walters about the problems associated with her water and wrote an internal memorandum to Thomas Poy, the Chief Manager, expressing his concerns:

> A major concern from a public health standpoint is the absence of corrosion control treatment in the City of Flint for mitigating lead and copper levels in the drinking water. Recent drinking water sample results indicate the presence

369. Jim Lynch, *EPA Stayed Silent on Flint's Tainted Water*, DETROIT NEWS (Jan. 12, 2016), http://www.detroitnews.com/story/news/politics/2016/01/12/epa-stayed-silent-flints-tainted-water/78719620/ [https://perma.cc/SL8P-JMYH]. Susan Hedman resigned from her position on February 1, 2016. Mark Brush & Sarah Hulett, *EPA Region 5 Administrator Susan Hedman to Resign in Wake of the Flint Water Crisis*, MICH. RADIO (Jan. 21, 2016), http://michiganradio.org/post/epa-region-5-administrator-susan-hedman-resign-wake-flint-water-crisis [https://perma.cc/85H5-UZ4P].

> of high lead results in the drinking water, which is to be expected in a public water system that is not providing corrosion control treatment. The lack of any mitigating treatment for lead is of serious concern for residents that live in homes with lead service lines or partial lead service lines, which are common throughout the City of Flint.[370]

Instead of moving quickly to verify Flint's problem or implement preventative measures, the EPA instead decided to try to force the MDEQ to act, says former EPA Region 5 Administrator Susan Hedman.[371] Even then, the EPA was unsure of whether it could force action which was not completed until November 2015.[372] Not once during this time period did the EPA publicize its concern that Flint residents were in danger from the high lead levels found in the water.[373] Various experts criticized Ms. Hedman with attempting to keep the information "in-house" and downplaying its significance.[374] Marc Edwards, who along with the ACLU, obtained numerous documents through public record requests, stated, "[t]here was no sense of urgency at any of the relevant agencies, with the obvious exception of Miguel Del Toral, and he was silenced and discredited."[375] Hedman continued to defend the EPA's handling of the crisis:

> "Let's be clear, the recommendation to DEQ (regarding the need for corrosion controls) occurred at higher and higher levels during this time period," Hedman said in a Detroit News interview. And the answer kept coming back from DEQ that "no, we are not going to make a decision until after we see more testing results."

Of course, there was no clear protocol on just how much more testing was needed or the time required to obtain the results. The battle between the defiant MDEQ and the somewhat powerless EPA continued in their interpretations of

370. Memorandum from Miguel del Toral, *supra* note 294.
371. *Id.*
372. *Id.*
373. *Id.*
374. Lynch, *supra* note 369.
375. *Id.*

testing protocol set forth in the LCR.[376] Specifically, 40 C.F.R. 141.81(b)(1), which requires that "[a] small or medium-size water system is deemed to have optimized corrosion control if the system meets the lead and copper action levels during each of two consecutive six-month monitoring periods."[377] After the switch to the Flint River, the MDEQ argued that the water testing, including two six-month periods of sampling, needed to be completed before even making a decision on the need for corrosion controls.[378] According to Hedman, the EPA wanted the corrosion controls implemented immediately out of concerns for public health.[379] The question remains as to why the EPA did not inform the public when the MDEQ failed to act. The answer lies in the way that the SDWA is currently written, giving the state primary power to regulate water options.[380]

The Fifth Circuit took up this very issue and held that the EPA's specific mandate under the SDWA "commandeered" a state regulatory program and violated the Tenth Amendment.[381] In that case, the EPA had required states to create a program to assist schools in remediating lead contamination in water coolers.[382] Rather than providing states with a choice of creating such a program or allowing the federal government to create a program for them, the SDWA specifically required states to comply under penalty of federal civil enforcement.[383] The Fifth Circuit held that this requirement violated the Tenth Amendment in light of *New York v. United States*, stating that "the Constitution does not permit Congress to so control the States' legislative processes."[384] The court explained that "Congress is free, pursuant to its Commerce Clause power, to combat lead contamination in drinking water by regulating drinking water coolers that move in interstate commerce. Such regulation, however, must operate directly upon the people, and not the

376. *Id.*
377. 40 C.F.R. § 141.81(b)(1) (2016).
378. Jim Lynch, *supra* note 369.
379. *Id.*
380. *See id.*
381. ACORN v. Edwards, 81 F.3d 1387, 1394–95 (5th Cir. 1997).
382. *Id.* at 1388.
383. *Id.* at 1394–95.
384. *Id.* at 1394 (citing New York v. United States, 505 U.S. 144 (1992)).

