

Original Scholarship

The Role of the Legal System in the Flint Water Crisis

PETER D. JACOBSON,^{*,†}
COLLEEN HEALY BOUFIDES,^{*,†}
DENISE CHRYSLER,^{*,†} JENNIFER BERNSTEIN,^{*,†}
and TOBY CITRIN^{*}

**University of Michigan School of Public Health; †Network for Public Health Law—Mid-States Region*

Policy Points:

- A major factor explaining government actors' failure to mitigate or avert the Flint, Michigan, water crisis is the sheer complexity of the laws regulating how governmental agencies maintain and monitor safe drinking water. Coordination across agencies is essential in dealing with multiple legal arrangements.
- Public health legal authority and intervention mechanisms are not self-executing. Legal preparedness is essential to efficiently navigating complex legal frameworks to address public health threats.
- The Flint water crisis demonstrates the importance of democracy for protecting the public's health. Laws responding to municipal fiscal distress must be consistent with expected norms of democracy and require consideration of public health in decision making.

Context: The Flint, Michigan, water crisis resulted from a state-appointed emergency financial manager's cost-driven decision to switch Flint's water source to the Flint River. Ostensibly designed to address Flint's long-standing financial crisis, the switch instead created a public health emergency. A major factor explaining why the crisis unfolded as it did is the complex array of laws regulating how governmental agencies maintain and monitor safe drinking water.

Methods: We analyzed these legal arrangements to identify what legal authority state, local, and federal public health and environmental agencies could have

used to avert or mitigate the crisis and recommend changes to relevant laws and their implementation. First, we mapped the legal authority and roles of federal, state, and local agencies responsible for safe drinking water and the public's health—that is, the existing legal environment. Then we examined how Michigan's emergency manager law altered the existing legal arrangements, leading to decisions that ignored the community's long-term health. Juxtaposed on those factors, we considered how federalism and the relationship between state and local governments influenced public officials during the crisis.

Findings: The complex legal arrangements governing public health and safe drinking water, combined with a lack of legal preparedness (the capacity to use law effectively) among governmental officials, impeded timely and effective actions to mitigate or avert the crisis. The emergency manager's virtually unfettered legal authority in Flint exacerbated the existing complexity and deprived residents of a democratically accountable local government.

Conclusions: Our analysis reveals flaws in both the legal structure and how the laws were implemented that simultaneously failed to stop and substantially exacerbated the crisis. Policymakers need to examine the legal framework in their jurisdictions and take appropriate steps to avoid similar disasters. Addressing the implementation failures, including legal preparedness, should likewise be a priority for preventing future similar crises.

Keywords: public health practice, environment and public health, law, environmental exposure.

THE FLINT, MICHIGAN, WATER CRISIS—A MANMADE TRAGEDY that exposed thousands of children and adults to excessive lead levels in the city's drinking water—was far from inevitable. The crisis resulted from a state-appointed emergency financial manager's decision in April 2014 to switch Flint's water source from the Detroit water system to the Flint River, ostensibly as a cost-saving measure to address Flint's long-standing financial crisis. Rather than alleviating a crisis, the switch created a major public health emergency and caused long-term harm to Flint residents' health, well-being, and trust in government.

Beyond the emergency manager's failure to take into account the public's health, a major factor explaining why the crisis unfolded as it did is the sheer complexity of the laws regulating how governmental agencies should maintain and monitor safe drinking water. In this article, we analyze the multiple legal arrangements at the heart of the Flint water crisis and recommend changes to relevant laws and their implementation. The

key questions we address can be stated simply. Given the appointment of an emergency manager, what legal authority could state, local, and federal public health and environmental agencies use to avert or mitigate the crisis? What legal changes are needed to prevent a similar public health crisis from occurring elsewhere?

Understanding what happened in Flint matters not only for accountability purposes, but also because there is little doubt that the Flint water crisis presages similar critical challenges facing many American cities. Certainly, the legal failures we detail in this paper were not the sole cause of the crisis. But examining how the intersection and implementation of various laws shaped decisions addressing a municipality's immediate financial crisis at the expense of the community's long-term health is essential to preventing a similar crisis from occurring elsewhere.

Context

In its review of what went wrong, the Michigan Governor's Task Force assigned primary responsibility for the state's collective failure to the Michigan Department of Environmental Quality (MDEQ; this department has since been renamed).¹ Before permitting the switch, MDEQ did not require the Flint water department to treat the water with anti-corrosion control measures that would have cost the city approximately \$140 per day and would have averted the crisis.² As a result, lead from the aging service lines to homes leached into the drinking water. Despite immediate complaints from residents about the water's smell, taste, and color, and the fact that General Motors abandoned the Flint water system in October 2014 due to corrosion concerns, state and local officials assured the public that the water was safe to drink.³ (For a brief timeline of relevant decisions and events, see the Appendix.)

In September 2015, at a press conference in Flint, Dr. Mona Hanna-Attisha presented results of elevated blood lead levels (EBLLs) in Flint's children, which the state instantly rejected.^{1,4} Nonetheless, the state relented in October 2015 and the water was switched back to the Detroit water system. Subsequently, residents learned that MDEQ's water testing was faulty, the department had misapplied the US Environmental Protection Agency's (EPA) Lead and Copper Rule (LCR), and the state health department prematurely dismissed evidence of EBLLs.¹ County public health officials declared a public health emergency and issued

a water advisory in October 2015; the Flint mayor declared a state of emergency in December 2015. After more than 18 months of denying a problem, state officials finally declared a state of emergency in Genesee County in January 2016. Even if the resulting harms are not as extensive as feared initially,⁵ the lead exposure will negatively affect the community's health, especially its children, for years.

