Flint, Michigan water crisis: lessons learned

It seems unimaginable in one of the wealthiest countries in the world that any citizen would be deprived of access to safe, clean potable water. This is in fact what happened to the residents of Flint, Michigan, who were exposed to inappropriately treated river water contaminated with high levels of lead. While federal and state resources pour into Flint to restore water quality, improve water distribution problems, and assess the health impacts of lead exposure on residents, investigations are ongoing to figure out what happened here. How was this situation allowed to unfold under the watchful eye of the US Environmental Protection Agency (EPA), the Michigan Department of Environmental Quality (MDEQ), the City of Flint, and a myriad other governmental authorities that knew about, discussed the facts surrounding, and permitted the residents of Flint to continue to pay for and consume contaminated water.

Flint water crisis facts
During 2012-2013, Flint was evaluating a transition from the Lake Huron water purchased from the Detroit Water & Sewerage Department (DWSD) in favour of a more cost-effective option. Flint decided to build a pipeline to the Karegnondi Water Authority with an anticipated cost saving of $200 million over 25 years, and the City’s emergency manager so informed the state treasurer on 16 April 2013. The DWSD advised Flint that it planned to terminate the water supply agreement, effective April 2014. The proposed pipeline could not be built in the one-year timeframe before DWSD planned to cease providing water, so Flint needed an interim alternative water supply. The City decided to return to a water source previously used by the community in the 1960s – the Flint River. Water distribution started from the river on 25 April 2014. The MDEQ verified at the time that the Flint River met drinking water standards and informed residents it was safe.

Flint citizens started to complain almost immediately about the smell and colour of the Flint River water, which was 70 per cent harder than the prior water supply. In August 2014, E. coli and total coliform bacteria were detected in the new water supply, prompting boil water advisories. In January 2015, Flint water failed to meet Safe Drinking Water Act (SDWA) standards for total trihalomethanes (THMM). An organic chlorinated chemical compound that is formed as a by-product of the addition of chlorine to water that contains organic matter such as algae, riverweeds or decaying leaves. In February 2015, sampling from a Flint home revealed high levels of lead at 104 parts per billion (ppb) – the standard established by the EPA is 15 ppb. An investigation conducted by a science team from Virginia Tech confirmed lead in the water at 13,200 ppb.

On 24 April 2015, MDEQ advised EPA that no corrosion control treatment was in place at the Flint Water Treatment Plant.

On 13 July 2015, MDEQ advised there was no reason for concern following the leak of an EPA memo expressing concern over lead levels in the Flint River water supply. On 25 September 2015, Flint issued a water advisory concluding no level of lead is safe. On 2 October, Michigan Governor Rick Snyder issued an action plan including free water filters and water testing for Flint residents. On 16 October, Flint returned to the Lake Huron water supply.

On 14 December, newly elected Flint Mayor Karen Weaver declared a state of emergency over the high lead levels in the water supply. In January 2016, both Governor Snyder and President Barack Obama declared a state of emergency for Genesee County (of which Flint is the principal city) related to high levels of lead in the drinking water.

Lessons learned: What went wrong?
What can we learn from the Flint water crisis? What does it say about the status of environmental protection in the US and those legally obligated to safeguard our public water supplies? What really happened in Flint and can it happen elsewhere in the US? Were Flint’s water problems exacerbated by the economically depressed racial justice
community where these residents lived and worked? We know enough to consider some of the lessons learned to date.

**Water regulatory oversight failures**

A five-member Flint Water Advisory Task Force created by Governor Snyder released a preliminary report on 29 December 2015, finding that MDEQ bore ultimate blame for the crisis. The task force found that MDEQ failed to follow the federal Lead and Copper rule requiring optimised corrosion control treatment (CCT) and advised Flint that CCT would not be necessary for a year. The task force concluded that ‘the decision not to require CCT, made at the direction of MDEQ, led directly to the contamination of the Flint water system’.

A final report issued on 21 March 2016 found that MDEQ bears primary responsibility but also blamed the Michigan Department of Health and Human Services (MDHHS), the Governor’s Office and state-appointed emergency managers, finding them ‘fundamentally accountable’ for the water crisis.

