Teacher Guide

Audience: 3rd-5th grade

Necessary Skills: Ability to Read and Write, ability to pour small amounts of liquid from one container to another

Purpose: To teach students about the scientific process of dispersion, how it affects our world, and how NOAA uses it.

Dispersion Hands-On Activity

Name _____ Class _____

MATERIALS
Oil
One jar and one clear container
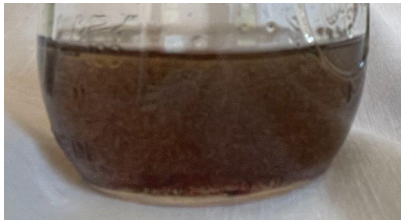3 Colors of Food Coloring
Water

STEP 1:
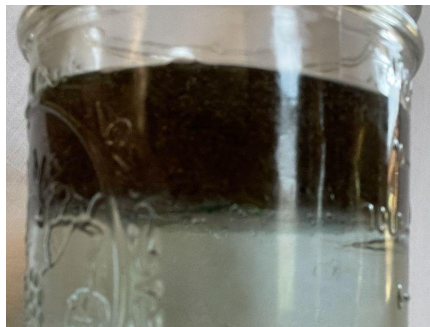Place 10 drops of food coloring in a jar with a few tablespoons of oil

STEP 2:
Shake Jar so food coloring breaks into many small droplets suspended in the oil

STEP 3:
Put about a cup of water in a clear container. Carefully pour oil mixture on top
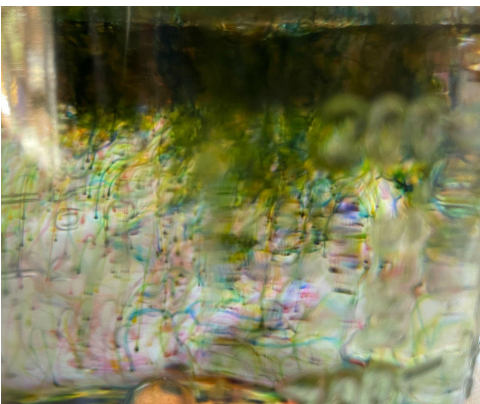
STEP 4:
Watch as the heavier food coloring droplets sink to the bottom of the oil, dispersing into the water, and eventually fully coloring the water

BACKGROUND
Dispersion is the scientific phenomenon where **small particles spread through a larger area**. This can be the **air or a liquid**, like in our experiment. Dispersion **happens naturally**, as the small particles like to have as much space as possible around them. Think of it like being in a room with a bunch of other people- you wouldn't want to all stand right by the door.
Dispersion can be **both good and bad for our environment.** Bad particles, like waste or oil, can be dispersed, harming the local ecosystem. However, NOAA also uses dispersion to

How might dispersion be affected by different conditions?

What do you notice about the time it takes for color to reach the water?

What do you notice about the patterns the color makes?

Imagine our food coloring was actually a harmful substance. How might it affect animals?

Additional Resources

Dispersion and Oil Spills

https://oceanservice.noaa.gov/facts/spills-cleanup.html

https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/weathering-processes-affecting-spills

Air Dispersion Modeling, modeling info

https://www.arl.noaa.gov/hysplit/

https://www.arl.noaa.gov/research/atmospheric-transport-and-dispersion/atd-programs-ready/

https://www.ready.noaa.gov/READY_gaussian.php