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## The Flint Water Crisis

Posted on March 7, 2016 Leave a Comment



In April 2014, the fateful decision to switch the city of Flint's water source from Lake Huron to the Flint River was made. The results of this decision were disastrous and the repercussions continue to affect the city's citizens today.

The city of Flint is located in eastern Michigan, a little over 60 miles northwest of Detroit. In March 2013, as a cost-saving measure, the Flint City Council voted to switch the city's source of drinking water from the Detroit Water and Sewerage Department (which sourced and treated water from Lake Huron and the Detroit River) to the newly-established Karegnondi Water Authority (KWA), which was expected to be completed in 2016. In April 2014, Flint's water agreement with Detroit ended, and the city was in need of a new source of water until the KWA project was complete. The decision was made to switch the city's source of water to the Flint River.

Unfortunately, the Flint water treatment facility did not properly apply corrosion controls, and the corrosive water from the Flint River ate away at the city's pipes, joints, and fixtures, leaching lead into the city's water supply at levels

significantly exceeding federal drinking water standards. Not long after the city made the switch, residents began to complain about the water's discolored appearance and offensive smell, but they were told the water was safe to drink. In October 2014, the General Motors plant in Flint switched its water back to Lake Huron because the Flint water was rusting car parts. In January 2015, residents were alerted that the water contained high levels of trihalomethanes, a disinfectant byproduct. Though a violation of the Safe Drinking Water Act, residents were told the contamination wasn't a problem for those with normal immune systems.

A research team from Virginia Tech University brought the lead contamination issue to the forefront after being contacted by a concerned citizen, whose tap water contained startlingly high levels of lead. The team, led by Professor Marc Edwards, sent lead test kits to residents of Flint. They traveled to Flint in August 2015 to visit several homes to collect samples, which were analyzed back in Blacksburg, Virginia. What they found were alarming levels of lead, in one case lead levels exceeded federal standards by 900 percent. Though the researchers reported their results to federal, state, and local government officials, their concerns went unheard. In September, Dr. Edwards and his team held a community meeting in which they told residents to stop drinking the water.

Not long after, Dr. Mona Hanna-Attisha, a local pediatrician, announced that test results indicated increased levels of lead in local children's blood. Lead exposure is particularly dangerous for young children and can profoundly affect growth, behavior, and intelligence over time. Elevated levels of lead in the blood are linked with learning disabilities, attention problems, issues with fine motor skills, and violent behavior.

In October 2015, Governor Rick Snyder announced that the state would buy filters and test lead levels in Flint's school buildings. He also recommended the city switch its source of water back to Detroit. Later that month, Flint switched back to Detroit water. However, damage to the city's pipes remains. Coating the pipes with phosphates, which would prevent lead from leaking back into the water supply, is a short-term solution, but one that would take at least 6 months to take full effect. Residents have been told to use bottled water for drinking and preparing food.

In January 2016, Gov. Snyder declared a state of emergency in Flint. The national guard was called in to distribute bottled water and filters. President Obama declared a federal emergency, freeing up federal funds to aid in the crisis. Officials estimate that it would cost \$55 million to replace all of the city's pipes. With at least 15,000 lead pipes in the city, replacing them all would be a massive undertaking, but it is likely the only solution that will allow residents to feel they can safely use the city's water again.

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