The Flint Water Crisis Study Guide: Government Failure and Intransigence, Lead Poisoning of Children, Death from Legionnaires’ Disease, and Systemic Racism  
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“The Flint Water Crisis is a story of government failure, intransigence, unpreparedness, delay, inaction and environmental injustice.”  
Governor’s Flint Advisory Task Force 2017  

Unusual Aspects of the Flint Crisis Requiring Introductory Explanation  
This Study Guide to the Flint Water Crisis introduces a number of terms and historical circumstances which require understanding in order to evaluate contextual factors which influenced this case study.  

Flint, Michigan’s Historical Importance and Rapid Decline  
The City of Flint was the birthplace of General Motors, and an important contributor to the vibrancy of the automobile industry in the United States. The first 20 minutes of the documentary by Michael Moore entitled Roger and Me captures this. 

General Motors severely downsized in the 1970s by relocating 38,000 previously secure and well-paying jobs, Flint went from being a prosperous city of nearly 200,000 to a struggling city of less than 100,000 with 40 percent of the population living in poverty.  

Flint’s Population Based on the US Census  
• 1960: 196,960  
• 1970: 193,317  
• 1980: 159,611  
• 1990: 140,761  
• 2000: 124,963  
• 2010: 102,434  
• 2014: 99,002 (not census)  
• 2017: 96,448 (not census)  

Michigan’s Emergency Fiscal Management Law  
This law allows the Governor to suspend the authority of an elected City Council and appoint an Emergency Fiscal Manager. Flint was not the first city in Michigan to have authority vested in an Emergency Fiscal Manager. But Flint was found to be $25.7 million in debt. 

In 1990 Michigan passed Public Act 72 authorizing the state to appoint an emergency fiscal manager over distressed schools and cities.  

December 2011-August 2012  
Michael Brown service as Flint emergency manager  

August 2012 -July 2013  
Ed Kurtz serves as emergency Flint fiscal manager
November 2012
Michigan voters overturn Public Act 72

December 2013
Michigan legislature passes Public Act 436. This new law was immune from referendum by Michigan voters

July 2013 –October 2013
Michael Brown again serves as Flint emergency fiscal manager

October 2013 –January 2015
Darnell Earley serves as Flint emergency fiscal manager

January 2015 –April 2015
Jerry Ambrose serves as Flint emergency fiscal manager. With a $7 million state loan to Flint, the fiscal disaster was declared over

Legionnaires’ Disease
An outbreak of Legionnaires’ Disease killed 12 people and sickened at least 87. Legionnaires’ Disease is a lethal form of pneumonia which was caused in Flint by low chlorine in Flint water. According to Michael Swanson of the University of Michigan who has been studying Legionnaires’ for 25 years:

“It’s a pneumonia, but what’s different about it is, we don’t share it like we do the flu or common cold...It’s caused by a bacterium, *Legionella pneumophila* that grows in water...If you don’t have a robust immune system, the microbe can cause a lethal pneumonia.”

“It was the change in water source that caused the Legionnaires’ outbreak.”

A report by National Public Radio included the following:

“...a complex of factors may be responsible for low chlorine levels during the crisis. In additional to killing microbes, chlorine can react with heavy metals like lead and iron, and with organic matter from a river. That means lead and iron in the water may have decreased the amount of chlorine available to kill bacteria.”

Nick Lyon, the former head of the Michigan Department of Health and Human Services, and Dr. Eden Wells, Michigan Chief Medical Executive, were charged with involuntary manslaughter in the Legionnaires’ Disease outbreak. The new Attorney General authorized the dismissal of the involuntary manslaughter charges against Lyon and Wells pending further investigation.

Lead Poisoning in Children

*Facts about lead exposure*

- Lead poisoning is a totally preventable disease.
- Lead exposure can harm young children and babies--even before they are born.
- Even children that seem healthy can have high levels of lead in their bodies.
- Children can get lead in their bodies by breathing or swallowing lead dust, or by eating soil or paint chips with lead in them.
- Removing lead-based paint improperly can increase the danger to your family.
• Centers for Disease Control and Prevention estimates reveal that about half a million children between the ages of one and five living in the U.S. Have an elevated level of lead in their blood.