States as conduits to the people."[385]

As it stands, the EPA argues that its responsibility is clear in that it establishes treatment and monitoring standards, while providing technical assistance.[386] The role of communicating with the public about lead in the drinking water is delegated to the state and the local public water utility.[387] Congressman Dan Kildee (D-Flint Township) questioned the EPA's performance and whether the LCR provides the necessary safeguards to protect the public.[388] If the state or local authorities interpret the law differently because of ambiguous language or simply refuse to act, perhaps the goal should be to revise the language of the SDWA and LCR to address public safety while preserving the intent of the Tenth Amendment.

VII. REWRITING THE SDWA AND THE LCR TO REFORM A CULTURE OF APATHY AND COMPLIANCE

> *[W]e need to change it so that everyone involved is more focused on protecting public health than only complying with regulations.*
>
> —William Rhodes, Rebecca Martin, and Siddartha Roy, Ph.D. students and Flint Water Study Team Members at Virginia Tech.[389]

The members of the Flint Water Study Team at Virginia Tech, an independent team of principle investigators, students, and post-docs, realized the need for revising the law. Dr. Edwards's years of past experience lead to the same conclusion—that issues like the one in Flint will continue to arise unless the laws are changed to reflect a shared responsibility for properly testing the water and protecting citizens. The following section takes into account various

385. *Id.*
386. Lynch, *supra* note 369.
387. *Id.*
388. *Id.*
389. William Rhoads et al., *We Helped Uncover a Public Health Crisis in Flint, But Learned There are Costs to Doing Good Science*, THE CONVERSATION (Feb. 29, 2016), https://theconversation.com/we-helped-uncover-a-public-health-crisis-in-flint-but-learned-there-are-costs-to-doing-good-science-54227 [https://perma.cc/J3WT-JHNV].

recommendations from scientists, committees, and legislators in proposing revisions to the SDWA and the Lead and Copper Rule, which could better safeguard the right of a community to be protected and informed.

A. Revising the Safe Drinking Water Act

Despite the fact that the SDWA is considered an example of cooperative federalism, where federal, state, and local governments share responsibility for environmental protection and enforcement, the crisis in Flint was exacerbated by finger pointing between agencies.[390] Perhaps shared responsibility equates to no responsibility and the idea of cooperative federalism does not work in the midst of a crisis. Ideally, a defined system, requiring action and accountability by specific agencies within a specific time period is necessary to successful implementation of the goals of the SDWA.

Lawmakers have recently begun to address this tension. On February 11, 2016, the U.S. House of Representatives approved a measure that would amend the SDWA and require the EPA to notify the public if the state or local officials fail to do so.[391] The bill set forth several worthy changes to the SDWA, including a mandatory notification by the EPA if the highest tenth percentile of residents' water lead levels exceeded the 15 ppb standard; a requirement that the EPA, state and local officials develop a strategic plan to improve communications between each other and to the public; and even a local requirement that utilities notify the consumers.[392] While the legislation adds a much needed notification requirement, there is still a question as to the time period in which all of it must occur. For example, the amendment to 42 U.S.C. 300g(3)(c)(5)(B) requires that the EPA initiate notice to the public if it receives data from a source other than the state and forward the results to the public water system and state in a time period established by the administrator.[393] Similarly,

390. *See* A. Dan Tarlock, *Safe Drinking Water: A Federalism Perspective*, 21 WM. & MARY ENVTL. L. & POL'Y REV. 233, 238–39 (1997), http://scholarship.law.wm.edu/cgi/viewcontent.cgi?article=1306&context=wmelpr [https://perma.cc/6AEE-VNMY].