While the task force focused on state entities, EPA bears at least some responsibility for the agency’s failure to act, particularly when confronted with critical data from one of its own water experts concerning high lead levels in Flint’s water. An agency water official identified problems in February 2015, continuing to update EPA leadership including an internal memo dated June 2015. EPA finally issued a SDWA emergency order in January 2016.

**Ageing infrastructure**

Ageing drinking water infrastructure played a critical role in the Flint lead-contaminated water emergency. Flint failed to apply corrosion inhibitors when the water supply transitioned from Lake Huron to the Flint River. As a result, corrosive Flint River water caused lead from ageing pipes to leach into the water supply. In February 2016, Mayor Weaver announced that the city would remove and replace all water service lines containing lead piping at an estimated cost of $1.5 billion. Flint saved approximately $140 per day by not adding a corrosion inhibitor upon transitioning to river water.

Many understand that Flint may be a ‘canary in the coal mine’ signalling more problems throughout the US with ageing infrastructure. In 2013, the US received a ‘D’ in the drinking water category of the American Society of Civil Engineers Report Card for its infrastructure. The report found that most of the nation’s drinking water infrastructure is nearing the end of its useful life, with replacement costs estimated at more than $1 trillion. The Associated Press analysis of EPA data found that nearly 1,400 water systems serving 3.6 million Americans exceeded the federal lead standard at least once between 1 January 2013 and 30 September 2015. The affected systems are large and small, public and private and include 278 systems that are owned and operated by schools and daycare centres in 41 states.

**Environmental justice**

The concept of ‘environmental justice’ as defined by EPA is the fair treatment and meaningful involvement of all people regardless of race, colour, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. In short, your health should not suffer because of the environment where you live, work, play or learn, and all citizens should receive environmental protection efforts appropriate for their communities. Environmental justice, also referred to sometimes as ‘environmental racism’, began as a movement in the 1980s with growing focus on the disproportionate number of polluting industries, power plants and waste disposal areas located in or near low-income or minority communities.

Flint’s residents are primarily black (56.6 per cent) and largely live in poverty (41.6 per cent). The task force called the water crisis a ‘clear case of environmental injustice’. According to Virgil Bernero, the Mayor of nearby Lansing, Michigan, the state gave Flint the cold shoulder when the water situation was developing and he commented in an interview with the Huffington Post dated 2 February 2016: ‘The response was muted. The state response was sluggish and irresponsible. That does have something to do with the people being voiceless. When those voices started saying, “This water is discoloured, it doesn’t smell right, I’ve got a rash, my kid isn’t responding properly”, those voices were not heard. And that does have something to do with being poor and a minority, frankly.’
Current status: Water for Flint residents

Flint residents are using filtered or bottled water for consumption as the recovery of the water distribution system continues. Flint returned to using water from Lake Huron delivered by the Great Lakes Water Authority in October 2015. Newly implemented corrosion control strategies will allow a protective coating within water service lines to build up over time to acceptable levels. EPA is sampling to ensure the effectiveness of the corrosion control measures being taken. In addition, Flint residents are strongly encouraged by EPA to implement the ‘Flush for Flint’ best practices to promote improved flushing of the water service lines in order to remove loose lead particles and to assist with the protective coating of the pipes. The best practices included running cold water at the highest flow in the bathtub and kitchen faucet for five minutes every day for a two-week period. EPA warned residents not to drink, cook or brush teeth with unfiltered water because it is not safe, but advised that residents can wash hands, bath or shower with unfiltered water.

The emergency declaration allowing the use of federal funding will end on 14 August 2016. Governor Snyder announced on 2 June that the State of Michigan will pay for the bottled water, filters and home testing kits needed by Flint residents. At this time, it is unclear when Flint’s public water supply will be considered safe for all potable uses.

Conclusion

More is yet to be uncovered about the adverse impact of ineffective federal and state regulatory oversight, Michigan politics, and dire financial distress on the quality of Flint’s drinking water supply. Numerous investigations are under way and certain responsible parties have been suspended, terminated and even criminally charged.

On 17 February 2016, Governor Snyder testified along with EPA administrator Gina McCarthy before the House Committee on Oversight and Government Reform, and in his opening statement probably provides the best explanation for the Flint water crisis: ‘Let me be blunt: this was a failure of government at all levels – local, state and federal officials – we all failed the families of Flint.’

Notes
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