

Sewer Bugs

Purpose:

1. To emphasize the importance of looking at things through “Science Eyes”
2. Create a working model of DENSITY

Materials:

1. 3 10 oz. Cans of clear lemon-lime soda
2. 1 10 oz. Can of cola
3. 1 small box of raisins
4. 3 jars (500 ml beakers work well)



Hypothesis

Ask students what they think the bugs are.

Procedure:

1. Before students arrive set up the following
 - a. Fill one beaker $\frac{3}{4}$ full of cola
 - b. Fill a second beaker $\frac{1}{4}$ full of cola, and add lemon-lime soda to $\frac{3}{4}$ full
 - c. Fill the third beaker $\frac{3}{4}$ full of lemon-lime soda
 - d. Add several raisins to each beaker
2. Tell students that through your research you have found an organism that actually eats raw sewage.
3. Hold up beaker a. The raisins will be bobbing up and down. Tell your students that the dark liquid is raw sewage from a local waste treatment plant. Note how “active” the “sewer bugs” are inside the “sewage”
4. Hold up beaker b. Tell your students that the “bugs” in this beaker have been in there for two weeks. Note how much lighter the “sewage” is and how active the “bugs are.
5. Hold up beaker c. Tell your students that these “bugs” have been in the beaker for over four months and have “eaten” all the sewage. Tell them the most incredible thing about these “creatures” is that they are edible.
6. Reach into beaker c; pull out a raisin, and eat it. (expect gagging from your students)
7. Now that you have their attention, point out that sometimes things are not what they seem to be, but if you look long and hard enough with your “science eyes” wide open you will be able to find a reason for everything that happens in this world... even the bugs.
8. Explain what happens



Conclusion:

The liquids are carbonated soda. The bugs are raisins. Raisins are heavier, or more dense, than the soda, so they sink to the bottom of the beaker. The carbon dioxide bubbles get caught in the folds of the raisins, which make them lighter, or less dense than the soda they are in. Because they are less dense now, they float to the top of the beaker. When the raisins hit the top of the liquid, the carbon dioxide bubbles are released into the air, making the raisin heavier, or more dense, so it sinks to the bottom of the beaker where it picks up more carbon dioxide bubbles and starts the process over again. Depending on the amount of carbonation in the soda, the raisins will “bob” for several hours.