391. Safe Drinking Water Act Improved Compliance Awareness Act, H.R. Res. 4470, 114th Cong. (2016).

392. *Id. See also* Spangler, *supra* note 304.

393. Safe Drinking Water Act Improved Compliance Awareness Act, H.R. Res.

other sections throughout the bill push for responsive action as soon as reasonably possible.[394]

Given the scientific evidence of harm that any lead levels that exceed 15 ppb, or even that a lower level 5 ppb, can cause, particularly during the first exposure period for children, there is an urgency that should be echoed in the time frames for a response. Further, in addition to requiring that the information disseminated require a clear explanation of the lead level exceedance and steps that the public water system is taking to correct it, federal law should require certain data collection including the location of the sample population, number of houses sampled, and testing dates.

Even if this bill passes the Senate, the remaining concern is that state and local officials can drag the process out or skirt the requirement by instituting questionable testing protocol like pre-flushing and using closed-neck bottles for collection; all of which allow for a better probability that the state's data would not exceed the 15 ppb "action level," thus not triggering the notification requirements.

B. Clarifying the Lead and Copper Rule

The Lead and Copper rule can be revised to address many of the shortcomings that lead to the events in both Flint, Michigan, and Sebring, Ohio. Tightening protocol for allowable data collection and requiring accountability and mandatory notification with imposed deadlines could have arguably prevented or mitigated these crises. The following includes eight proposed revisions that address the problems discussed above.

1. NDWAC Recommendations for LCR Revisions

In 2014, the EPA's National Drinking Water Advisory Council (NDWAC) appointed the Lead and Copper Rule Working Group (LCRWG), which was charged with providing advice to the NDWAC as it develops recommendations for long-term revisions to the Lead and Copper Rule, which was submitted in a report to EPA Administrator, Gina McCarthy,

4470.

394. *Id.*

on December 15, 2015.[395] The report acknowledged the disparate impact and environmental justice issues that arise when there is a lack of resources to reduce the sources of exposure in some communities, particularly those that are poverty stricken.[396] It also considered the cost implications, but emphasized that an important factor in the group's deliberations was the fundamental principal that public water systems and state resources should be aimed toward actions that will achieve the greatest public health protection.[397] It further stated that it was essential that the federal and state governments establish "creative financing mechanisms" to achieve the goals of reducing lead exposure for all individuals exposed to lead, regardless of income, ethnicity, or race.[398]

The particular concern of the committee was the possibility of a municipality leaving a lead service line in place because a low-income resident would not have the means to pay for its replacement.[399] Its emphasis on community outreach is particularly important given that residents must be fully informed of the risks in order to protect themselves and work with local officials to identify and remedy the lead problem. To achieve the goal of fully informing the community of the risks, groups like the LCRWG should recommend that municipalities be required to assess the state of their record-keeping in terms of properly identifying lead service lines. It is probable that Flint's "index card system" is not unlike record-keeping in other urban areas. Requiring local municipalities to immediately implement a plan to update service line information is a critical first step in keeping the public properly informed. As the lead service lines are identified, local governments should consider long-term, holistic solutions for how to protect communities from lead leaching pipes, not short-term measures that increase exposure to lead such as partial service line replacement.

395. Letter from Jill D. Jonas to Gina McCarthy, *supra* note 255.

396. LEAD AND COPPER RULE WORKING GROUP, REPORT OF THE LEAD AND COPPER RULE WORKING GROUP TO THE NATIONAL DRINKING WATER ADVISORY COUNCIL 5 (2015), https://www.epa.gov/sites/production/files/2016-01/documents/ndwaclcrwgfinalreportaug2015.pdf [https://perma.cc/G7YS-NWVF].

397. *Id.*

398. *Id.* at 7.