Lead is more dangerous to children than adults because:
• They often put their hands and other objects in their mouths that can have lead dust on them.
• Their growing bodies absorb more lead.
• Their brains and nervous systems are more sensitive to the damaging effects of lead.

Children between the ages of 1 and 3 who live in low-income housing built before 1978 are especially at risk. In early 2005, the Consumer Product Safety Commission announced a new policy addressing lead in children's metal jewelry. There have been cases where children who swallowed or repeatedly sucked on jewelry items containing lead developed high blood lead levels. Since 2004, the Commission has recalled over 150 million pieces of toy jewelry that were sold in vending machines and through other outlets.

Effect of lead in the body
Lead poisoning can affect just about every system in the body yet often produces no definitive symptoms. The following are some of the most common symptoms of lead poisoning. However, each child may experience symptoms differently. Lead poisoning may cause:
• Damage to the brain and nervous system
• Behavior and learning problems; slowed growth
• Hearing problems
• Headaches
• Anemia

Lead is also harmful to adults, who may suffer from:
• Difficulties during pregnancy
• Reproductive problems in both men and women
• Anemia
• Kidney damage
• High blood pressure
• Digestive problems
• Nerve disorders
• Memory and concentration problems
• Muscle and joint pain

High levels of lead may also cause seizures, coma, and death. The symptoms of lead poisoning may resemble other conditions or medical problems. Always consult your child's doctor for a diagnosis.

Systematic Racism
In 2017, the Michigan Civil Rights Commission reported on the Flint water crisis with an important subtitle: “Systemic Racism Through the Lens of Flint.”

A key paragraph captures the meaning of “systemic racism”:
“Reviewing the historical government actions impacting the living and health conditions of Flint residents, i.e., the legacy of Flint was sobering and left a deep impression. We must come to terms with the ongoing effects of “systemic racism” that repeatedly led to disparate racial outcomes as exemplified by the Flint Water Crisis. This can no longer be ignored.”

The Michigan Civil Rights Commission went on to observe: “The people of Flint have been subjected to unprecedented harm and hardship, much of it caused by structural and systemic discrimination and racism that have corroded your city, your institutions, and your water pipes, for generations.”

The Backstory of the Flint Water Crisis
The Flint River had been the drinking water source for the City of Flint until the 1960s. Flint signed an agreement then to get water from a new pipeline which brought water from Lake Huron.

February 2004 U.S. Geological Survey, MDEQ and Flint Water Utilities Department
“The source water area for the Flint emergency intake includes 96 potential contaminant sources.”

July 2011 Rowe Engineering Report
“A detailed investigation of potential courses of contamination has not been completed.”

November 29, 2011
A review team determines the City of Flint is $25.7 million in debt.

March 26, 2013
MDEQ’s Michael Alexander
“The Flint River from just upstream of the City of Flint to the upstream end of the Holloway Reservoir is not meeting designated uses for:
• Fish consumption due to PCB in fish tissue and water column.
• Total and partial body contact due to E. coli in water column.
• Other indigenous aquatic life due to nutrients and phosphorus in the water column.”

March 26, 2013
MDEQ District Supervisor Stephen Busch
Continuous use of the Flint River would:
“Pose an increased microbial risk to public health (Flint River vs. Lake Huron source water).”
“Pose an increased risk of disinfection by-product (carcinogen) exposure to public health (Flint River vs. Lake Huron source water.)”
“Trigger additional regulatory requirements under the Michigan Safe Drinking Water Act.”

March 27, 2013
MDEQ’s Jim Sygo responds to colleague Stephen Busch:
“...we are in a situation with Emergency Fiscal Managers so it’s entirely possible that they will be making decision relative to cost.”

**Annotated 2014 Timeline**

March 7, 2014
Flint Emergency Manager Darnell Earley informs Detroit Water and Sewage Department that Flint will switch to Flint River water and discontinue water service with DWSD using Lake Huron Water.

March 26, 2014
Stephen Brooks, MDEQ water safety engineer:
“...I would like to make sure everyone is on the same page on what Flint will be required to do in order to start using their plant full time.”

