CHM 151: Chemistry Around Us Signature Assignment #1 – Critical Thinking

Flint Water Crisis

Module 4 Day 6

Learning Objectives

- Outline the events of the Flint Water Crisis
- Consider multiple issues of water, including human rights, the role of governments on ecological resources and utilities, citizen action, and health

Class Activities

- 1. Flint Water Crisis Resources
 - Flint Water Crisis Summary Video
 - Flint Water Crisis Reading Assignment
- 2. With your group, create a timeline of the key events of the Flint Water Crisis
- Based on your group number, answer the discussion questions for your assigned theme

 be prepared to summarize your thoughts to the class. You can do additional online
 research to gather data to support your claims.
 - a. Record your responses to the discussion questions here:
- 4. Choose either "natural resource management" or "national risks" and answer the discussion questions
 - a. Record your responses to the discussion questions here:
- 5. Reflection
 - a. Critically state the issue you investigated in Question 3, be sure to use (and cite) specific evidence to support your claims.
 - b. What is the impact of this environmental crisis?
 - c. What changes should be made to prevent this kind of crisis from happening again?



Rubric for Critical Thinking (from AAC&U Critical Thinking VALUE Rubric)

	Capstone	Milestone	Milestone	Benchmark
	4	3	2	1
Explanation of the Issue	Issue/problem is stated clearly and described comprehensively delivering all relevant information necessary for full understanding	Issue/problem is stated, described, and clarified so that understanding is not seriously impeded by omissions	Issue/problem is stated but description leaves some terms undefined, ambiguities unexplored, boundaries undetermined, and/or backgrounds unknown	Issue/problem is stated without clarification or description
Evidence	Information is taken from source(s) with enough interpretation and/or evaluation to develop a comprehensive analysis or synthesis.	Information is taken from source(s) with enough interpretation and/or evaluation to develop a coherent analysis or synthesis	Information is taken from source(s) with some interpretation and/or evaluation, but not enough to develop a coherent analysis or synthesis	Information is taken from source(s) without any interpretation or evaluation



Flint, Michigan: Lethal Water Discussion Guide

Assignment

- 1. Read the case "Flint, Michigan: Lethal Water."
- 2. Look at the associated graphic, "Flint, Michigan: Lethal Water: Understanding the Connections."
- 3. Reflecting on the wheel graphic as you consider what you read in the case, select one of the themes to answer the corresponding discussion questions

Discussion Questions: Understanding the Connections

The graphic contains a photograph of the inside of one of the city water pipes in Flint, Michigan, that was affected by the contaminated water discussed in the case. The wheel of words around the pipe identify 15 different themes or connecting factors (circles of influence) related to the community that played a role in the water/lead crisis in Flint, Michigan, and responses to it. The 15 "circles of influence" each overlap, a reminder that the crisis had many causes and requires interconnected responses. Consider each of the 15 themes individually and in relation to the others, across and among different groups of themes and factors.

As a group, answer the discussion questions for your theme. Consider how your theme relates to the other themes presented in the graphic. Be prepared to summarize your responses for the class.

Science

- How did science play a role in diagnosing the problem?
- Did outdated standards contribute to the crisis?
- Science is data—numbers. Where in the story were people trying to argue their case using data? Whose data was believed? Whose data was questioned? Why?
- As you consider the other themes/factors of the crisis (below), think about how science is connected with them in creating (or solving) health problems.

Local Industry, Economics, Employment

• What local industry is Flint, Michigan, best known for?

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- Who was the leading employer, and how did changes in industry and employment affect the economic security and prosperity of Flint residents and the city? Did these economic changes play any role in the original plan to find a cheaper water source?
- How does the current employment situation in Flint affect those who live there after the water crisis?
- Think about how jobs and industry affect: loss of industry, abandoned homes, lower tax income to pay for city utilities, and the efforts to maintain a survival infrastructure (water, electricity, schools, jobs, security, food, governance).

Civil Rights

- Why are civil rights especially important for Flint residents?
- How do you think racial discrimination in civil rights in America might play a role in the Flint crisis? (hint:^a)
- Some critics of the Flint crisis called the Emergency Managers "dictators" because of the decisionmaking power they had due to the city's impending risk of bankruptcy. Do you think this comment is justified? Do you think Flint citizens' civil rights were shortchanged due to the appointment of "emergency managers"?
- How might a focus on civil rights help address attempts at urban renewal in Flint?

Poverty

- How does the poverty rate in Flint compare to poverty rates elsewhere in the United States?
- Discussions about poverty often use the words inequity and inequality as if they mean the same thing, but they do not; *Inequity* is a lack of fairness or injustice while *inequality* is a disparity or difference in size or circumstances. How would you use these two words in relation to those affected by the Flint crisis?
- How did poverty increase Flint children's risk of exposure to lead in the water? How did poverty affect families' access to healthy foods and the ability to find and purchase safe water alternatives?
- What is the connection between poverty and health care access in the United States? Consider the stressors of poverty and how they increase poor health.