399. *Id.*

2. Rethink Partial Service Line Replacement

The current version of the LCR has not provided enough incentives to municipalities to fully replace lead service lines.[400] It is extremely costly, and there is no requirement to replace these lines unless the action level has been exceeded and corrective corrosion measures cannot bring the water levels back down below 15 ppb.[401] The NDWAC argues that even though replacing lead service lines is the goal, replacement of these lines can lead to temporary lead elevations in the water due to the sloughing of lead fragments during replacement.[402] Additionally, replacement of the lines would, at an estimated $5,000 per pipe, run anywhere from $16.5 billion to $50 billion before the $384 billion that the EPA says is needed by 2030 for deferred maintenance of the service lines.[403] Additionally, NDWAC recommended that utilities engage in a "meaningful effort" to work with homeowners when they refuse to participate in the lead service line replacement.[404]

While costly, a mandate on line replacement is a step in the right direction in principle, even though Dr. Lambrinidou, a colleague of Marc Edwards, argues that a full replacement would almost never happen while particularly dangerous partial service line replacements would continue to impose significant health risks.[405] In 2011, the American Academy of Pediatrics (AAP) advocated for an immediate moratorium on partial line replacements, stating that studies have shown significantly elevated water lead levels following partial replacement.[406] The AAP provided numerous reasons supporting its opinion, including the fact that many homeowners do not replace their portion of the lead service line

400. *Id.* at 13. *See also* 40 C.F.R. § 141.81 (2016). Because line identification and replacement is so costly, additional financing mechanisms are needed to encourage full replacement by water systems.

401. LEAD AND COPPER RULE WORKING GROUP, *supra* note 396, at 13.

402. *See id.* at 13–14.

403. Wines & Schwartz, *supra* note 85.

404. LEAD AND COPPER WORKING RULE GROUP, *supra* note 396, at 17.

405. Roy, *supra* note 251.

406. Letter from O. Marion Burton, President, Am. Acad. Pediatrics, to Aaron Yeow, Designated Fed. Officer, Sci. Advisory Bd. Drinking Water Comm. (Mar. 22, 2011), https://yosemite.epa.gov/sab/sabproduct.nsf/177871EFC7607CD08525785C0050AAB1/$File/aapcomments.PDF [https://perma.cc/3K99-G3DQ].

due to high costs,[407] the fact that the EPA had at that time not proposed any additional funding or research to study effects of partial line replacement, and the disparate impact on a large percentage of children who live in homes with an intact lead service line.[408] Therefore, it concluded that if a lead service line must be replaced, the water utilities should offer to pay for complete, not partial replacement of the pipe.[409] Further, if partial pipe replacement is necessary, the public water system should provide the homeowner with clear information of the potential problems, including adverse health effects, and offer to pay for installation of NSF-rated lead filters, instructing homeowners on proper use and replacement.[410]

More importantly, in the interest of environmental justice concerns, Dr. Lambrinidou advocated for an objectively measurable definition of "meaningful effort" that the NDWAC initially suggested.[411] Clarifying this recommended definition would prevent a public water system from unfairly blaming homeowners for refusing to participate in the line replacement when they have been ill-informed of the risks, cannot cover the cost, or are under the impression that their water is safe because of a previous one-time test showing a lead level below 15 ppb.[412]

3. Create Transparency and Stronger Education Requirements

The NDWAC recommends implementing a public education outreach program "at least every three years," or when a new customer moves in, which largely ignores the public who currently reside in homes with lead service lines and are already at risk.[413] In 2012, the CDC warned that local and state governments must facilitate data-sharing between

407. *Id.* at 2. The AAP cites a 2004 survey of water utilities that estimates the cost from $450 to $10,000 to the homeowner. *Id.* Further, the AAP cites to estimates in Washington, D.C. and Providence, RI, where only 18 percent and one percent of the residents chose to replace their portion of the service line. *Id.*

408. *Id.* at 3. Approximately three to five million U.S. homes have lead service lines and 94 million homes have lead-soldered fixtures. *Id.*

409. *Id.* at 4.