April 16, 2014
Michael Glasgow, Water Treatment Plant operator for the City of Flint:
“...I would like to make sure we are monitoring, reporting and meeting requirements before I give the OK to start distributing water.”

April 17, 2014
Mike Glasgow
“I do not anticipate giving the OK to begin sending out water anytime soon. If water is distributed from the plant in the next couple of weeks, it will be against my direction.”

April 23, 2014
MDEQ’s Stephen Busch to MDEQ Spokesman Brad Wurfel:
“While the Department is satisfied with the City’s ability to treat water from the Flint River, the Department looks forward to the long term solution...”
[The long-term solution was to be a new pipeline for Flint from Lake Huron which was starting construction]

April 25, 2014
Press Release from Flint Department of Public Works Director Howard Croft:
“The test results have shown that our water is not only safe, but of the high quality that Flint customers have come to expect. We are proud of that end result.”
Flint Mayor Dayne Walling states:
“It’s regular, good, pure drinking water, and it’s right in our backyard.”

May 15, 2014
[a top EPA official in Washington, D.C., Mike Eisenberg, is informed of health complaints about Flint water]
U.S. EPA’s Jennifer Crooks, Michigan’s Drinking Water Liaison, about citizen Lathan Jefferson’s complaint about rashes caused by the Flint water:
“He asked me for free drinking water lab analysis, which I was unable to provide. He only wants to speak with someone from EPA headquarters.”

June 2014
[responding to numerous water quality complaints]
Flint Mayor Dayne Walling:
“It’s a quality, safe product...I think people are wasting their precious money buying bottled water.”

[Important note: In January of 2016 U.S. EPA determined that the City of Flint and MDEQ did not anticipate or provide for corrosion controls. As a result, the highly corrosive Flint River water in city water lines would cause hazardous lead to leach into city drinking water supplies…” Bridge Magazine, “Poison on Tap,” p. 37.]

August 15 and September 5, 2014
Boil water advisory after fecal coliform bacteria is found in city water.

October 13, 2014
“General Motors said it will no longer use the river water at its engine plant because of fears it will cause corrosion.” MLive.com

MDEQ Spokesman Brad Wurfel:
“I stressed the importance of not branding Flint’s water as ‘corrosive’ from a public health standpoint simply because it does not meet a manufacturing facility’s limit.”

October 14, 2014
[Opinions of two top lawyers to Governor Rick Snyder of Michigan]
Deputy Legal Counsel Valerie Brader
“I see this as an urgent problem to fix.”

Chief Legal Counsel Michael Gadola:
“...To anyone who grew up in Flint as I did, the notion that I would be getting my drinking water from the Flint River is downright scary. Too bad the (emergency manager) did not ask me what I thought, though I’m sure he heard it from plenty of others. My Mom is a City resident. Nice to know she’s drinking water with elevated chlorine levels and fecal coliform...They should try to get back on the Detroit system as a stopgap ASAP before this thing gets too far out of control.”
October 14, 2014
[context of this time period is the final weeks of Governor Rick Snyder’s re-election campaign]

October 21, 2014
[Susan Bohm of the Michigan Department of Health and Human Services alerted official in Genesee County of concerns that Flint’s water would be linked to Legionnaires’ disease.]

Annotated 2015 Timeline

January 7, 2015
Advisory from the Michigan Department of Treasury, Management and Budget indicating the state is “in the process of providing a water cooler on each occupied floor…” [in the state of Michigan Office Buildings in Flint].

January 23, 2015
Snyder administration Special Projects Manager Ari Adler raises concerns about Flint with Communications Director Jarrod Agen: “this is a public relations crisis—because of a real or perceived threat is irrelevant—waiting to explode nationally.”

January 29, 2015
Flint Emergency Manager Jerry Ambrose declines DWSD water resource reconnection.

January 30, 2015
MDEQ Spokesman Brad Wurfel:
I don’t want my director (MDEQ Dan Wyant) to say publically that the water in Flint is safe until we et the results of some county health department epidemiological trace work back on 42 cases of Legionnaires’ disease in Genesee County since last May.”