National Risks

- Discuss the role of national safety in this local crisis. For example: The Flint crisis illustrates the failure of an American governance at the city, state, and federal levels, despite political systems designed to create national norms of health for all who live in the U.S. What happened in Flint alarms experts because it is a symptom of a crisis that could happen elsewhere. For example, Professor Marc Edwards' interest in the Flint story arose from his discovery of similar issues in Washington, D.C. The crisis in Flint concerns many because it was so easy for incompetence and poor governmental choices to result in the violation of national standards designed to keep people safe and healthy in their homes.
- Many who moved away from Flint said they will never quite trust the water, no matter where they live. Do you agree? Why or why not?

^a Barret J. "Environmental Justice in Maryland" Environmental Law Clinic, University of Maryland September 2015, <u>https://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=2555&context=fac_pubs</u>. Accessed June 23, 2016.

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Politics

- Political factors play a big role in the Flint water crisis. How did politics affect health in this story? Consider the distinct effects of local city government in Michigan with that of national organizations such as the Environmental Protection Agency (EPA).
- How influential in decisions about safe water were: Political budgetary concerns? The Receivership (near-bankruptcy) status of the city? The EPA? The literal cost of raising water prices? What were the negative political consequences of the crisis?
- How do you think political factors might play a positive role in cleaning up water and healthy access to water in Flint?

Health

- In Flint, a non-health-related series of crisis situations led to a health crisis. Consider how health often depends on social factors much more than it depends on good medicine. What social factors in Flint are not directly about health that nonetheless harmed children's health?
- Are Flint's children at special risk because they are poor and may have substandard access to proper medical care? Why?
- Discuss the consequences of lead exposure. What is the short-term vs. long-term impact? What amount of lead is a healthy dose?
- Discuss the consequences and potential health costs to Flint citizens of other contaminants that were discussed in this story (e.g., *E. coli*; trihalomethane).

Policy

- What policies did state government workers pay attention to in deciding to switch Flint's water source?
- What is the role of government policy in the legal debates over costs and consequences? Does this change depending on what level of government (federal, state and local) is acting? What policies were ignored?
- How are legal policy, environmental policy, and health policy all part of the debates and factors in this narrative?

Parents' and Citizen Advocacy

- What parent voices did you hear, and which did you most identify with? Do you think racial bias played a role in the crisis, since the most vocal parent covered in the news—and the researcher and physician who championed the need for change—were not members of the African American community in Flint?
- How important were the voices of parents in identifying the Flint water crisis and pushing for national attention and change?
- Discuss the importance of citizen action in local environmental crises.

Environment

- The Flint water crisis was caused by human action that led to environmental contamination. Environment includes not only the natural environment (water, soil, air), but also the social environment of urbanization. How did the crisis affect Flint's environment?
- Do you know what happens to contaminated pipes when they are replaced or upgraded? How does such "waste disposal" affect the broader environment?

• What environmental effect do you think followed from Flint residents new need to depend entirely on safe water from other sources (e.g., plastic bottles that need proper recycling)?

Legal Action

- Who blamed who in the Flint water crisis? Who had power to push for legal action? What positive role does legal action play in a crisis like Flint's?
- Debate the issue of liability in a situation where government workers were expected to comply with their supervisors and act on decisions they did not always understand.
- What legal action might have the greatest power to improve the lives of those children whose learning potential is permanently affected by lead poisoning as a result of the crisis?

Public Health Campaigns

- How did public awareness of health issues influence this story? What form did public information about health and health risk in Flint take?
- Usually public health campaigns are driven by citizens in collaboration with local public health organizations, including local government. Discuss the role of the public health organizations in the Flint crisis in communicating effective timely information about the risks in the water.

Governance

- International, national, state, and local government organizations are responsible for governance decisions that make it possible for ordinary people to live well, affecting both economics and health. Yet often those responsible for economic governance (the budgets) compete with those responsible for health governance (health systems and health care access). Discuss these competing governance tensions as they played a role in the Flint water crisis. How can those who govern budgets increase their focus on the importance of health?
- How can those who govern health effectively communicate with politicians who care primarily about balancing the books?
- Why is health important for economic flourishing and development around the world?

Public Safety Regulation

- Public safety is regulated by policies, by laws, by citizen action, and by national influence. How was public safety compromised in the Flint water crisis?
- What regulations played a role in the debates? Think about how public safety regulations relate to the other connecting influences and related factors in the "Flint Water Crisis Wheel."

Natural Resource Management

- Do you agree that water is a human right? What should the role of government be in ensuring essential water is safe? Affordable?
- Do some research to find the international documents online that spell out exactly what global leaders have agreed upon related to the human right to water. Look at the language in these documents that describe issues of affordability, access, safety, and health. Think about similar issues related to debates over access and ownership to natural resources such as clean air, adequate food supply, and fossil fuels.