410. *Id.*

411. Roy, *supra* note 251.

412. *Id.*

413. *Id*. at 3.

health and housing agencies, enact and enforce preventive lead-safe housing standards, help identify financing for lead hazard remediation, and provide families with the information needed to protect their children from hazards in the home.[414] Both the Flint crisis and the recent developments in Sebring, Ohio, demonstrate that information sharing is not occurring. The addition of a statewide or even nationwide registry that can be accessed by local, state, and federal agency officials could be used as a tool to increase accountability and the dissemination of information to the public.[415] Further, the "at least every three years" requirement is woefully inadequate considering the percentage of lead pipes in U.S. homes and the various uses of disinfectants and anti-corrosives by public water systems.

4. Improve Corrosion Control Requirements

In early 2015, when Flint was told that it was required to have corrosion control, the MDEQ maintained that its reading of federal regulations was that those treatments were not even required until *two* rounds of tests were conducted over the course of a year, a stance the state later acknowledged was a mistake.[416] The current language of the LCR should be clarified to require that any change in a public water supply, whether it be from the water source, a change in anti-corrosive measures, or the addition or substitution of disinfectants, will require that public water systems conduct immediate testing and submit the results to the state and the EPA.

5. Modify Monitoring Requirements

Since early 1995, New York City has implemented one of the most progressive monitoring programs by offering free tap water testing to all residents, with the resulting analytical data stored at the Asheville Environmental Quality Index (EQI).[417] New York has also been able to reduce tap lead levels by as

414. ADVISORY COMM. ON CHILDHOOD LEAD POISONING PREVENTION, *supra* note 162.

415. *See id.*

416. Spangler, *supra* note 304.

417. Maas, *supra* note 167, at 319.

much as sixty-six percent since 1992.[418] Importantly, New York instituted a valid testing protocol, where both first draw and one-minute flush lead concentrations were measured and stored along with information on the age, location, and size of the building, the composition of the plumbing materials, and other water quality variables such as pH and use of anti-corrosives.[419] Researchers have commented that this is one of the most comprehensive sets of data reported by a state.[420] Although it is not a perfect data set and is lacking during some time periods, it still provides a powerful example that perhaps the most cost-effective and valuable method to reduce lead exposure in drinking water is to offer and encourage all households to test their water for lead on multiple occasions.[421] Additionally, a two-sample testing protocol (with an initial out-of-the-tap test and one-minute flush) can determine: (1) whether there is a lead problem; and (2) whether a child's exposure can be limited or eliminated by flushing the tap for a specific amount of time before using the water.[422] This measure should be emphasized in a uniform guidance document for state and public water systems, along with other requirements for sample collection, such as the source of the collection (which should be at the tap) and use of larger neck bottles, in an effort to institute uniform testing that will result in a more accurate portrayal of actual lead levels in water.

6. Tighten the Reporting Standards

The current language of the LCR allows public water systems with lead service lines to continue to conduct ninetieth percentile calculations based on non-random sampling that fails to include the "worst-case" homes, thereby allowing them to circumvent their obligations and place the public at risk.[423] As evidenced by the revisions made by Flint in its test results, numbers can be dropped due to "testing errors." The LCR should be revised to require that all data points are included in an initial calculation and, should a state or public water system

418. *Id.*
419. *Id.*
420. *See id.*
421. *Id.*
422. *Id.* at 320.
423. *Id.*; *see also* 40 C.F.R. § 141.80(c) (2016).

determine that certain data points be dropped, they should also submit a second calculation without those points and include reasoned explanations as to why data points were dropped from the sample set.

