

Background on Episode 2

At the intersection of disaster management and leadership studies, the Leadership During Crisis Podcast series explores stories from leaders who have led through a complex crisis. Episode 2, led by Lucy Gillespie, explores crisis leadership from several unique dimensions in asking not only how local leaders are managing Pittsburgh's recent boil water alerts, but—more importantly—what they are doing in the mid and long-term to avoid a more significant water crisis like what occurred in Flint, Michigan.

Episode 2 features interviews with Amie Downs, Communications Director for Allegheny County, and Will Pickering, Communications Manager for the Pittsburgh Water and Sewer Authority (PWSA). Amie and Will help Lucy understand a Pittsburgh story that reflects a larger narrative occurring across the country. Aging infrastructure is creating real vulnerabilities for local communities, and local leaders have inherited the responsibility for managing such risks within constrained resources before they become a more acute crisis.

Facilitator Context

Understanding Risk – Stresses and Shocks

The Federal Emergency Management Agency (FEMA) defines a risk as “the potential for an unwanted outcome resulting from an incident or occurrence, as determined by its likelihood and the associated consequences.”ⁱ The risks any community faces likely include both acute shocks and long-term stresses—that is, risks are driven not only by specific hazards (i.e. flood risk due to a hurricane), but also by characteristics of natural, built, and human environments (i.e. permeable land loss due to rapid development that exacerbates flooding). Pittsburgh’s own resilience assessment identifies potential acute shocks such as extreme weather and landslides, as well as longer-term stressors such as inequality and aging infrastructure (the subject of this podcast).ⁱⁱ Given this, effective risk management requires communities to take cross-sector and cross-discipline approaches to not only plan for acute disasters, but to understand how their daily decisions mitigate or increase different dimensions of risk, and resilience to risk.

A National Risk of Aging Water Infrastructure

The term *water infrastructure* commonly refers to at least three types of systems, those used for drinking water as well as those used to dispose of storm and waste water. The way these systems are designed, managed, and maintained influences whether or not communities have sustainable and equitable access to clean water, as well as whether or not harmful pollution enters surrounding waterways. Public drinking water systems provide water to approximately 90 percent of the U.S. population, and most of this infrastructure was built more than 50 years

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ago (in some cases, more than 100 years ago).ⁱⁱⁱ Because of this, much of the infrastructure is reaching the end of its usable life.

Replacement, however, is complex, given that water infrastructure development followed larger growth and migration patterns. For example, not all pipes even within a city like Pittsburgh were installed within the same period; and those pipes, their joints, and corrosion protections may be comprised of different materials. This creates challenges for communities in identifying and prioritizing the elements of their systems facing the most risks. Further, needs for additional drinking water infrastructure are rising in areas of high growth, such as in the southern and western United States.^{iv} Replacement for these communities is only half the story; new development may also be required to meet growing population demands.

The “water infrastructure problem” presents real risks to communities across the nation: significant costs for repair may compete with other public needs; businesses may experience economic loss during system disruptions; households may lose access to clean water or experience property damage if systems fail; and public health issues may arise if conditions are present that allow water to leach harmful chemicals, such as lead, from infrastructure with insufficient anti-corrosive agents. These are the risks local leaders in Pittsburgh are facing, and against which they are prioritizing mitigation action and investments.

Pittsburgh’s Multifaceted Water Issues

While Pittsburgh also faces challenges in managing waste water and storm water runoff, the focus of this podcast is on aging drinking water infrastructure and the risks it creates for the city’s residents. First, most of the water infrastructure in Pittsburgh was constructed when the use of lead in service lines and residential plumbing was pervasive because of its durability and resistance to corrosion. Overtime, however, even lead pipes corrode and must be treated with anti-corrosive agents or replaced, as lead leaching into public drinking water creates significant health risks. While water testing prior to 2016 showed Pittsburgh below a nationally mandated threshold for lead exposure, it surpassed that threshold in late 2016 and was issued a consent order by the federal government for various failures to mitigate exposure risk.^v Since that time, Pittsburgh has undertaken efforts to improve corrosion control, inventory remaining lead service lines across the city, and provide resources for residents’ replacement of lead plumbing in their own homes.

The second issue that Pittsburgh faces is water service disruption due to water main and service line deterioration. To date, the PWSA has admittedly taken a reactionary approach to maintenance given the number of water main breaks that occur annually and the fact that Pittsburgh’s drinking water infrastructure has been woefully underinvested for years.^{vi} Service disruption is not only inconvenient, it’s potentially hazardous if contaminants enter the drinking water because of back flow or loss of pressure. Moving forward, Pittsburgh hopes to adopt a proactive maintenance scheme that focuses on “risk and performance.”^{vii}

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Facilitator Discussion Questions:

1. What are the most significant risks facing Pittsburgh's water infrastructure? Are there any strengths?
2. What factors led to the increased focus and attention on sustainable drinking water infrastructure in Pittsburgh after decades of "a buried problem"?
3. What are the information or analysis challenges associated with Pittsburgh's drinking water problems? Based on what you heard in the podcast, how is Pittsburgh attempting to address these information issues?
4. The podcast describes the "lead problem" in Pittsburgh as property-specific. Meaning, the lead that exists within the water infrastructure is present in service lines leading from main lines into private properties. Given this, how do you assess who is responsible for addressing the problem? Who should bear financial responsibility? How do dimensions of equity play into your answer?
5. In the podcast, Amie Downs says, "Credibility is 99% of the battle sometimes." What are the challenges in communicating with and developing trust with a community about the water issues facing Pittsburgh? How is Pittsburgh attempting to build trust related to water safety and confidence in the PWSA?
6. In the podcast, Lucy, Amie, and Will discuss several strategies Pittsburgh has or is attempting to undertake to reduce immediate public health concerns regarding lead and address longer-term infrastructure degradation. These strategies include education, providing filters, improving corrosion control, and partial or full lead service line replacements. If you were advising the PWSA, what criteria would you use to evaluate these options?
7. Pittsburgh is not currently facing a water crisis like what occurred in Flint, Michigan; however, Flint offers an example of what can occur when leaders fail to effectively address risk in advance of acute disaster. What leadership lessons do you draw from this in the context of effective crisis leadership? What can leaders do to better address risk in advance, and prepare for an emergency or disaster if it does occur?

Resources

ⁱ Comprehensive Preparedness Guide (CPG) 201: Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR) Guide. 3rd Edition. FEMA. May 2018. <https://www.fema.gov/media-library/assets/documents/165308>.

ⁱⁱ Preliminary Resilience Assessment. City of Pittsburgh. 2016. <http://pittsburghpa.gov/onepgh/>.

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iii “Information about Public Water Systems. Drinking Water Requirements for State and Public Water Systems.” Environmental Protection Agency.

<https://www.epa.gov/dwreginfo/information-about-public-water-systems>.

iv Ibid.

v Shoemaker, J. Dale and Lindsay Patross. “What the Future Holds for Pittsburgh’s Water Authority.” Public Source. January 2, 2018. <https://www.publicsource.org/what-the-future-holds-for-pittsburghs-water-authority/>.

vi “Focusing on the Future: Pittsburgh Water and Sewer Authority Roadmap for Success.” PWSA. November 2017. <https://headwaters.pgh2o.com/Content/documents/focusing-on-the-future.pdf>.

vii Ibid.