The Flint community also suffered from a series of Legionnaires' disease outbreaks that allegedly caused 12 deaths in 2014-2015.⁶ Although there is some dispute about the cause of the outbreak, researchers identified inadequate free chlorine levels in the Flint water system following the switch to the Flint River as the leading suspect.⁷ Publicly released emails indicate that the Genesee County Health Department (GCHD) became concerned about the county's increased incidence of Legionnaires' disease in October 2014 and raised these concerns with both the Michigan Department of Health and Human Services (MDHHS) and the Flint Department of Public Works (DPW) at that time.¹ Within a few months of GCHD's investigating the outbreak, MDEQ, the Centers for Disease Control and Prevention (CDC), the EPA, and the Michigan governor's office were also made aware of the outbreak and the suspected link to the Flint water supply.¹ In fact, a CDC official observed in April 2015 that the outbreak was unusually large—"one of the largest we know of in the past decade"—and needed a comprehensive investigation.⁸ Nevertheless, MDHHS declined the CDC's offers of assistance, MDEQ and DPW refused to cooperate with GCHD's requests for information, and the public was not notified until January 2016⁹—well over a year after concerns were raised internally.¹

The factual and legal underpinnings of the Legionnaires' disease outbreak are important to our analysis of Flint's drinking water (ie, lead poisoning) crisis because the legionella outbreak occurred simultaneously and has been linked to the same change in water source. As a result, the events surrounding the spread of Legionnaires' disease are intertwined with and provide necessary context to government officials' and the public's understanding of whether Flint's water was being properly treated. Although efforts to avert and mitigate the spread of Legionnaires' disease may have suffered from similar problems as did efforts to avert and mitigate exposure to lead, this article focuses primarily on the drinking water crisis and therefore discusses Legionnaires' disease only as necessary to provide context.

Methods

We examined the legal framework in two phases. Initially, we mapped the legal authority and roles of federal, state, and local agencies responsible for safe drinking water and the public's health—what we call the existing legal environment. Then we examined how Michigan's emergency manager law altered the existing legal arrangements, leading to decisions that ignored the community's long-term health. Juxtaposed with those factors, we considered how federalism and the relationship between state and local governments influenced the scope and authority of public officials' responses during the crisis. For each aspect, we built the matrices shown in Figures 1, 2, and 3 to indicate how the various laws interact with one another. (Certain aspects of the legal framework might vary across states.)

To conduct our analysis, we used standard legal research methods. That is, we used available legal databases to identify and examine the applicable statutes, ordinances, and regulations relevant to the Flint water crisis. Throughout, we used an iterative process to ensure accuracy and thoroughness of the legal analyses. For example, after Boufides conducted the initial mapping, Jacobson, Chrysler, and Bernstein reviewed and commented on the results. As each matrix was being developed, we used the same process to determine how to array and display the results.

In any analysis of legal texts, there is an element of subjectivity. In this case, our assessment of gaps and overlaps did not vary among the authors but might vary across other analysts. To address this limitation, we subsequently shared our analysis with three professionals who are deeply familiar with all of the Flint legal issues—two attorneys (a public health law practitioner and a public health law scholar) and a public health practitioner. They independently confirmed our research methods and construction of the matrices.

For Phase I, we first identified government agencies at all levels with a significant role in regulating public health or safe drinking water, including responsibility for (a) environmental health hazards; (b) safe drinking water; (c) protecting the public's health; and (d) conducting public health investigations. Next, we searched for all laws relating to each agency's general grant of authority, along with its mandatory and discretionary legal functions relative to safe drinking water or public health.

Figure 1. Legal Framework Templates

Safe Drinking Water Legal Framework										
	Federal		State			County	City			
	EPA	HHS / CDC	Governor	MDEQ	MDHHS	GCHD	Mayor	City Council	DPW	
Prevention										
Surveillance/ Detection										
Investigation										
Intervention										

Public Health Legal Framework										
	Federal		State			County	City			
	EPA	HHS / CDC	Governor	MDEQ	MDHHS	GCHD	Mayor	City Council	DPW	
Prevention										
Surveillance/ Detection										
Investigation										
Intervention										

Abbreviations: CDC, Centers for Disease Control and Prevention; DPW, Department of Public Works; EPA, Environmental Protection Agency; GCHD, Genesee County Health Department; HHS, Health and Human Services; MDEQ, Michigan Department of Environmental Quality; MDHHS, Michigan Department of Health and Human Services.

We then developed summary matrices (available from the authors) of public health and environmental laws to structure our analysis of each agency’s actual or potential relationship to the unfolding events. We consolidated the matrices into the legal framework templates shown in Figure 1 and arrayed each agency’s legal authority according to the key public health functions associated with the crisis: (1) prevention (action to avoid exposure to lead or legionella); (2) surveillance and detection (public health data collection and water-quality monitoring); (3) investigation (activities to identify a public health threat); and (4) intervention (actions to mitigate or avert a public health threat).

Figure 2. The Existing Legal Environment

Public Health and Safe Drinking Water Legal Framework									
	Federal		State		County		City		
	EPA	HHS / CDC	Governor	MDEQ	MDHHS	GCHD	Mayor	City Council	DPW
Prevention	X	Y		X	Y		X	Y	X
Surveillance/ Detection	X	Y		X	Y	Y			X
Investigation	X	Y	X	Y	Y	Y	X	X	Y
Intervention	X	Y	X	Y	Y	Y	X	X	Y

Key:
 X Safe drinking water responsibilities
 Y Public health responsibilities
 □ Highlights absence of public health role in relevant prevention activities

Abbreviations: CDC, Centers for Disease Control and Prevention; DPW, Department of Public Works; EPA, Environmental Protection Agency; GCHD, Genesee County Health Department; HHS, Health and Human Services; MDEQ, Michigan Department of Environmental Quality; MDHHS, Michigan Department of Health and Human Services.

