

# Oceanography

# Testing Salinity



Students will test salinity in a variety of experiments to understand the effects of salt in bodies of water. Students will also investigate the role of density and buoyancy and how this relates to natural ocean processes.

## Materials

- Two glasses/jars/containers
- Container of salt
- 2 eggs
- Index cards
- Food coloring
- Plastic cups

## Safety Considerations

- Students should be cautious not to ingest any materials

## Keywords & Concepts

**Salinity** is the concentration of salt in seawater or ocean water.

**Salination** can result from natural processes, for example natural events like weathering of minerals that contain salt, or from human events like chemicals and salts being added to bodies of water.

**Density** is equal to mass/volume.

- This means that increasing the **mass** of the water by adding salt, increases the density. Salt water is more dense than freshwater, which is less dense.

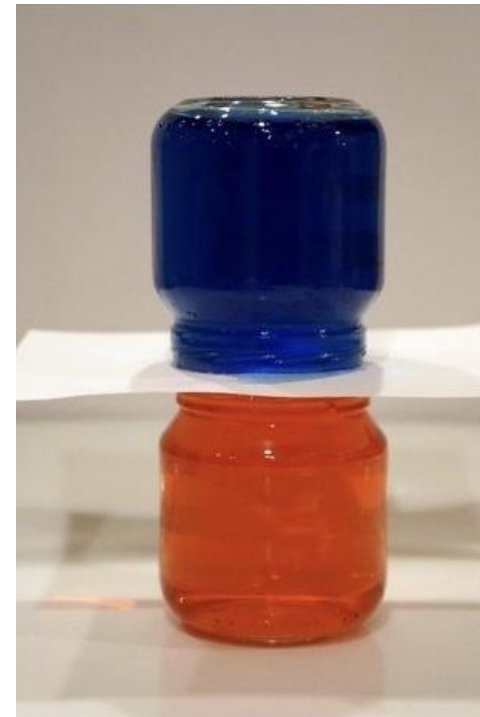
# Testing Salinity

## Experiment 1

- 1) Fill two glasses or containers with water
- 2) Add 6 teaspoons of salt to one of the glasses and mix it up really well so it's all dissolved
- 3) Place an egg into each glass. Which one floats and why?

## Experiment 2

- 1) Using 2 identical jars, fill each with water. One will be regular water (blue) and one will be salt water (red)
  - a) Add 6 teaspoons of salt to the other jar and add red food coloring drops
  - b) Add blue food coloring drops to the regular water
- 2) Place an index card or thick piece of paper on top of the jars. You are going to place one jar on top of another. First place the red on top of the blue.
  - a) To do this, hold the card on top of the jar as you flip it, and place it down on top of the other jar with the card on top.
- 3) Next, slide the cards out slowly so that the water meets.
- 4) What happens - do they mix? What color does the water turn?
- 5) Try this again but with the blue jar on top. What happens now? How does it look different to your first try?



## Experiment 3

- 1) Fill 3 small plastic cups with water.
  - a) Add 3 teaspoons of water to one
  - b) Add 6 teaspoons of water to another
- 2) Place each cup in the freezer. What do you think will happen?
  - a) Write a your hypothesis down for each cup
- 3) After 30 minutes, check the freezer and observe what is happening in each of the cups.
- 4) Are they starting to freeze? Which ones? Why do you think this is?
  - a) Write your observations down and note if they match your hypothesis.
- 5) Place them back into the freezer and check throughout the day to see which cup will freeze over completely first.

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## Debrief

### Experiment 1

- The egg in the glass with salt in it will float. This is because salt makes water more dense, so the egg will be less dense than the water around it and float!

### Experiment 2

- What did you find when you put the blue jar on top? Since the blue jar contained water that had no salt, it was less dense and didn't want to sink (because it isn't heavy). The red jar was more dense and therefore heavier because it was salty water. This is why when you remove the index cards, the water doesn't mix! The two different salinities made it so that they stay separated.

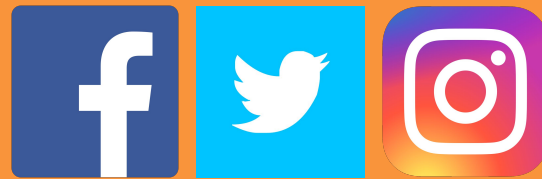
### Experiment 3

- The cup with the most salt will freeze the slowest
  - This is because adding more salt makes the water more dense and lowers the freezing point.

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project or results with us?

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Have a question?

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