

## Ohio State University Extension Lorain County 4-H School Enrichment Outreach

# Density of Liquids: A look at objects, matter, materials, and motion

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**Liquids have unique properties we can easily see when they interact with each other.** Through this activity you'll see what can happen when we put different liquids together and then we'll make the liquids move!

**Matter takes on various forms.** Look at water for example: Ice is a solid form of water, steam is water as a gas, and what we pour into our glass and drink, is a liquid. Liquids can not hold their shape. Unlike ice, a solid, water isn't a shape on its own.



**Density** is a characteristic that makes liquids different from each other. **Liquids of different densities can be layered on top of one another!** Here's a link to a [three-layer density experiment](#).

## Want to make your own layers of liquid?

### Get an adult to help with this!

- A small container with a tight lid
- Food coloring
- Water and (any) cooking oil
- Alka-Seltzer or denture cleaner tablet(s)

## Procedure:

1. Fill container 1/3 full of water. Add food coloring.
2. Pour in oil. Fill jar no more than 2/3 full.
  - ❖ **You now have 2 layers because the oil is LESS dense than the water!**
3. Break Alka-Seltzer or other tablet into a few pieces. Drop them in one at a time.
  - ❖ **Observe how the force of the CO<sub>2</sub> (carbon dioxide) can move the colored water into the LESS dense oil layer.**

What can you see when you turn off the lights and shine a flashlight into the bottle?



## What's happening?

- ✓ The density of oil is less than the density of water.
- ✓ When we add an external force – CO<sub>2</sub> bubbles – we can force the layers to interact!
- ✓ [The molecular makeup of water and oil](#) explains why they remain in layers.

For other hands-on science activities check out [4-H STEM at Home](#)

This activity was based on *Bubble Transporters* from The Ohio 4-H Science Fun with Kitchen Chemistry project book. Available at <https://4-h.org/parents/curriculum/>

