

The Electrostatic Effect

Re-Energy
Learning Activity
Grade Level 7-12



Main Objectives

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.

Curriculum Connections

Alberta

Science 7: Interactions and Ecosystems
Science 8: Mix and Flow of Matter
Science 9: Electrical Principles and Technologies
Science 10: Energy Flow in Technological Systems
Science 10: Energy Flow in Global Systems
Science 30: Energy and the Environment

Length of Activity

1 - 2 hours

Materials List

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

Introduction

The electrostatic effect is defined as the force electric charges exert on one another. Coulomb's law describes this effect. The law states that like charges repel one another, and opposite charges attract one another.

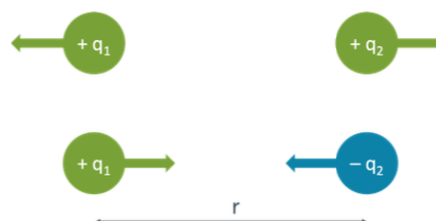


Figure 1: Coulomb's Law. Charges (q) are positively or negatively charged. Charges behave in one of two ways: a) like charges repel one another. I.e., positive and positive, or negative and negative, and b) opposite charges attract one another. The direction each charge moves in relation to one another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

Procedure

Before you begin: Please review the Electrical Energy Storage backgrounder.

Step 1: 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: 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: After rubbing the balloon, hold it near a light stream of water and observe the effect.

- a. 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.

- b. Alternatively, you can hold the balloon near someone's hair and watch it stand up on the end!

Step 4: In groups, individually, or as a class, answer the questions in the activity worksheet.