

Water Density Lesson



Key Words

- Density – the amount of mass per unit of volume
- Saline – a liquid containing salt, such as seawater
- Brackish – a mix of fresh and saline, or salt, water, such as the water found in the Lake Worth Lagoon

Materials Needed

- Clear cup, jar or tall-sided container
- Water – approximately 1 cup (optional: an additional ½ cup)
- Salt – 2 tablespoons (optional: an additional 4 tablespoons)
- Food coloring – two colors (preferably blue and yellow), 3 drops each (optional: an additional color, preferably red)
- Tablespoon – standard spoon is fine
- Cups or bowls

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Step 1

Gather your materials. Mix 3 drops of blue food coloring with $\frac{1}{2}$ cup of water in a bowl. This represents your fresh water and rain.

In a separate bowl, mix $\frac{1}{2}$ cup of water, 2 tablespoons of salt and 3 drops of yellow food coloring together. Be sure to mix the liquid until all of the salt is dissolved. This represents your seawater.



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Step 2

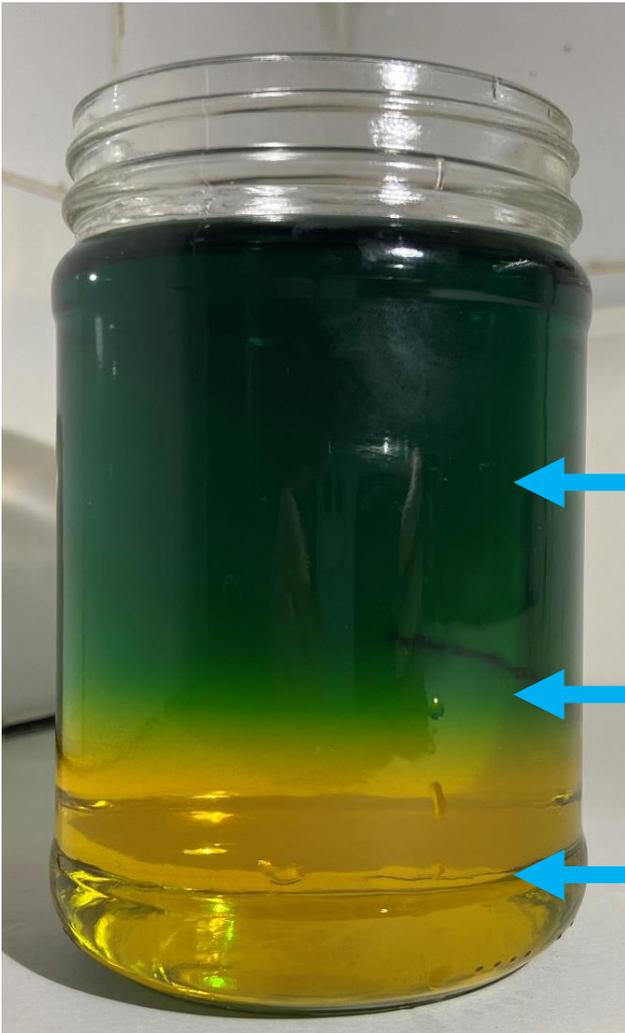
Pour your yellow seawater into a clear cup, jar or tall-sided container. Let it sit for a few seconds, so the water is still and no longer moving from when you poured it. Next, take a spoon hold it over the top of the container holding the yellow water. Slowly and carefully pour the blue freshwater “rain” over the spoon, so the blue water gently enters the container.

Describe what happened below:

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Step 3

Label the different sections of water below with saline, fresh water or brackish. Hint: the definitions of these words can be found on page 1.



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Step 4

The saline seawater was more dense than the fresh water so it does not completely mix together. The area between the two layers that mixed slightly and looks green represents brackish water, or water that's a mix of fresh and salt water. Estuaries, such as the Lake Worth Lagoon, are bodies of water where fresh water from the land mixes with salt water from the sea, forming brackish water.



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Step 5

If you mixed another $\frac{1}{2}$ cup of water with 4 tablespoons of salt and 3 drops of red food coloring to add to your mixture, what do you think would happen?

Will this new, red solution be more or less dense than the blue seawater?

Why?

Which color would be at the bottom of your glass?

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Answer Key

Step 2

The blue and yellow water mixed slightly but there is a blue layer on top, a yellow layer on the bottom, and a green layer in between them.

Step 3

- Fresh
- Brackish
- Saline

Step 5

- The red water will drop to the bottom, because it is the most dense due to having the most salt mixed in
- More dense, because it has more salt mixed in
- Red