Salt Water and the Ocean Around Us

**Project Skills:**
Mathematics, Environmental Education

**Life Skills:**
Problem solving, decision making, acquiring, analyzing, and using information, working with groups.

**Academic Standards:**

**Grade Level(s):** 6-8

**Time:** 60 minutes

**Supplies Needed:**
- 1 large clear bowl
- Tap water
- Salt
- Food coloring
- 4 clear plastic cups per group
- Stirring rod
- 2 medicine droppers per group

**Advance Preparation:**
5 types of water pre-made in labeled containers so students can easily locate them. (Make sure all water is at the same temperature)

**BACKGROUND**
In this activity youth will gain an understanding of how the level of salt/mineral concentration in the ocean and bays affect who the water behaves.

**INTRODUCTION**
Review activity background pg. 94-95.

Summary: The ocean is salty because rivers continually carry into it water that has flowed through rocks and soil leaching minerals out of these materials. The dissolved minerals include various salts and metals.

Scientist estimate that the ocean contains 10 billion tons of gold, but that it is too diluted to be extracted.

The salt and metals are left behind in the ocean when the surface water evaporates and forms clouds. That is the reason the ocean is salty and the rainwater is fresh.

The weight of the entire dissolved mineral in ocean water is called salinity. The ocean has many different areas that have different salinity levels. *In this lesson you will learn how salinity affects the density of water. You will also see how different water masses found in the ocean "behave."*

**WHAT TO DO**
Hand out 2 worksheets per student

**Part 1:**
- Label one cup “tap water” and fill with clear tap water. Ask students what they think will happen to the green very salty water when placed in the tap water. Have them record this guess in the hypothesis area. Tell students that a hypothesis is a guess of the unknown that scientist make based on what they already know.
• Fill one medicine dropper with very salty green water.
• Place one drop of very salty green water in the cup with tap water.
• Answer and record:
  o What happened to the drop of very salty green water in the tap water?
  o Why did the tap and very salty green water not mix together?

Part 2:
• Label one cup salty water and fill it with clear salt water.
  o Ask students what they think will happen to the blue tap water when placed in the salt water. Record in the hypothesis area. (Sharing out loud different hypothesis is beneficial if time permits).
• Fill the other medicine dropper with blue tap water.
• Place one drop of blue tap water into the cup with clear salt water.
• Answer and record:
  o What happened to the drop of blue tap water in the salty water? Why? (Answers on pg. 112).

Part 3:
• Fill the clear bowl half full with very salty green water.
• Pour clear tap water slowly down the side of the bowl until you have a clear water layer over the green salty water.
• Clean one of the medicine droppers and fill with slightly salty red water.
  o Ask student to make and record a hypothesis on what will happen when the slightly salty red water is squeezed into the very salty green water.
• Carefully place the tip of the dropper in the layer of green water and squeeze out one or two drops.
• Have students record what happened.
  o Ask student to make, share and record a hypothesis on what will happen when the slightly salty red water is squeezed into the clear tap water. Why? (Answers on pg. 112)
• Now take the same dropper of slightly salty red water and squeeze one drop into the layer of clear tap water.
• Record observations on the worksheet.
  o Ask student to make a hypothesis on what will happen if you stir the layers of water.
• Stir, and record observations.

TALK IT OVER
Ask additional students question pg 96 (Answers on pg 112). Also use Discuss section on pg 96-97.