

## AP Chemistry Lab 07

### Investigation 3 *What Makes Hard Water Hard?*

#### Central Challenge

Samples of tap water have been collected from faculty members who live in different townships, villages, cities, and counties. Some are from municipal water sources, others are from wells. The water will be analyzed for their quantities of water hardness through principles of metal ion precipitation and separation. The samples will then be ranked in order of increasing water hardness.

#### Context for This Investigation

When relocating, there are many factors that go into choosing where to buy a house. One of those factors is water quality – it is advantageous to find a location where a water softener will not be needed. Hard water costs more for detergent, plumbing repairs, and appliance maintenance and replacement. Having water that is already soft is preferred to installing a water softening system. You, the students, will identify which of the areas around Western New York have the lowest hard water quantities by ranking the hardness of the water in the areas.

#### Materials

|  |  |                                     |
|--|--|-------------------------------------|
| Distilled water                            | Metal scoops                           | 250 mL Erlenmeyer flasks (optional) |
| Calcium chloride, anhydrous (for practice) | 250 mL beakers                         | Buchner funnels with stoppers       |
| Sodium carbonate, anhydrous (for practice) | 100 mL graduated cylinders             | Glass tubing (optional)             |
| Wash bottles                               | Watch glasses                          | Ring stand                          |
| Analytical balances                        | 250 mL side-arm flasks (filter flasks) | Drying oven                         |
| Clamps                                     | Aspirators                             | Filter papers                       |
| Double hole rubber stoppers (optional)     |  | Water samples                       |
|  |  |                                     |

#### Safety and Disposal

All solutions can be flushed down the drain. Normal laboratory precautions, including wearing goggles at all times, should be taken as these solutions may be harmful if swallowed and can irritate the eyes.

#### Prelab Guiding Questions/Simulations

# Ap Chemistry Lab Answers

**Lei Huang**



## **Ap Chemistry Lab Answers:**

## Whispering the Strategies of Language: An Psychological Journey through **Ap Chemistry Lab Answers**

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