Early February 2015
The Chief of Staff to Michigan Governor Snyder, Dennis Muchmore writes: “Since we’re in charge we can hardly ignore the people of Flint...After all, if GM refuses to use the water in their plant and our agencies are warning people not to drink it...we look pretty stupid hiding behind some financial statement.”

Both Treasury and Flint Emergency manager Jerry Ambrose say a switch back to Lake Huron water would result in a 30 percent increase in Flint’s already high water rates.

Flint Mayor Walling seeks $20 million from state and federal sources for debt relief for the City of Flint.

State Representative Sheldon Neeley from Flint writes that his constituents “are on the verge of civil unrest.”
Shurooq Hasan, an epidemiologist for Genesee County, writes to an outside expert as part of seeking to understand why the number of cases of Legionnaires’ Disease had quadrupled in 2014 over the number of in 2013 (49 cases in 2014).
“We have investigated a hospital...but have expanded to include the city’s water supply.”

February 26, 2015
Email from Jennifer Crooks of EPA to Stephen Busch and Mike Prysby (MDEQ)
“...I have been discussing the water situation with Lee-Anne Walters since January, and she has been talking to Mike Glasgow at the plant about the black sediment in her water...(Glasgow did test it find that the iron levels were greater than his test would go...But, because the iron levels were so high, he suggested testing for lead and copper. WOW!!! Did he fine LEAD! 104 parts per billion.) She has two children under the age of three...Big worries here.”

February 27, 2015
The Michigan Department of Environmental Quality makes a false statement to an inquiry from EPA seeking explanation for high levels of lead being present in a Flint resident’s water supply.
MDEQ falsely claims that there is “optimized corrosion control” being used in the Flint Water Treatment Plant.

Bridge Magazine explained the importance of “corrosion control”:
“Corrosion control is a common water treatment strategy to prevent corrosive water from corroding water lines and causing numerous problems, most notably the leaching of lead from old pipes into public water supplies.” (p. 59)

Virginia Tech Professor Mark Edwards wrote in September of 2015:
“Effective July 1998, the federal Lead and Copper Rule (LCR) has required that all large public water systems maintain a program to control levels of lead in drinking water from corrosion. Moreover, the law requires the City of Flint to have a state-approved plan, with enforceable regulatory limits for ‘Water Quality Parameters’ including pH, alkalinity and/or corrosion inhibitor dose measured in the water distribution system. MDEQ never required Flint to have a corrosion control program, nor did it set water quality parameters for the new Flint River source water.” (Mark Edwards, Bridge Magazine, 2016, p. 59)

THE U.S. ENVIRONMENTAL PROTECTION AGENCY WILL CONCLUDE IN A JANUARY 2016 ORDER THAT MDEQ SHOULD HAVE ORDERED AND SUPERVISED OPTIMIZED CORROSION CONTROL AS SOON AS FLINT SWITCHED TO FLINT RIVER WATER”

February 27, 2015
Miguel Del Toral, the EPA Region 5 Ground Water and Drinking Water Regulations Manager, became the only key state or federal drinking water regulator to consistently
sound the alarm about a potentially serious lead problem. He was consistently, and wrongly, discredited within EPA and by state of Michigan officials.

March 3, 2015
Flint Emergency Manager Jerry Ambrose states that reconnection to Lake Huron water would be too costly

March 11, 2015
MDEQ Stephen Busch: “...there is no evidence or confirmation of legionella coming directly from the Water Treatment Plant...”

March 12, 2015
MDEQ Liane Shekter Smith to MDEQ colleagues:
“While the change in [water] sources may have created water quality conditions that could provide additional organic nutrient source to support legionella growth, there is no evidence or confirmation of legionella coming directly from the Water Treatment Plant or in the community water supply distribution system at this time.

March 13, 2015
Brad Wurfel, MDEQ Communications Director:
“Essentially, Jim Henry with Genesee County Health is putting up the flare. He’s made the leap formally in his email that the uptick in [Legionnaires’ Disease] cases is directly attributable to the river as a drinking water source—this is beyond irresponsible...”

