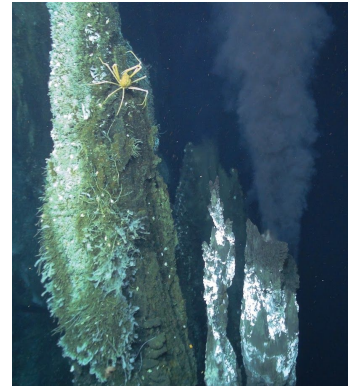


Hydrothermal Vent Bubbler

Make your own bubbler to see how minerals and metals get pulled out of the Earth's crust at hydrothermal venting sites on the ocean floor.

Materials

- 125 mL (½ cup) white vinegar
- 125 mL (½ cup) neutral cooking oil (canola or vegetable)
- 5mL (1 teaspoon) baking soda
- Food colouring (your choice of colour, we used red!)
- A tall clear glass
- A small spoon



Demonstration

1. Pour the vinegar into the bottom of your tall clear glass. Mix in some food colouring so it is a nice dark colour. Mix with the spoon if needed.
2. Carefully pour the oil over the vinegar. It will look like it is mixing, but it will separate after a few minutes. Let it sit for 30 seconds so you have a nice clean line between the coloured vinegar and the oil.

Observe: The oil and vinegar separate out due the different densities of these liquids.

3. Drop the baking soda carefully into the glass.

Observe: The baking soda will sink through the oil into the bottom vinegar layer and begin reacting with the vinegar.

4. Observe!

How This Helps Us #knowtheocean

This separation of the liquids is replicating the margin between the **Earth's crust** (the vinegar) with the ocean water (the oil). The baking soda sinks through the oil into the bottom vinegar layer, similar to how the cold, dense ocean water seeps through Earth's **porous** crust on the seafloor. As the baking soda reacts with the vinegar creating little bubbles of gas, some of these bubbles will carry some of the vinegar up through the oil to the surface, just like the heated ocean water will carry minerals up and out of the Earth's crust into the surrounding ocean water at a hydrothermal vent area. The minerals that have been pulled up will become solid, known scientifically as the process of **precipitation**. We can observe something similar as the bubbles of coloured vinegar sink back down through the oil.

Keep in mind that one thing our experiment can't show us is that the cooled minerals actually become large rock towers, rather than seeping back into the Earth's crust. Some vent towers can grow to be very tall and steep as the minerals precipitate around them, much like how stalactites form in caves.