As shown in Figure 2, we combined the separate matrices to capture powers and responsibilities at the intersection of the two legal frameworks. Ideally, each point of intersection in each matrix (eg, from state to local, from health department to environmental department, or from prevention functions to surveillance functions) would represent a clean transition of authority from one agency or level of government to another. Preferably, juxtaposing the safe drinking water and public health legal frameworks would clearly indicate where one agency's responsibility ends and another's begins. But in reality, these intersections depict gaps or overlap between the two legal frameworks that create significant implementation challenges. For that reason, we assessed potential overlapping jurisdiction (ie, powers shared with or monitored by multiple agencies) and gaps in authority that could produce failures to communicate across agencies and governmental levels. From this, we developed a structural legal failures matrix (Table 1) and an implementation needs matrix (Table 2) indicating impediments to effective legal and nonlegal responses.

Table 1. Structural Legal Failures (Gaps and Ambiguities)

	Federal			State			County			City		
	EPA	HHS/CDC	Governor	MDEQ	MDHHS	Gen. Cnty. Bd. of Comm'rs	GCHD	Mayor	City Council	DPW		
Prevention	Lacks PH expertise but no PH consult required	No authority (narrow exceptions)		Lacks PH expertise but no PH consult required	No authority		No authority for type 1 water supply			Lacks PH expertise but no PH consult required		
Surveillance/ Detection				Not required to report to or support PH			Does not receive all BLL test results			Not required to report to or support PH		
Investigation					Unclear with regard to drinking water		Unclear with regard to drinking water					
Intervention					Unclear with regard to drinking water		Unclear with regard to drinking water					

Abbreviations: BLL, blood lead level; CDC, Centers for Disease Control and Prevention; DPW, Department of Public Works; EPA, Environmental Protection Agency; GCHD, Genesee County Health Department; HHS, Health and Human Services; MDEQ, Michigan Department of Environmental Quality; MDHHS, Michigan Department of Health and Human Services; PH, public health.

Table 2. Failures of Implementation (Jurisdictional Overlap and Failures to Perform)

	Federal			State			County			City	
	EPA	HHS/CDC	Governor	MDEQ	MDHHS	Gen. Cnty. Bd. of Comm'r's	GCHD	Mayor	City Council	DPW	
Prevention	Failed to identify/address MDEQ's cultural issues			Failed to assure Flint's capacity, require OCCT							Failed to complete needed upgrades, implement OCCT
Surveillance/ Detection				Guided DPW to submit inaccurate data, lied to EPA	Failed to facilitate GCHD's access to BLL data						Failed to correctly monitor lead

Continued

Table 2. Continued

	Federal			State			County			City	
	EPA	HHS/CDC	Governor	MDEQ	MDHHS	Gen. Cnty. Bd. of Comm'rs	GCHD	Mayor	City Council	DPW	
Investigation	Failed to fully investigate Flint residents' lead concerns	Failed to assist GCHD absent state request	Failed to assure rigorous investigation by agencies	Failed to cooperate with GCHD's LD investigation	Failed to adequately investigate BLL or LD data, support GCHD's LD investigation	Failed to use full authority to investigate				Failed to cooperate with GCHD's LD investigation	
Intervention	Failed to override OCCT decision, take enforcement action, issue emergency order	Failed to declare PH emergency	Failed to take responsibility for agency failures, timely declare emergency	Failed to require Flint to correct violations		Did not urge/require aggressive GCHD action				Failed to notify public of LD outbreak	

Abbreviations: BLL, blood lead level; CDC, Centers for Disease Control and Prevention; DPW, Department of Public Works; EPA, Environmental Protection Agency; GCHD, Genesee County Health Department; HHS, Health and Human Services; LD, Legionnaires' Disease; MDEQ, Michigan Department of Environmental Quality; MDHHS, Michigan Department of Health and Human Services; OCCT, optimal corrosion control treatment; PH, public health.

Figure 3. The Emergency Manager Law

Public Health and Safe Drinking Water Legal Framework + Emergency Manager											
	Federal		State				County		City		
	EPA	HHS / CDC	Governor	Treasury	EM	MDEQ	MDHHS	GCHD	Mayor	City Council	DPW
Prevention	X	Y		X	Y	X	Y		X	Y	X
Surveillance/ Detection	X	Y				X	Y	Y			X
Investigation	X	Y	X	Y	X	X	Y	Y			Y
Intervention	X	Y	X	Y	X	X	Y	Y	X	Y	Y

Key:
 X Safe drinking water responsibilities
 Y Public health responsibilities
 ✖ □ Highlights changes to framework due to emergency manager's appointment

Abbreviations: CDC, Centers for Disease Control and Prevention; DPW, Department of Public Works; EM, Emergency Manager; EPA, Environmental Protection Agency; GCHD, Genesee County Health Department; HHS, Health and Human Services; MDEQ, Michigan Department of Environmental Quality; MDHHS, Michigan Department of Health and Human Services.

For Phase II, we examined the specific provisions of Michigan's emergency manager law and how the law was implemented during the Flint water crisis. In particular, we examined how the governor's appointment of an emergency manager shaped and limited the ability of other responsible agencies to exercise their legal authority. In addition, we explored emergency manager laws in other states to identify, compare, and contrast key features of these laws. We investigated alternative strategies for addressing local financial distress in states without emergency manager laws.

We then mapped the emergency manager legal structure onto the Phase I Summary Matrix, as shown in Figure 3. This approach illuminates how the appointment of an emergency manager undermined the existing legal environment and contributed to what went wrong in Flint. The methodology enables us to evaluate whether the failures were inherent in the structural (ie, objective) legal framework or in how the agencies interpreted and implemented the laws.

The Existing Legal Environment for Safe Drinking Water and Public Health

Figures 1 and 2 indicate the multiple laws, agencies, and levels of government responsible for safe drinking water and protecting the public's health. Figure 2 demonstrates that environmental and health agencies share overlapping responsibility for surveillance, investigation, and intervention to protect the public from health threats associated with contaminated drinking water. The existing legal environment thus resulted in numerous overlapping responsibilities, gaps, and structural and implementation failures. Though overlap is not inherently problematic, it is almost inevitable that gaps will occur if the relevant agencies have not communicated and prepared for instances of overlapping authority. (Figure 3 shows how the emergency manager law affected the existing legal environment.)