March 13, 2015
Stephen Busch from MDEQ to Jim Henry of Genesee County Health Department:
“MDEQ fully recognizes the public health threat posed to individuals that contract Legionnaires’ Disease with the understanding that the disease is not contracted by ingestion of potable water and therefore not regulated under the federal Safe Drinking Water Act...”

BRIDGE MAGAZINE TRUTH SQUAD (p. 67)
“The Legionnaires’ issue doesn’t become public until the Governor announces it nine months later (in January 2016).

March 18, 2015
EPA’s Jennifer Crooks to MDEQ and Del Toral in EPA Region 5:
Lee-Ann Walters reported lead levels in her home were 397 parts per billion

March 19, 2015
Regarding Legionnaires’:
Email from Jim Henry at Genesee County Health to MDEQ’s Stephen Busch:
“I was informed [by Mick Prysby of MDEQ] there was no reason to meet because the municipal water system is in compliance with the Safe Water Drinking Act.”
March 30, 2015
MDEQ informs the Flint Water Treatment Plant that the 6-month lead copper monitoring put the 90th percentile results for lead at 6 parts per billion.

April 24, 2015
MDEQ Stephen Busch to MDEQ colleagues Prysby and Cook:
“…There are no additional requirements for the City of Flint based on the levels of lead and copper in the current source water and the results of the lead and copper distribution monitoring…I believe this condition has been met.”

BRIDGET MAGAZINE TRUTH SQUAD, p. 71
“Three MDEQ drinking water specialists are fully aware of Del Toral’s concerns. MDEQ takes no action. “MDEQ begins a month-long legalistic interpretation that no additional corrosion control or anti-lead strategies are required under the law in the Flint drinking water system.”

June 24, 2015
EPA’s Del Toral sounds his loudest alarm to date in an eight-page memo to his supervisor Thomas Poy.

BRIDGE MAGAZINE TRUTH SQUAD, p. 76
“…no one at EPA or MDEQ fully shared Del Toral’s sense of urgency, or had-as of June 30- any plans to address Del Toral’s concerns. EPA ultimately and officially shares a redacted and final copy of Del Toral’s report to MDEQ four months later.”

July 1, 2015
EPA Region 5 Director Susan Herdman downplays and even apologizes for the Del Toral memo:
“The preliminary draft report should not have been released outside the agency...Again I apologize...for the manner in which this matter was handled.”

July 13, 2015
MDEQ Spokesman Brad Wurfel:
“Let me start here---anyone who is concerned about lead in the drinking water in Flint can relax.”

July 23, 2015
Linda Dykema, Director of the Michigan Department of Health and Human Services Division of Environment Health criticizes Miguel Del Toral:
“Regarding the EPA drinking water official quoted in the press articles [Del Toral], the report that he issued was a result of his own research and was not reviewed or approved by EPA management. He has acted outside his authority.”
July 24, 2015
MDEQ Brad Wurfel:
“By the tenants of the federal statute, the city is in compliance for lead and copper.”
“...the bottom line is that residents of Flint do not need to worry about lead in their water supply...”

July 28, 2015
Cristin Larder, a MDHHS epidemiologist notes a spike in blood-lead levels in Flint in the summer of 2014 just after the switch to Flint River drinking water.
[This is not taken seriously]

BRIDGE MAGAZINE TRUTH SQUAD, p. 89
“MDHHS does not understand what its own data says. Only after a separate and crucial Flint-specific lead study released in September 2015 by Hurley Medical Center in Flint will MDHHS revisit its data and eventually, and painfully, come to the realization that blood lead levels in Flint children are, indeed, rising.”

“MDHHS’s failure to see warning signs in child lead-testing data is the second punch in a one-two combination of state government incompetence in the Flint water crisis. First comes many months of ignorance, missed warnings, denial, and inaction in the MDEQ regarding the lack of corrosion control in the Flint water pipes, even after alarms are repeatedly raised by EPA. Then comes weeks of ignorance, missed warnings, denial and inaction in MDHHS regarding elevated lead level in Flint children.”

