The Electrostatic Effect

Re-Energy
Learning Activity
Grade Level 7-12

Main Objective

Learners will investigate the electrostatic effect and its connection to Coulomb's law.

Learning Outcomes

By the end of this activity, learners will:

- Understand and explain what the electrostatic effect is and how it is used in energy storage.
- Provide everyday examples of the electrostatic effect.

Length of Activity: 1-2 hours

Step 1+2: Test balloon charge on different surfaces
Step 3: Observe balloon effects on water and hair.
Step 4: Group discussion

Materials List

- 1 balloon per group
- Other materials required as necessary
- Pen and paper

Created by

With support from

Introduction

The electrostatic effect is defined as the force that electric charges exert on one another. Coulomb's law describes the electrostatic effect, stating that like charges repel one another and opposite charges attract one another (Figure 1).

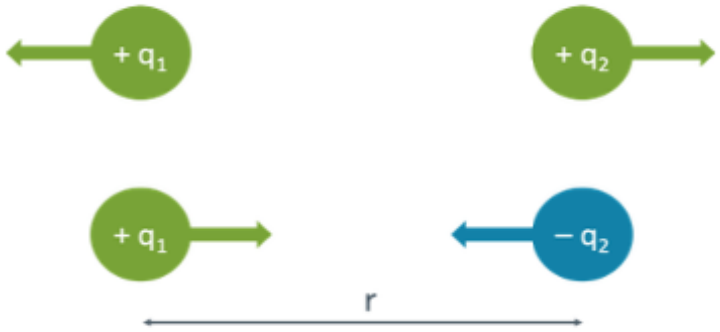

Figure 1: Coulomb's Law. Charges (q) are positively or negatively charged. Charges behave in one of two ways: a) like charges repel one another. I.e., positive and positive, or negative and negative, and b) opposite charges attract one another. The direction each charge moves in relation to one another is denoted by the arrow.

Activity

Before you begin:

Please review the Electrical Energy Storage backgrounder.

Step 1: Form Groups

In groups of 3-4 learners, have each group blow up a balloon.

- ***Note:*** The goal of this activity is to charge the balloon and bend water. This is accomplished by rubbing the balloon against something.

Step 2: Identify Potential Charge Surfaces

Learners should brainstorm which surface or object will effectively charge the balloon. Then, make a list of the objects and materials that did and did not charge the balloon in the activity worksheet.

Step 3: Test the Charge of the Balloon

After rubbing the balloon, hold it near a light stream of water and observe the effect.

- Using the activity worksheet, write down what material was used to rub, and what effect it had on the water.
  - ***Note:*** If the balloon was charged, it will look like the water is bending.
- Alternatively, you can hold the balloon near someone's hair and watch it stand up on the end!

Step 4: Complete Worksheet

In groups, individually, or as a class, answer the questions in the activity worksheet.