Safe Drinking Water

Starting with safe drinking water (marked by the letter "x"), Figure 2 shows divided responsibility at the federal, state, and local levels. Under the Safe Drinking Water Act (SDWA),¹⁰ the EPA is responsible for establishing and enforcing safe drinking water standards. But the SDWA allows the EPA to delegate primary enforcement authority (primacy) to the states, which it has done in most instances (though the EPA retains the authority to override state decisions). In Michigan, MDEQ has primacy for assuring safe drinking water, including exclusive jurisdiction over permitting for type I community public drinking water systems, encompassing most municipal systems.

In the context of Flint, the key regulation is the LCR.¹¹ Because lead exposure is unsafe at any level, the LCR requires a specified treatment technique referred to as optimal corrosion control treatment (OCCT), which is designed to prevent harmful lead concentration in drinking water. Instead of setting health-based contaminant standards, the rule establishes a lead action level. If exceeded in more than 10% of tap water samples, the lead action level triggers additional system-level actions such as lead service-line replacement.¹²

For Flint, the permitting process should have required OCCT as a condition for switching the water source to the Flint River. Contravening

the LCR, MDEQ allowed the switch to occur without adequate corrosion control treatment in place and used improper sampling techniques to test for lead. MDEQ failed to require adequate and needed upgrades to the aging Flint Water Treatment Plant prior to the switch and misled the EPA about OCCT implementation.¹

At the local level, the mayor and city council would ordinarily be responsible for the decision to switch the water source, while the local DPW would retain responsibility for operating and maintaining the water supply on a daily basis, including meeting OCCT standards. As we discuss later in the paper, the appointment of an emergency manager suspended local authority for these decisions. In any event, DPW lacked adequate resources to upgrade the facilities and consequently was not equipped to effectively treat the corrosive Flint River water after the switch. Indeed, mere days before the switch, the Flint laboratory and water quality supervisor emailed MDEQ officials to express concern about the plant's readiness, saying, "If water is distributed from this plant in the next couple of weeks, it will be against my direction."¹(Appendix V, p6) Nevertheless, water distribution began and was accompanied almost immediately by complaints from Flint residents regarding the water's foul odor, color, and taste.

Public Health

State and local agencies have primary responsibility for protecting the public's health (marked by the letter "y" in Figure 2). The Michigan Public Health Code creates a system in which the state and county health departments have parallel authority, with the state retaining the authority to take over local health functions anytime a county fails to perform its responsibilities.^{13,14} Both state and county health departments have broad authority to investigate and intervene when the public's health is threatened, but health departments in Michigan do not play a role in preventing health threats associated with type I community public drinking water supplies (as shown by the bolded block in Figure 2). Significantly, there is no requirement for environmental agencies to provide information to health departments regarding specific environmental health threats or changes to water treatment methods.

Even though health departments did not have a role in regulating Flint's drinking water to prevent contaminants from entering the water,

they still had a key role in preventing harm. They retained responsibility for monitoring the public's health, identifying and investigating aberrations, and acting to avert or mitigate potential harm. Most important, both state and local health departments retained the authority under Michigan's Public Health Code to investigate a threat to the public's health, issue an imminent danger order, or seek an injunction to correct or abate a nuisance, unsanitary condition, or cause of illness. While doing so would have put either the state health department or the local health department in conflict with MDEQ, it might have facilitated an exchange of information that the local health department needed to protect the public's health. Notwithstanding their considerable legal authority, neither health department took any action.

Structural Legal Failures

One of the most glaring structural flaws we observed in the public health legal framework relative to safe drinking water is the lack of a specific and defined role for public health agencies (see Table 1). Both federal and state drinking water laws are designed to protect the public's health, but in Michigan, public health agencies are only tangentially involved in their implementation. Rather than having specific powers related to safe drinking water, public health legal authority arises from general grants of authority to monitor or intervene to protect the public's health. Michigan law delegates primary legal authority and responsibility for safe drinking water to MDEQ, independent of public health agencies. The absence of public health expertise and prioritization in prevention activities contributed to the subsequent implementation failures.

A reciprocal structural flaw is that MDEQ was not required to share information with the state and local health departments. This resulted in a series of implementation failures that exacerbated the crisis.

Implementation Failures

We agree with the Governor's Task Force that "MDEQ caused this crisis to happen"^{1(p29)} when the department abdicated its essential and unique responsibilities as the state's environmental health agency (see Table 2). For instance, MDEQ approved Flint's water supply construction permit including only minimal water treatment plant upgrades despite concerns

about the overall safety of using the Flint River as a water source; MDEQ misinterpreted the LCR when it failed to require corrosion control treatment; MDEQ did not require the city's DPW to correct LCR violations; and MDEQ reported inaccurate information to the EPA regarding corrosion control in Flint, contributing to the EPA's failure to override the state's improper OCCT determination.¹

We also assessed a litany of implementation failures that emerged from investigations during and after the crisis, particularly the lack of communication and coordination, which seem to have stemmed from either inadequate legal preparedness (defined broadly as an understanding of and capacity to quickly and effectively use law) or poor agency culture. For example, MDEQ and the Flint DPW refused to cooperate with GCHD's Legionnaires' disease investigation and MDHHS rebuffed the CDC's offers to assist GCHD's investigation.⁸ In May 2015, MDHHS concluded that the Legionnaires' disease outbreak was over, even as cases continued to emerge and GCHD continued to investigate.¹ Several agencies had legal authority to intervene as the water crisis progressed, but the jurisdictional gaps, overlaps, and inconsistencies in Michigan's existing legal framework elicited confused, contradictory, and ultimately deleterious policy responses. Predictably, this produced missed opportunities to mitigate the crisis.

