

FLINT MICHIGAN – LEAD INCIDENT WHAT HAPPENED AND LEASONS LEARNT



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ABSTRACT

From April 2014 to October 2015, the residents of Flint, Michigan, USA were supplied with water from the municipal drinking water supply that was arguably unfit for human consumption. Due to changes in source water, the community was exposed to lead concentrations in their drinking water that far exceeded USEPA standards. For 18 months community concerns about their water supply were not acted on and an independent inquiry found that many individuals and groups, including local, county and state officials contributed to the disaster.

The events leading up to the Flint crisis were complex and difficult. The handling of the situation has been examined in minute detail and many players have been criticised. The question for the Australian drinking water industry is whether this event could have happened here and if our current approach to water risk management and our response to customer concerns are robust enough to make sure it never does.

Information for this paper has been drawn from the following documents and web sites: Flint Water Advisory Task Force – Final Report (March 2016); The Toxic Tap – Time Magazine February 1, 2016; Flintwaterinfo.com; Flintwaterstudy.org and numerous news reporting and commentary web sites.

1.0 INTRODUCTION

Flint is a city of around 100,000 people in the southern part of the state of Michigan, USA. The city is the home of General Motors and the population has dropped from more than 200,000 in 1960. The median income of Flint is approximately \$25,000 USD which represents less than half the state average and a significant number of residents live below the poverty line.

The municipal water supply for Flint was originally a private supply founded in 1883 which was purchased by the City of Flint in 1903. A treatment plant was constructed in 1954 to treat water from the Flint River, however from 1967, water has been sourced via pipeline from Detroit Water and Sewage Department from Lake Huron and treated at the Fort Gratiot treatment plant. The Flint treatment plant remains as an emergency back-up for the city supply.

Financial issues for the City resulted in investigations as early as 2009 into alternative, less expensive sources of drinking water, most notably the Flint River. In 2013, the City Council voted to switch the supply from the Detroit Water and Sewage Department to the Karegnodi Water Authority through the construction of a pipeline from Lake Huron. This pipeline was to be completed in 2016. The result of this decision was a 12 month window where water from Detroit Water would be disconnected and the pipeline would not be completed. It was decided as an interim measure to recommission the Flint water treatment plant and supply water from the Flint River.

Several factors during the commissioning and connection of the Flint River supply resulted in the provision of drinking water that was highly corrosive but without added corrosion control. The supply was connected to Flint River on April 25, 2014.

Over the following 18 months, consumers in Flint received water that contains levels of lead that exceeded regulatory standards and the community displayed symptoms of lead poisoning and was also the subject of an increased number of cases of legionellosis. This paper describes the incident and the errors that contributed to the incident.

2.0 DISCUSSION

On October 16 2015, 18 months after the City of Flint connected to the Flint River as a water supply, the City reconnected to the original source water from Lake Huron. During that time, the City was thrown in chaos and numerous regulators, politicians and resident groups as well as university researchers and citizen scientists had an active role to play in the way the incident was managed and evolved. There has been scrutiny and discussion about this water quality crisis at a level higher than previously seen in drinking water supply – primarily through the tole of social media and the press. A report produced by the Flint Water Advisory Task Force on 21 March 2016 was damning in its 36 findings and 44 recommendations concerning the action and inaction of many individuals and agencies whose mandate is to protect the public health of drinking water consumers. The following is a summary of the outcomes of the task force and the lessons that the water industry should consider.

2.1 Regulators did not provide regulation

- The Michigan Department of Environmental Quality (MDEQ) is the agency who had responsibility to enforce drinking water regulations – the task force found that they failed in this fundamental responsibility. They were found to have misinterpreted the USEPA Lead and Copper Rule and allowed the Flint River water to be supplied in the first instance without corrosion control. The utility was allowed 6 months of sampling prior to a decision about the need for corrosion control. MDEQ staff were found to be dismissive and unresponsive and failed to consider that the increased incidence of legionellosis was attributed to the change in water supply.
- The Michigan Department of Health and Human Services (MDHHS) was found to have a lack of understanding of their own child lead level data and were reluctant to share data with other agencies. MDHHS should have taken a lead role in the incident, but failed to exercise its responsibility.
- The Michigan Governor’s Office was shown to have their information compromised and were given wrong information by both MDEQ and MDHHS. Even in the face of information collected by other agencies, the Governor’s office relied on this incorrect advice. The task force also found that official statements from the Governor’s office were inappropriate and unacceptable.
- State – Appointed Emergency Managers were found to have contributed to the crisis and were motivated by financial concerns. The task force placed primary responsibility for the crisis with state government and emergency managers.
- The Genesee County Health Department (GCHD) was found to have communication and cooperation that was inadequate to protect public health. The GCHD was also found to have not responded fast enough to follow up on children lead levels.
- The USEPA was found to have failed to properly exercise its authority initially and was found to be hesitant and slow to insist on proper corrosion control for the supply.

2.2 City of Flint failed in its duty

- The Task Force found that the Flint Public Works department were ill-prepared to assume responsibility for full time operation of the Flint Water Treatment Plant and distribution. The treatment plant was found not to be capable of treating water to the required standard and they failed to comply with the USEPA Lead and Copper Rule.

2.3 What happened with social media

The Flint water crisis showed the power of social media in raising awareness of the situation. The messaging distributed by social media was far more informative and damaging than official messaging from the City of Flint, or the Governor's office. The social media response was a varied as twitter, Instagram, Facebook, mobile phone SMS service, web sites and go fund me campaigns. The utility lost control of the story very early on in the incident and were not able to recover the messaging.

2.4 The role of citizen scientists

The Flint water crisis is one of the first examples where citizen scientists and researchers, not connected with the Government were able to influence the incident. The researchers at Virginia Tech, led by Prof Marc Edwards, conducted a trial of lead pipe with Flint River and Lake Huron water, undertaken by five groups of school students. The results, from two rounds of analyses, showed that the lead released from pipe in contact with tap water from the Flint River were significantly higher than the lead in samples with Detroit water – in one case in excess of 20,000 µg/L. These results were published online and used to influence the water managers. The results of the study can be seen at www.FlintWaterStudy.org.

3.0 CONCLUSION

The Flint water crisis is an example of many levels of ineffective regulation, control and management. The primary issues that contributed to the extent and length of the incident include:

- Inadequate risk assessment for risk of switching drinking water sources
- Inadequate understanding of the relevant regulations – lead and copper rule
- A lack of collaborative culture within multiple agencies
- A lack of technical expertise within both the water supply agency and the regulator
- An inability to change reasoning when presented with different data
- Lack of consultation with the community and lack of acceptance of community concerns
- Actively discrediting individuals that raised the issue of high lead levels
- No social media response.

The consequences of the Flint crisis will be long felt and varied. The municipal water, now provided from Lake Huron is still not able to be consumed, although is now considered acceptable for showering and hand washing. The replacement of lead services lines is underway but it has not been determined if the entire distribution system is to be replaced.

5.0 REFERENCES

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