



# Curiosity Guide #510

## Diffusion and Osmosis

Accompanies Curious Crew, Season 5, Episode 10 (#510)

### Smelly Particles

Investigation #2

#### Description

The nose knows!

#### Materials

- Clear container
- Hot water
- Peppermint oil
- Friend
- Tea kettle
- Water
- Stove

#### Procedure

- 1) Heat up water in the tea kettle on the stove.
- 2) When the water is hot, pour 1 to 2 inches of water into the clear container.
- 3) Unscrew the cap of the essential oil and place the bottle in the hot water bath.
- 4) What do you notice? Is there a pattern in who notices something first?

## My Results

### Explanation

People who are closest to the container will immediately notice a change in odor, but eventually everyone can smell the odor. How can the smell travel to everyone so quickly?

All matter is made of molecules. Molecules are always in motion and colliding with one another. The bottle contains a high concentration of smelly particles. When the bottle is open, those particles start to collide with particles outside the bottle. That process is called *diffusion*, which means that the particles spread out and increase their concentration in spaces where there were no particles of their type before. Adding hot water makes the molecules move faster, and the process happens much more quickly. What would happen if the bottle was placed in a cold bath, or no bath at all? Try it!

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