For instance, with the Public Health Code's broad grant of legal authority, both the state health department (MDHHS) and the local health department (GCHD) were legally well-equipped to act, yet were reluctant to intervene, arguing they lacked sufficient information. Nevertheless, the departments surely could have been louder and more demanding in requesting information and cooperation. Indeed, responsibility for using its bully pulpit to sound the alarm must be understood as embedded within a local health department's role as the primary provider of local public health services. Although Michigan's public health legal structure limited what GCHD could formally undertake within the City of Flint regarding regulation of drinking water, the agency's county-wide jurisdiction offered considerable opportunities to protect the health of the county's citizens once a threat existed.

The legal mechanisms enabling agencies to intervene when another agency's actions or omissions threaten the public's health are not self-executing. Legal checks and balances are futile if a co-equal agency adopts a policy of noninterference or deference without first establishing channels for communication and true cooperation.

The Emergency Manager Law

Michigan's municipal financial emergency law, the Local Financial Stability and Choice Act, empowers the governor to place complete legal control of financially distressed Michigan municipalities in the hands of a state-appointed emergency financial manager. The emergency manager is appointed by and serves at the pleasure of the governor and is shielded from tort liability for his or her decisions. A unique aspect of Michigan's emergency manager law is the extent to which it removes all power from locally elected officials, hence completely displacing local democracy. Although four separate individuals served as Flint's emergency manager between 2011 and 2015,¹ we use the singular form when referring to the emergency manager law's structure.

As shown in Figure 3, the emergency manager's appointment significantly alters the Phase I legal framework in at least two ways. First, the appointment adds two new entities—the State Department of Treasury and the emergency manager—to how the various laws operate and intersect (indicated in Figure 3 by the smaller of the two bolded blocks). More important, it removes all legal authority vested in Flint city officials (indicated by the large X in Figure 3). Because the emergency manager is appointed by and serves at the pleasure of the governor, he or she operates as a state- rather than a municipal-level actor. The emergency manager has complete authority over governmental operations (including the decision to switch the city's municipal water source), budgeting, and employees. As a result, the existing legal framework is inverted, with almost all power concentrated at the state level (shown in Figure 3 by the larger of the bolded blocks).

An emergency manager is empowered to “act for and in the place and stead of the governing body and the office of chief administrative officer of the local government,” and the law declares a purpose to safeguard “the capacity of local units of government and school districts to provide or cause to be provided necessary services essential to the public health, safety, and welfare.”¹⁵ But the statute does not impose specific requirements for how the emergency manager should take the public's health and welfare into account in making fiscal decisions. That is, the statute does not require the emergency manager to balance the public health implications, such as through cost-benefit or cost-effectiveness analyses, relative to the municipality's fiscal needs. Indeed,

the failure to consider the public's health occurred despite the emergency manager's very purpose of preserving governmental services to protect the health, safety, and welfare of Flint residents.

The Flint water crisis shows the catastrophic consequences of an emergency manager's failure to understand his or her role more broadly. At least one Flint emergency manager has professed to understanding that his role was to focus solely on fiscal management, and not on protecting the community.¹⁶ An emergency manager's failure to recognize the broader responsibilities associated with completely taking over a local government—combined with a lack of expertise for identifying and assessing the public health implications of policy choices—undoubtedly contributed to the failure to distribute safe water.

Structural Legal Failures

We identified three major structural flaws in Michigan's emergency manager law. First, the law lacked democratic accountability. Second, the law did not include specific operational requirements for the emergency manager to consider public health in decision making. Its only specific directions pertained to fiscal realities. Third, there is no specific requirement for the emergency manager to engage with the affected community in making decisions.

Implementation Failures

Serious implementation failures exacerbated the structural flaws. Government officials at every level ignored or disregarded community concerns and complaints. As a result, the collective emergency managers who served Flint either failed or refused to recognize the scope of the emerging environmental and public health harms and did not prevent or mitigate them. Not surprisingly, the ensuing fiscal harm exceeded the putative cost savings by orders of magnitude.

Beyond disrupting the existing legal framework, the lack of democratic accountability in the emergency manager law poses an additional, distinct threat to health. In particular, because each emergency manager completely supplanted the authority of Flint's locally elected officials, yet was unwilling and not legally required to consider their concerns, local citizens' voices went unheeded for over a year. The effective silencing

of Flint citizens enabled the development, progression, and perpetuation of the water crisis. Because there is always the risk that someone will act outside the law—accidentally or intentionally—a community’s ability and power to challenge an emergency manager’s decisions may be just as important as having clear legal mandates, competent government officials, and appropriate criteria for decision making.

The emergency manager law’s shortcomings are particularly troubling given its disproportionate application in communities of color. In its report on the crisis, the Michigan Civil Rights Commission noted that almost 50% of Michigan African Americans have lived under emergency management, as compared to less than 10% of all Michiganders.¹⁷ The Governor’s Task Force Report and other analyses of the crisis have similarly recognized that implicit bias and structural racism likely affected how the laws were implemented in Flint, arriving at the “inescapable conclusion” that the Flint water crisis is “a clear case of environmental injustice.”^{1(pp54-55)}

Discussion

Our legal analysis reveals several crucial deficiencies. In short, we observe failures in both the legal structure and how the laws were implemented that failed to stop and substantially exacerbated the crisis. Under these circumstances and the complex legal arrangements in Flint, it should not be surprising that harried public officials, acting under great pressure, failed to coordinate across units or use their legal authority effectively to prevent the crisis or mitigate its extent.

