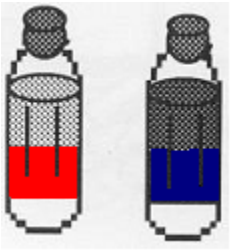
# Oil and Soap

## To do and notice:

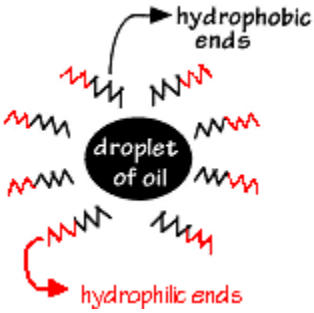


1. Compare the two jars. The top layer is oil; the
   bottom layer is water.
2. Shake each jar. Watch what happens.

   How does the one with soap added to it act differently?

## What is going on?

Oil is a “water-fearing” (hydrophobic) molecule that will not mix with water. The oil layer is less dense than water, so it floats on top.




Soap molecules have both “water-fearing” and “water-loving” (hydrophilic) ends. When soap is added, the oil and water mix better because the hydrophobic ends surround the oil and break it into smaller droplets. At the same time, the hydrophilic ends point away from the small oil droplets, helping to suspend the oil in water.

Many birds have natural oils on their feathers. The oils repel water and help birds float. Other aquatic animals, such as otters or beavers, also have natural oils in their coats. [illegible]e of soap’s effect on oil, soap pollution can harm aquatic animals; so don’t rinse your camping dishes in a stream.