August 3, 2015
Email from EPA’s Tinka Hyde to MDEQ’s Liane Shekter Smith
“Is there a public health concern regarding lead in Flint or other regulatory requirements?”

In a July 21 conference call between EPA and MDEQ:
“MDEQ explained that they did not treat the switch to Flint River water as a ‘new system’ but not as a new source...”

“Region 5 (EPA) noted that under 141.81b3iii that any system that has been deemed optimized must notify the State of any long-term change in treatment or the addition of a new source. The state must review and approve the change...”

August 17, 2015
MDEQ orders optimized corrosion control but gives Flint two years to implement the corrosion controls.

August 23, 2015
Virginia Tech Professor Marc Edwards notifies MDEQ that he will begin an independent study of Flint water quality.
August 27, 2015
20 percent of the first Edward’s samples of 48 exceeded 15 parts per billion.

August 27, 2015
MDEQ spokesman Brad Wurfel to Mike Brown, the Governor’s senior federal policy representative:
“Don’t know what it is, but I know what it’s not. The key to lead and copper in drinking water is that it’s not the source water, or even the transmission lines (most of which are cast iron). It’s in the premise plumbing (people’s homes).”

BRIDGE MAGAZINE TRUTH SQUAD
This assertion proves to be very wrong a few weeks later in October when Flint Department of Public Works officials indicate that many city pipes have the possibility of leaching lead, but the city can’t immediately get its finger on the issue because the info is stored on 45,000 paper index cards.

September 2, 2015
Marc Edwards asserts that corrosiveness of the Flint River water is causing lead to leach into resident’s water.

September 2, 2015
MDEQ’s Brad Wurfel
“We want to be very clear that the lead levels being detected in Flint drinking water are not coming from the treatment plant or the city’s transmission lines...The issue is how, or whether, and to what extent the drinking water is interacting with lead plumbing in people’s homes.”

September 14, 2015
Stephen Busch of MDEQ to Dr. Yanna Lambrinidou of EPA:
“As the City of Flint has not yet established optimized corrosion control treatment, the MDEQ is not yet at the point of regulatory requirements where the range of water quality parameters would be set.”

BRIDGE MAGAZINE TRUTH SQUAD p. 103
Stephen Busch’s response is a clear admission that MDEQ let Flint switch drinking water sources to the Flint River without establishing water quality parameters.

September 20, 2015
Marc Edwards alleges to EPA that Flint’s lead sampling techniques are seriously flawed.

September 24, 2015
Dr. Mona Hanna-Attisha released her study of blood samples of young children which indicates that the levels of lead in blood rose sharply since the water-source switch. In one zip code the blood levels of children tripled, and in another they doubled.
The response of MDHHS staffer, Wesley Priem, manager of the Healthy Homes section: “This is definitely being driven by a little science and a lot of politics.”

September 25, 2015
“The City of Flint is issuing a lead advisory for residents to be aware of lead levels in drinking water after hearing concerns from the medical community. While the city is in full compliance with the Federal Safe Drinking Water Act, this information is being shared as part of a public awareness campaign to ensure that everyone takes note that no level of lead is considered safe.”

No Conclusion Yet
There is no conclusion yet to the Flint Water Crisis. The Flint Water Advisory Task Force issued its first report on December 28, 2015 and assigned major blame to the Michigan Department of Environmental Quality. The department’s director, Dan Wyatt, and Chief Spokesman, Brad Wurfel, resigned.

On January 13, 2016 Governor Snyder announced that there had been 87 cases of Legionnaires’ Disease with 9 deaths (increased to 12). In his State of the State Address on January 19, 2016, Governor Snyder said: “I’m sorry and I will fix it.”

On January 21, 2016, EPA Administrator Gina McCarthy issued an Emergency Order with a cover letter to Governor Snyder:
“The U.S. Environmental Protection Agency is deeply concerned by continuing delays and lack of transparency and has determined that the actions required by the order...are essential to ensuring the safe operation of Flint’s drinking water system and the protection of public health.”

As of July of 2019 there is an expanded criminal probe. Fifteen original criminal indictments have been dismissed pending new investigations of criminal responsibility for the Flint Water Crisis.

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