Regardless of the collective emergency managers’ separate actions, the existing legal environment created gaps, overlapping jurisdiction, and inconsistencies that alone would have been problematic for governmental actors. In retrospect, the Flint water crisis exposed the shortcomings in Michigan’s existing legal framework that contributed to confused and ultimately deleterious policy responses. Two key aspects stand out: first, although MDEQ had primary responsibility for safe drinking water monitoring and enforcement in Michigan, multiple agencies had authority to intervene; and second, while the emergency manager’s jurisdiction over Flint prevented the city’s elected officials from acting, it did not supplant the local health department’s county-wide authority. Thus, it seems clear that inadequate legal preparedness contributed significantly

to how and why the crisis unfolded as it did. In this context, it is worth noting that governmental action and inaction during the water crisis has generated a multitude of both civil and criminal litigation against the State of Michigan and various officials involved in decision making. An examination of that litigation is beyond the scope of this paper, most importantly because our focus is on examining ways to improve public health law structures and practices to prevent future crises rather than assigning blame to specific individuals for the Flint crisis.

Our analysis demonstrates how appointing an emergency manager with virtually unlimited legal authority exacerbated the already complex legal arrangements governing safe drinking water. The emergency manager law allowed an unaccountable state-appointed official to undertake crucial, long-term local decisions without considering the public's health, while simultaneously upending the familiar intergovernmental relationships and communication channels that might otherwise have provided a check on those decisions, especially at the local level. Against this inauspicious backdrop, the law's autocratic structure effectively silenced the affected community.

Assessing responsibility is important for a variety of reasons. For one thing, the Flint community deserves monetary compensation and governmental resources to address the very real and severe damage they continue to endure. For another, it is essential to ensure accountability of government and private actors and to restore a sense of justice and fairness to a community that has been harmed. Equally important, a retrospective assessment can develop strategies to help prevent the occurrence of similar disasters in the future, especially in communities facing fiscal challenges and aging infrastructure. Importantly, because emergency manager laws are invoked in financially distressed communities, they disproportionately affect our most vulnerable populations.

Why is the legal environment so complex? Among the many reasons for the legal complexity, three emerge as the most significant. They represent the confluence of structural problems, implementation failures, and the sheer number of actors involved who were not prepared to deal with the complexity.

First is the difficulty of building a structural legal framework that avoids gaps and overlaps when confronting problems that involve the interaction of entirely different legal regimes. In the Flint water crisis, relevant actors needed to understand and be able to implement both Michigan's public health laws and the safe drinking water requirements.

In conjunction with this complex legal environment, the Governor's Task Force recommended changes to MDEQ's agency culture and the regulatory compliance environment, urging the agency to "default to public health protection" where there is legal ambiguity.^{1(p29)} In a separate letter to Governor Snyder, the Task Force also recommended focusing on drinking water safety rather than "minimalist technical compliance."¹⁸ It is additionally important to recognize that multiple other agencies had authority to investigate and intervene when MDEQ failed to properly implement its responsibilities. For example, local and state public health agencies possessed broad, general legal authority to respond to public health threats, yet seemed hesitant to exercise their general authority in response to an environmental threat for which specific authority resided with the state's environmental agency. It therefore seems reasonable to conclude that in the midst of the crisis, it was difficult for the relevant agencies to comprehend and synthesize the two legal regimes and act accordingly, let alone factor in how the emergency manager law affected decisions that would have been routine without an emergency manager.

Another reason for the complexity is the inherent ambiguity of how laws are written, which exacerbates the challenges of assuring adequate legal preparedness. Though some ambiguity is difficult to avoid, legal uncertainty and inadequate legal preparedness contributed to the implementation deficiencies, especially as to how and why the crisis unfolded as it did. According to Benjamin and Moulton, the core elements of legal preparedness are laws and legal authority, effective use of laws, coordination of legal interventions across jurisdictions, and information resources and dissemination.¹⁹ None of these elements was met before or during the Flint water crisis. In fact, the crisis exposed considerable flaws in each element. Our analysis of the gaps and overlaps indicates a lack of cohesiveness across legal regimes that contributed to poor coordination across agencies, deficient communication, and inadequate data sharing. In this case, laws that regulate different concerns across different agencies were enacted and implemented in silos, failing to address the need for an integrated, coordinated framework. Our analysis demonstrates how ineffective coordination impeded successful implementation of the law. But even a more consistent legal regime with better coordination and communication might not have avoided the crisis. Nonetheless, it seems fair to suggest that improved legal preparedness might have at least mitigated the ensuing harm.

A final observation is that the number of actors involved at various levels of government made it difficult to communicate and coordinate across agencies and levels of government. Many of the implementation failures we describe could have been avoided had fewer actors been involved. This is again where legal preparedness is important. As with disaster preparedness generally, effective responses depend on communication and coordination that need to be designed and tested ahead of time. For example, the federal government funded bioterrorism preparedness exercises that included all agencies likely to be first responders. Similar preparedness exercises will be needed to prevent another Flint water crisis.

Although not specifically part of our study, it seems clear that agency cultures also contributed to the Flint water crisis. Public health tends toward a risk-averse, procedurally based culture,²⁰ meaning that practitioners often fear acting prematurely or without adequate legal authority, and public health agencies acted accordingly in Flint. The environmental agencies acted within similar constraints, but also suppressed critical information.¹ Moreover, when confronted with new evidence that contradicted expectations or previously drawn conclusions, both environmental and public health agencies became defensive rather than recognizing opportunities to potentially identify and correct mistakes. It is hard to avoid the conclusion that a culture of punishing transparency and summarily denying bad news seemed to pervade the agencies in the Flint tragedy.

Finally, and likewise not a part of this study, many journalists, commentators, and community activists have reported on the likely role of structural racism, implicit bias, and overt racial animus in the Flint water crisis. As noted above, the governor's own task force concluded that race was an important factor in how the crisis transpired.¹ Equally direct, in his 2016 testimony before the Michigan Civil Rights Commission, Professor Peter Hammer discussed the role of express, structural, and strategic racism in multiple aspects of the Flint water crisis, including the passage and underlying assumptions of the emergency manager law, the series of decisions that led to switching Flint's drinking water source, and the governmental inaction that enabled the crisis to continue for as long as it did.²¹ Though beyond the scope of this study, racism and political bias toward communities of color and low-income communities must be recognized as factors that likely contributed to both the structural and implementation failures we have discussed.

