Activity 5: Milk Fireworks

Time: 25 minutes

Objectives:
- Students will explain the relationship between milk and soap and the reaction between the two.
- Students will test how the fat content of milk affects that relationship with soap.

Standards:
NGSS 2-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

Procedure:
*Note: Always check for food allergies before working with students and food

1. Read the book “Chuck’s Ice Cream Wish” out loud to the class.
2. Have students partner up and get two Styrofoam plates per group.
3. Fill one plate with skim milk and one plate with whole milk.
4. Have students add 4-5 drops of food coloring into the milk, near the center of the plate.
5. Then, take a Q-tip cotton swab and dip one end in dish soap.
6. Touch the soapy Q-tip to the food coloring.
7. Have students observe the difference between how the color spreads in the whole milk versus skim milk.

Ask students:
- What is the difference between what happens to the color in each plate?
- We used two different types of milk, and something different happened with each. What is the difference between the milks? (The fat content.)
- Share with students that the soap is reacting with the fat in the milk and that is what causes the color to swirl away from the soap.

Extensions and Variations:
- Try this activity with higher or lower fat liquids, like water or heavy whipping cream. Ask students what happens if you add more or less soap.

Materials:
- Styrofoam Plates (1 per student)
- Whole Milk (3/4 cup per 2 students)
- Skim Milk (3/4 cup per 2 students)
- Q-tips (1 per student)
- Food Coloring
- Dish Soap

The Relationship Between Agriculture and Food, Fiber and Energy