

Curriculum Unit
Title

Disaster Science-Flint Michigan Water Crisis

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KEY LEARNING, ENDURING UNDERSTANDING, ETC.

Students will understand what triggered the release of lead in the water system in Flint Michigan, resulting from untreated water and its component creating a change in the pH, thus triggering a reverse in equilibrium. This resulted in the seepage lead into the water system. This unit merges equilibrium and acidity to highlight what happens when the balance of scales specific to water monitoring can result in disaster. This unit will also explore the social aspects, effects on mental health, distorted facts by the media, effects of PTSD and the disruption of communities

ESSENTIAL QUESTION(S) for the UNIT

How do chemical reactions react to change and when these changes occur what effects will this have of humans, the environment and animal life?
What effects do disasters impose on humans and the environment?

CONCEPT A

CONCEPT B

CONCEPT C

ESSENTIAL QUESTIONS A

ESSENTIAL QUESTIONS B

ESSENTIAL QUESTIONS C

Explain how a change in reactant concentration affects the rate of reaction.
• Describe one method for measuring the rate of a reaction.

Explain how an increase in reactant concentration causes a chemical reaction to shift and create more product.
• Explain how a decrease in reactant concentration causes a chemical reaction to shift to create more reactant

Explain the difference between the hydrogen ion concentration, in a solution with a pH of 2 and a solution with a pH of 3.
• Describe what pH measures.
• Graph their data and explain how the spectrophotometer can be used as a tool to find an unknown pH

VOCABULARY A

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Reaction rates, forward and reverse reactions, dynamic equilibrium, energy, Le Chateliers principle

Effects of change in concentration on reaction rates and equilibrium, chemical pathways, 1st & 2nd order reactions, equilibrium constants.

pH, pH scale, reactivity with metals, concentration, $\log [H^+]$

ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES

With this unit, students will explore the social aspect of disasters specific to their community, how disaster was managed in the past are there any deliterious effects of disaster that pose an immediate threat. Students will develop surveys to assess community perception regarding disaster, preparedness, the ability to maintain or resume normal way of life and if not, what and how much resources are needed to resume a normalcy in lifestyle.