

# Cool Milk Trick

## Student Worksheet

Name \_\_\_\_\_

**Overview** You're about to see a great fireworks show...in your milk! You'll see the wonderful properties of soap and just may wash your hands a little better after this eye-opening experiment.

**What to Learn** You will discover that a soap molecule is a little bit like a snake. It has a head that loves water, and a tail that loves grease. This property is what gets your dishes clean. You'll also learn about the definitions of atoms and molecules.

### Materials

- whole milk
- other types of milk for comparison
- food dye
- bowl
- liquid soap

### Lab Time

1. Pour milk into a bowl. Add several drops of different colored food dye.
2. Add one drop of soap into the middle and observe!

## Cool Milk Trick Data Table

| Type of Milk | Observations<br>(Include how long the "fireworks show" lasted) |
|--------------|--|
| Whole Milk   |  |
| 2% Milk      |  |
| Nonfat Milk  |  |
| Soy Milk     |  |
| Other: _____ |  |
| Other: _____ |  |

**Exercises** Answer the questions below:

1. How is soap like a snake?
2. What would happen if you used 2% milk instead of whole milk?
3. Why do we need soap and not just water to clean dishes?
4. What about dirty hands? If you just rinse them in water do they get clean? Why or why not?
5. What is the difference between an atom and a molecule?

## Exercises

1. How is soap like a snake? (There is a “head” that loves water, and a “tail” that loves grease.)
2. What would happen if you used 2% milk instead of whole milk? (There’s not as much fat so there wouldn’t be as much of a show.)
3. Why do we need soap and not just water to clean dishes? (The soap has both a hydrophilic end and a hydrophobic end, which attaches itself to grease and allows it to be washed down the drain. Water alone doesn’t attach itself to grease.)
4. What about dirty hands? If you just rinse them in water do they get clean? Why or why not? (No! Water only gets some of the dirt off. Any oil, grease, or other grime needs soap to be truly clean.)
5. What is the difference between an atom and a molecule? (An atom is the smallest particle of an element, while a molecule is two or more atoms stuck together.)

**Closure** Before moving on, ask your students if they have any recommendations or unanswered questions that they can work out on their own. Brainstorming extension ideas is a great way to add more science studies to your class time.