Key Recommendations

Based on the structural flaws and implementation failures described above, we identified key legal and policy changes that can help to prevent or mitigate future crises. To be most effective, these recommendations must work in tandem with transformed agency cultures.

Emergency manager laws . The Flint water crisis is a case study showing the importance of democracy for protecting the public's health. A few commonsense changes in the process of appointing and overseeing an emergency manager can alleviate subsequent failures. These changes would assure that the emergency manager hears and responds to the community's concerns. In short, more accountability is needed. Laws responding to municipal fiscal distress should include an explicit requirement to consider the public's health in decision making. These laws must be consistent with the expected norms of democracy rather than displacing democracy entirely. States should therefore develop a rigorous process for public participation and engagement in decision making once an emergency manager is appointed. Further, states should develop appropriate criteria requiring the emergency manager to take into account the public's health and not just focus on cost-cutting measures. When decisions implicate the public's health, appropriate experts must be consulted. Moreover, an emergency manager should be required to consult regularly with local public health officials to assure identification of less obvious and/or long-term public health consequences.

Safe drinking water . Public health agencies should be involved in regulating safe drinking water supplies. Structurally, this could be achieved through changes in the permitting process and in environmental regulations. State environmental laws should require local health department participation in the permitting process for public water systems within their jurisdiction. The state environmental agency should develop regulations requiring coordination with state and local health departments regarding actions to be taken and when to notify the public of an environmental health threat. Before granting primacy to the states, the EPA should conduct a more rigorous review of state programs and closely examine the culture of the state agency responsible for safe drinking water.

Public health . In the Flint water crisis, the primary problem was with implementation, not the Public Health Code's structure. Addressing the

implementation failures should be a priority for avoiding future similar crises. This would include building capacity for legal preparedness, using legal authority to aggressively investigate and oppose threats to the public's health, and developing criteria for notifying the public of threats such as the Legionnaires' disease outbreak.

References

1. Flint Water Advisory Task Force. Final Report. Commissioned by the Office of Governor Rick Snyder, State of Michigan. https://www.michigan.gov/documents/snyder/FWATF_FINAL_REPORT_21March2016_517805_7.pdf. Published March 2016. Accessed April 29, 2019.
2. Lynch J. DEQ: Flint water fix should have come by 2014. *Detroit News*. January 21, 2016. <http://www.detroitnews.com/story/news/politics/2016/01/21/deq-director-flint/79145696/>. Accessed April 29, 2019.
3. Fonger R. General Motors shutting off Flint River water at engine plant over corrosion worries. *MLive*. October 13, 2014. Updated January 17, 2015. https://www.mlive.com/news/flint/index.ssf/2014/10/general_motors_wont_use_flint.html. Accessed April 29, 2019.
4. Hanna-Attisha M. *What the Eyes Don't See*. New York: One World; 2018.
5. Gomez HF, Borgially DA, Sharman M, et al. Blood lead levels in Flint, Michigan: 2006–2016. *J Pediatr*. 2018;197:158-164.
6. MDHHS orders McLaren Flint to comply with action to address legionella [press release]. Lansing, MI: Michigan Department of Health & Human Services; February 14, 2017. http://www.michigan.gov/mdhhs/0,5885,7-339-73970_71692-404886-,00.html. Accessed April 29, 2019.
7. Zahran S, McElmurry SP, Kilgore PE, et al. Assessment of the Legionnaires' disease outbreak in Flint, Michigan. *Proc Natl Acad Sci U S A*. 2018;115(8):E1730-E1739.
8. Dolan M, Anderson E, Egan P, et al. Flint e-mails: CDC voiced concerns over Legionnaires' actions. *Detroit Free Press*. February 9, 2016. <https://www.freep.com/story/news/local/michigan/flint-water-crisis/2016/02/09/flint-e-mails-state-city-appear-unable-share-info/80028820/>. Accessed April 29, 2019.
9. Increased cases of Legionnaires disease investigated in Genesee County [press release]. Lansing, MI: Michigan Department of

- Health & Human Services; January 13, 2016. https://www.michigan.gov/mdhhs/0,5885,7-339-73970_71692_71696-373401-,00.html. Accessed July 17, 2019.
10. 42 USC § 300g et seq.
 11. 40 C.F.R. §§ 141.80-141.91.
 12. Environmental Protection Agency. Lead and Copper Rule Revisions white paper. https://www.epa.gov/sites/production/files/2016-10/documents/508_lcr_revisions_white_paper_final_10.26.16.pdf. Published October 2016. Accessed April 29, 2019.
 13. Mich. Comp. Laws § 333.2201 et seq.
 14. Mich. Comp. Laws § 333.2401 et seq.
 15. Preamble to the Local Financial Stability and Choice Act, Public Act 436 of 2012, codified at Mich. Comp. Laws § 141.1541 et seq.
 16. Fonger R. Former Flint EM: “My job did not include ensuring safe drinking water.” *MLive*. May 2, 2017. https://www.mlive.com/news/flint/2017/05/former_flint_em_my_job_did_not.html. Accessed April 30, 2019.
 17. Michigan Civil Rights Commission. *The Flint Water Crisis: Systemic Racism Through the Lens of Flint—Report of the Michigan Civil Rights Commission*. Detroit: Michigan Department of Civil Rights; 2017. https://www.michigan.gov/documents/mdcr/VFlintCrisisRep-F-Edited3-13-17_554317_7.pdf. Accessed April 30, 2019.
 18. Letter from Flint Water Advisory Task Force to Governor Snyder. December 29, 2015. In Flint Water Advisory Task Force. Final Report. Commissioned by the Office of Governor Rick Snyder, State of Michigan. Appendix II. https://www.michigan.gov/documents/snyder/FWATF_FINAL_REPORT_21March2016_517805_7.pdf. Published March 2016. Accessed April 29, 2019.
 19. Benjamin GC, Moulton AD. Public health legal preparedness: a framework for action. *J Law Med Ethics*. 2008;36(Suppl.1):13-17.
 20. Jacobson PD, Wasserman J, Botosaneanu A, et al. The role of law in public health preparedness: opportunities and challenges. *J Health Polit Policy Law*. 2012;37(2):297-328.
 21. Hammer PJ. The Flint Water Crisis, KWA and Strategic-Structural Racism: Written Testimony Submitted to the Michigan Civil Rights Commission Hearings on the Flint Water Crisis. Michigan Department of Civil Rights, State of Michigan. https://www.michigan.gov/documents/mdcr/Hammer_Peter_Flint_water_and_strategic-structural_racism_final_552225_7.pdf. Published July 18, 2016. Accessed Oct. 21, 2019.

