



Cornhusker Economics

Flint Michigan Drinking Water Crisis

Background: water lines including water mains and the distribution lines from the water main to the home, business, or other buildings were made of lead up to the early 20th century. Now, most water distribution lines are copper, and most indoor water supply plumbing is usually copper or plastic. Many cities have replaced their lead water mains but it is a massively expensive proposition – most water lines are buried under streets so the street has to be dug up to get to the water line. Even where lead water mains have been replaced, there are still the water distribution lines from the water main to the home or other buildings. Where the water system has lead pipes, the quality of the drinking water is managed through water treatment to prevent corrosive elements that would leach lead into the community's tap water. Appropriate water treatment can provide drinking water that would actually line the lead water pipes with a preventative coating to prevent corrosion.

Lead is toxic and severe lead poisoning can lead to seizures, coma, or death. Lead poisoning in children can lead to permanent learning disabilities.

2011: cash-strapped Flint, Michigan, falls under state financial control (the city declared a state of financial emergency, which led to the state takeover of all city finances including decisions on city drinking water supply management).

2013: the state-appointed emergency manager stopped buying Flint drinking water from Detroit and substituted cheaper water from the Flint River. This saved \$100/day – a false savings given the ultimate public health outcome. Flint drinking water officials failed to treat the Flint River's highly corrosive water [very negligent] and as a result, lead leached out from the city's old lead water mains into thousands of Flint homes,

schools, and businesses. The state environmental officials and EPA officials who oversaw this were also very negligent.

2014: Flint residents complained that Flint River drinking water looked discolored and smelled and tasted bad. Flint drinking water officials assured residents that the water was safe, but they were wrong. In October, Flint's General Motors Truck Assembly plant discontinues using Flint tap water because high levels of chlorine were corroding engine parts.

2015: Virginia Tech University researchers identified very high lead levels in Flint drinking water. Flint pediatrician identified high lead levels in children, which can lead to severe and permanent learning disabilities. Between 6,000-12,000 children were exposed to drinking water with high lead levels. In October, Flint switched back to Detroit drinking water (could have done so months earlier).

2016: State and federal states of emergencies were declared, which made state and federal emergency assistance available to Flint and its residents. Coalition of citizens and clean water groups sued city and state officials to get clean drinking water for Flint residents. Federal judge orders door-to-door delivery of safe drinking water (bottled water) to those needing it. Criminal charges are filed against 13 state and local officials.

2017: City of Flint agrees to replace lead water pipes, and to implement a comprehensive tap water testing program. Over 27,000 residential water lines were excavated and checked, over 10,000 lead pipes have been replaced, and over 15,000 water lines were copper, not lead, and did not need to be replaced. To date, fewer than 500 water lines need to be inspected. State ends bottled water distribution.

2018: Nestle donated 1.6 million bottles of water for free distribution in Flint (100,000 bottles per day for several months).

2020: In August, victims were awarded a combined settlement of over \$600 million with 80% going to the families of children affected by the water crisis.

2021: In January, former Michigan Gov. Rick Snyder and eight other officials were charged with 34 felony counts and seven misdemeanors for their role in the crisis. Fifteen criminal cases have been filed against state and local officials with only one conviction of a minor charge to date.

Key takeaways:

1. Very important: normally community drinking water testing is done at the drinking water treatment plant, not e.g. through random sampling of tap water throughout the community. So, if the water was okay for whatever it was tested for at the drinking water treatment plant, that testing would not pick up the high lead levels that came out of the water taps of homes and businesses served with lead water pipes. This is key as to why SDWA water testing did not catch the lead for so long. :--(The drinking water testing program is premised in part on the expectation that drinking water officials are fully aware of the challenges associated with the community's drinking water distribution system and take appropriate precautions to avoid all possible public health issues.

2. The lead water pipe issue affects virtually every community in the US. The key issue is making sure that the water that leaves the drinking water plant does not cause the lead to leach into the drinking water, as it did in Flint. Clearly, state environmental and some EPA officials did not take the potential for leaching from the change in Flint's water source as seriously as they should have.

3. President Biden has asserted that the 2022 infrastructure program would replace every lead water pipe in the US. Whether it will actually accomplish that remains to be seen – the cost would be in the tens of billions at least. But hopefully, they will get the lead water line replacement task completed in Flint.

4. Flint is an example of a community with a hollowed-out infrastructure. In this case, this means that the city water department didn't have adequate staffing and funding to do the job they needed to. This situation was worsened when cash-strapped Flint was in essence taken over by the state of Michigan because Flint was nearly bankrupt. An emergency city manager from the state took over running Flint and looked for places to cut spending everywhere in city government in an attempt to balance the budget. It is easy for mistakes to be made in this environment, and clearly, they were made in Flint. The state

of Michigan ultimately replaced a single city emergency manager with a commission, no doubt to try to avoid future mistakes.

The hollowing out of public government agencies, state and federal, has been occurring going back at least to the 1980s under President Reagan. This is largely in response to public cries to cut taxes and reduce public spending. At the federal level this ebbs and flows as the Presidency switches from Republican to Democrat and back again. A similar phenomenon occurs at the state and local level. This can mean that there are fewer knowledgeable and experienced public employees to prevent catastrophes like the Flint water crisis. In the end – in a democracy – we get the government that we elect and are willing to pay for through our taxes. If we try to do everything on the cheap, there usually are unpleasant consequences.

5. In a better world we would have public programs to identify lead water pipes and replace them over time, understanding that this would be very expensive and that most people would want their pipes replaced first (as long as they didn't have to pay for it). In the meantime, water managers would implement water treatment technology to prevent leaching of lead into tap water, as is done today in many if not most public water supply systems.

6. The Flint water crisis was a temporary breakdown in the oversight of the public drinking water protection. EPA (and likely Flint) officials understood that using Flint river water could lead to lead leaching into Flint tap water, but elected to “see how things went” for six months before making the decision to treat the Flint river water to prevent lead corrosion. This was perhaps in deference to the state emergency manager attempting to balance the Flint city budget, but it was an error of judgment of the highest magnitude. Thousands of Flint children have permanent learning disabilities as a result of this wait-and-see attitude. These learning disabilities cannot be overcome by any financial settlement no matter how large.

This article was originally prepared for distribution to students in my AECN 357 environmental and natural resources law course. Wikipedia has an excellent article on the Flint water crisis if you wish to explore this issue further.

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