# Eroding Infrastructure and its effect on the environment and human population

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This unit is intended for high school chemistry and environmental science students. The unit challenges students create of model of the outcomes, issues, constraints before and after an observed during a man-made or natural disaster. Specific to this unit, the framework of this unit is built on the Flint Michigan water crisis that resulted from a financial decision to revert to an alternative water system with known violations specific to water contamination and human consumption. High levels of chlorine known prior to the decision to revert to from the Detroit water system, reacted with the lead found in the junction used in the current piping system. The increase in pH following Le Chateliers principle, resulted in the seepage of lead from the piping system followed by human consumption. The consumption of any amount of lead by humans results in certain debilitating diseases such as Legionnaires disease, with long term health effects. Students will be tasked with recreating what occurs when metals are exposed to increased acidic concentrations. Students will select different metals (provided list) assess levels or reactivity, monitor and measure pH changes before and after and the observed during reactivity. Students will also engage in researching known occurrences in and around their communities to ascertain the root cause, management of this crisis, health effects, management by elected officials, impact on health (mental health and PTSD) and finally the impact on these communities not limited to but including causes for relocation. In the final product students will develop two surveys to ascertain the public's trust or distrust of information shared by local elected officials. Students will also develop a plan to manage the announcement, collection and distribution of relief supplies. This unit encompasses both Next Generation Science and Common Core Standards specific to literacy. Both the laboratory and research activities will be assessed using a rubric and students will have the opportunity to engage in extensive qualitative research with allotted time for whole class review and instructor feedback. As a backdrop to underscore the proximity and high probability of a disaster affecting Wilmington Delaware, students will be briefed on an impending category 5 hurricane approaching the northeast coastline. Students will research the effect this hurricane would have on the Southbridge area, environmentally, socially, and any health concerns resulting from contamination through the current infrastructure and the low line gradient of the area.