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### *Neutralization Investigation: Battery Chemicals in Landfills*

The purpose of this project was to determine the effects that the different rock types shale, quartz and feldspar have on potassium hydroxide, which is a chemical found in alkaline batteries. The hypothesis was that each rock sample would neutralize the potassium hydroxide, and that the shale would be the most efficient. This experiment consisted of two stages. For the first stage, there were three separate ring stands in which a filter was placed, containing the rock samples and potassium hydroxide. Underneath this there was a beaker with distilled water. Water was run through the filter and into the bottom beaker, and the pH value of this was measured. In the second stage of the investigation, there were three vials that were filled with the water, rock samples and potassium hydroxide. Every day the solution was mixed and the pH value measured. The data collected from these two tests did not support the hypothesis. It was predicted that each of the samples would be able to neutralize potassium hydroxide, but only the feldspar began to neutralize the chemical. In the second part, the pH dropped from 12.38 to 10.49 in five days. The shale stayed about the same, going up and down unpredictably, and the quartz actually increased in pH value, changing from 12.44 to 12.57. These findings show that feldspar is capable of neutralizing potassium hydroxide, when given enough time to react. This information is useful for developers who are investigating locations for landfills.