

Supplies

pH, Alkalinity, Acidity, Oh My!:

Sample of acid mine drainage

If you are unable to acquire a sample of acid mine drainage, create your own sample solution by dissolving ferrous sulfate (FeSO_4) in water.

Student Instructions

Student pH Information

Student pH Worksheets

A. Demonstration

1. Buffer Solution
2. Distilled Water
3. 2-250 ml beakers
4. phenolphthalein indicator
5. bromcresol green indicator
6. 0.1M NaOH
7. 0.1M HCl

B. If analyzing with HACH Kits

1. HACH Acid Mine Drainage Kit
 - i. Follow the Total Acidity Procedure
 - ii. Prior to class, test the alkalinity to determine which test (High or Low Range) is best.
2. Graduated cylinders
3. Deionized Water
4. Pipets
5. Goggles

OR

C. If analyzing with laboratory analysis (for each lab group):

1. Sodium Hydroxide (0.02N), 50 ml
2. Sulfuric Acid (0.02N), 100 ml
3. Bromcresol green (pH 4.5 indicator)
4. Phenolphthalein (pH 8.3 Indicator)

Glassware Needed per Sample (Alkalinity and Acidity):

1. 2 Beakers or Erlenmeyer Flasks
2. 2 Burets

3. Graduated Cylinder (50 ml)
4. 1 Buret clamp
5. 1 Ring stand
6. Various pipets for dilutions, or graduated cylinders, although not as accurate.

Equipment Needed:

1. pH, meter if not using indicators
2. Goggles

Sedimentation:

Student Sedimentation Instructions

Packets of sand (coarse, medium, and fine)

Water

Mineral oil

Ruler

6 test tubes

Watch or stopwatch capable of measuring seconds

Remediation: (all documents are per group)

Supplies for building a model

Scenario handout – Iron Mine Old/No. 8 Mine Seep

Iron Mill Mine Case Study

Science of Acid Mine Drainage Handout

Wetlands Handout

Internet access

Project Criteria Rubric (teacher only)