Safety Lesson
4th or 5th Grade
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Benchmarks:
SLC 9: Students will identify safe and unsafe practices and demonstrate safety in areas including: using appropriate senses for given situation (i.e., wafting instead of directly sniffing, only tasting when substance is known and permission is given, etc.); waiting for adult supervision when conditions may be hazardous; handling of known and unknown substances; acceptable behavior.

Objective:
This lesson will help students understand basic safety procedures while being active in a scientific environment, including following directions. It is to be emphasized that all 5 senses are used in scientific experiments as much as is safe to do so and the results of experiments are unknown.

Materials:
- Water
- Vinegar
- Baking soda (optional)
- Lab coat
- Two beakers
- Pipette
- Graduated cylinder
- Hot plate
- Something to boil water in (optional)
- Food coloring
- Safety goggles

Set Up:
Prepare a 250 ml of water in one beaker and 250 ml of vinegar in the other beaker. Place four drops of the same color food coloring in each beaker.

Initial Observation:
The teacher’s job is to determine what the liquids in the beakers are, but to do so by practicing bad lab techniques. As you do incorrect and unsafe techniques, let the students tell you the right thing to do and why it should be done that way.
Examples: smell the “unknown” chemicals up close, stick your fingers in the chemicals, try mixing them, etc… After some generating some general safety rules from the above method, dump some baking soda into both containers and have students guess the liquids from the reaction. Do we now know both liquids, or only one? What would you guess the other liquid is? How can we check this?

Target Model:
- You shouldn’t smell the liquids up close, because they could smell bad and hurt you
- You shouldn’t stick your fingers in the liquids because they might be poison or acid
- You shouldn’t taste the liquids because they might be poison
- You should wear safety goggles so that the liquids don’t splash into your eyes
- If you mix the liquids with each other or something else, you should mix them a little bit at a time so you don’t have a big explosion.
- You should wear a lab coat so that you don’t spill any of the liquids on yourself because they might be poisonous or acidic.
- One of the liquids reacted when the baking soda was poured in, so it probably is vinegar.
- The other liquid is probably water, but we don’t have a good way to check that yet.