7. Keep Resources Local and Restore Accountability in Reporting and Communications

As mentioned earlier, local health departments are faced with the challenge of providing numerous health services with limited resources, particularly from states managing economic challenges.[424] Additionally, removing power from locally elected officials and those employees with knowledge and experience in the health and welfare of its citizens effectively hamstrings local officials and prevents accountability. Local health officials have the ability and desire to prioritize activities and funding to meet the needs of the populations it serves.[425] Allowing the local public health officials more authority as well as access to much needed funding is beneficial because it could improve the efficiency of resource utilization and community education efforts. This authority would be valued even if it could possibly lead to fragmentation of services within a state, particularly when resources are limited.[426] Federal, state, and local agencies should focus on a simplified, coordinated effort to ensure better utilization of resources, clear and regular communication between health officials at all levels and mandatory reporting requirements that do not allow for lax oversight. Additionally, Congress should strongly consider a "buck stops here" approach in designating a primary agency, either at the state or federal level, responsible for timely reporting and communication coordination.

424. *See* Kemper, *supra* note 185, at 91.

425. *See id.*

426. *Id.*; *see also* AM. WATER WORKS ASS'N, BURIED NO LONGER: CONFRONTING AMERICA'S WATER INFRASTRUCTURE CHALLENGE 3 (2012), http://www.awwa.org/Portals/0/files/legreg/documents/BuriedNoLonger.pdf [https://perma.cc/DFN9-5KTR]. The AWWA has confirmed the need for more funding; it estimates that the U.S. needs to spend $1 trillion over the next twenty-five years to repair existing water infrastructure.

8. Promote Altruistic and Peer-Reviewed Science

Finally, the federal government should consider providing additional incentives such as grant money for independent researchers like Professor Edwards and Dr. Hanna-Attisha. This would add much needed support for independent testing and additional peer-review measures that are currently lacking in the ATSDR's process. It would also further aid the current woefully inadequate resources provided by the state to local governments.

CONCLUSION

As evidenced from the many complicating factors mentioned above, the crisis in Flint is not an easily solvable problem. With federal and state governments facing financial constraints and shrinking budgets, the solutions must be more targeted and governmental roles and accountability must be clarified. Laura Sullivan, a professor of mechanical engineering at Kettering University at Flint, does not know when Flint's work will be complete, but she believes there is momentum for change:

> What I can tell you is I firmly believe that the light is shining so brightly on the city of Flint right now, that if there were any entity that had any negative or malicious reason to slow things down, there's no way they could do that," Sullivan says. "And if there's any entity that has the ability to make things right, they're being empowered to do that.[427]

And while Flint is diligently working to correct the harm caused to its citizens, and legislators are proposing new requirements for the SDWA, more can be done. In 2017, the EPA is expected to readdress the LCR and propose revisions. These revisions should close loopholes utilized in data collection and reporting, as well as require that state and local government truly make meaningful attempts to communicate with and educate the public, because education is the key to preventing a repeat of the environmental disaster that

427. Shapiro, *supra* note 269.

occurred in Flint. Meanwhile, Leanne Walters, whose son was diagnosed with lead poisoning, continues to fight and bring attention to what happened in Flint.[428] At the beginning, her voice was met with disbelief and resistance, much like the mothers in Woburn, Massachusetts. As Flint still continues to address its water crisis, the Smithsonian Magazine announced in October 2016 that it will be honoring Walters's heroic efforts to inform the public, along with Dr. Marc Edwards's scientific work with the American Ingenuity Award.†

428. Molly Young, *Erin Brockovich Says 'Superman's Not Coming' to Fix Flint Water Crisis*, MLIVE (Nov. 3, 2016), http://www.mlive.com/news/flint/index.ssf/2016/11/erin_brockovich_talks_flint_wa.html [https://perma.cc/WDK5-XVFU].

† Author's Note: Six months after this Article was first posted on SSRN, the EPA published its "Lead and Copper Rule Revisions" white paper. EPA, LEAD AND COPPER RULE REVISIONS WHITE PAPER (2016), https://www.epa.gov/sites/production/files/2016-10/documents/508_lcr_revisions_white_paper_final_10.26.16.pdf [https://perma.cc/KLE5-SZ5H]. I am delighted that the white paper echoes many of this Article's concerns and recommendations. The EPA's endorsement of these recommendations as part of its comprehensive action plan is a positive step forward. I am hopeful that the EPA will quickly promulgate a rule that will further benefit the health of our communities and our children.