Support/Funding: Support for this project was provided by the de Beaumont Foundation.

Conflict of Interest Disclosures: Professor Jacobson received consulting fees from Willey and Chamberlain LLC outside the submitted work related to the indictment of the MDHHS administrator in the Flint water crisis criminal trials; this consulting arrangement did not involve issues pertaining to the manuscript.

Acknowledgments: We appreciate the comments from Michael C.H. McDaniel, JD, and Brenda Lawson, JD, on a previous draft. We dedicate this article to our friend and colleague Toby Citrin who unexpectedly passed away in January 2020.

Address correspondence to: Peter D. Jacobson, JD, MPH, University of Michigan School of Public Health, 1415 Washington Heights, Ann Arbor, MI 48109 (email: pj@umich.edu).

Appendix: Timeline of Key Decisions

This timeline documents decisions and events affecting our legal analysis of the Flint water crisis. Entries are excerpted or summarized from the Flint Water Advisory Task Force's Summary Timeline of Key Events and Integrated Event Timeline.¹ (p16-21, Appendix V)

Date	Event
11/2011	Governor Rick Snyder appoints emergency manager (EM) to Flint.
3/2013–4/2013	State treasurer approves EM request to contract with Karegnondi Water Authority (KWA) for water supply. Then—water supplier Detroit Water & Sewerage Department (DWSD) sends letter terminating Flint water service effective April 17, 2014.
4/25/2014	Flint switches to Flint Water Treatment Plant (WTP) as primary water supply source until expected completion of KWA pipeline in 2016. Switch occurs despite Department of Public Works' (DPW) concern that WTP is not ready. Complaints begin immediately.
8/15/2014	Flint issues boil water advisory (E. coli). Boosts chlorine disinfectant use.
9/5/2014	Flint issues boil water advisory (coliform bacteria). Boosts chlorine disinfectant use.

Continued

Continued

Date	Event
10/17/2014	Genesee County Health Department (GCHD) concerned about legionellosis outbreak in Flint and possible connection to water supply.
12/16/2014	MDEQ notifies Flint of quarterly violation of Safe Drinking Water Act (SDWA) Disinfection Byproducts requirements due to elevated levels of total trihalomethanes (TTHM).
12/31/2014	Lead and copper monitoring shows two samples above lead action level.
2/26-27/2015	EPA tells MDEQ that lead sampling protocol (preflushing) may be biasing results. MDEQ informs EPA that Flint is using corrosion control.
3/5/2015	MDEQ notifies Flint of second quarterly violation of Disinfection Byproducts requirements.
3/23/2015	Flint City Council votes to end Flint River service and return to DWSD. Vote is nonbinding. EM refuses to act on city council's vote.
4/24/2015	Contrary to prior statement, MDEQ informs EPA Flint is not using corrosion control.
4/29/2015	State treasurer and EM sign emergency loan agreement stating Flint may not return to DWSD without state approval. Governor Snyder returns control of Flint finances to mayor and city council under supervision of Receivership Transition Advisory Board.
5/29/2015	MDHHS reports 2014–2015 cases of legionellosis in Genesee County and concludes that the “outbreak is over.”
6/8/2015	MDHHS chastises GCHD for communicating with CDC regarding legionellosis without state approval.
6/9/2015	MDEQ notifies Flint of third Disinfection Byproducts quarterly violation.
7/21/2015	EPA informs MDEQ that Lead and Copper Rule (LCR) requires corrosion control in Flint.
8/17/2015	MDEQ notifies Flint of lead and copper monitoring results, “scrubbed” to exclude two high lead results; directs Flint to install corrosion control and phosphate treatment.

Continued

Continued

Date	Event
8/31/2015	Professor Marc Edwards (Virginia Tech) reports on corrosive lead levels in Flint water.
9/24/2015	In a press conference, Dr. Mona Hanna-Attisha (Hurley Medical Center) releases findings of elevated blood lead levels in Flint children.
9/25/2015	Flint, with support of GCHD, issues lead advisory.
9/29/2015	GCHD demands fresh analysis by MDHHS of state blood lead level data; issues public health advisory.
10/1/2015	Genesee County Board of Commissioners and GCHD issue “do not drink” advisory. GCHD declares public health emergency.
10/2/2015	Governor Snyder announces Flint Action Plan to address water system.
10/16/2015	Flint is reconnected to Detroit water system.
11/10/2015	EPA announces intent to audit State of Michigan’s drinking water program.
12/14/2015	Flint mayor Karen Weaver declares state of emergency in Flint.
12/29/2015	Governor Snyder apologizes for Flint water crisis via a press release.
1/4/2016	Genesee County Board of Commissioners declares state of emergency.
1/5/2016	Governor Snyder declares state of emergency for Genesee County.
1/13/2016	Governor Snyder/MDHHS issues first public notice of 2014–2015 spike in legionellosis in Flint.
1/16/2016	President Barack Obama approves declaration of emergency and request for federal aid.
1/22/2016	Governor Snyder returns additional executive powers to Flint’s mayor.
