

## Chemistry: *Preparation of Soap*

Soap is made of molecules that have one polar end and one nonpolar end. This fact gives soap its ability to attach to the oily substances on your skin and carry away the bacteria and dirt with the rinse water. Soap has been made for thousands of years, and can be made in the laboratory quite easily.

### Procedure:

1. Obtain 25 mL of a 40% (by weight) solution of sodium hydroxide (NaOH) from your teacher. This solution is called lye, and it is very corrosive, so avoid contact with it. Wash your hands immediately and thoroughly if you get it on your skin.
2. Also get about 1 gram of borax from your teacher. Stir it into the lye with a glass stirring rod. Borax improves the sudsing action of soap.
3. Have your teacher pour 60 mL of melted lard into a plastic cup. The lard should not be a clear yellow; it should be slightly cloudy.
4. Slowly trickle a small amount of lye down the glass stirring rod and into the lard. Then stop and stir. Repeat this process, pouring in only a little lye at any one time. This step takes time, usually between ten and fifteen minutes. Pouring the lye in too quickly will cause the lye and the lard to separate, and your final product will be a failure. You want to avoid getting two distinct layers in your plastic cup. If you see two layers beginning to form, stir the mixture vigorously to mix it well.
5. After all of the lye has been added, continue stirring until the mixture thickens.
6. Add 2 mL of ammonia (two squirts from a disposable pipet) and continue to stir.
7. If you wish to add dyes or perfumes to your soap, do so now. Four or five drops are sufficient. You may add "rope" at this point also, if you wish.
8. Using masking tape, label your plastic cup of soap with both your name and hour.
9. Clean off the glass stirring rod with your fingers under running water, return all lab materials to the place directed by your teacher, and clean your lab table.
10. We will store the soap until it has solidified. This process takes several weeks.

