Dry Ice Lab

Investigative Question: Why does dry ice act differently than ice?

Important! NEVER TOUCH DRY ICE WITH YOUR BARE HANDS!! Tissue damage or frostbite can result from the improper handling of dry ice. Always wear goggles.

Answer the following questions before you begin the lab:

1. What do you think dry ice is? _____
   _____
2. Where can we find CO_2?_____
   _____
3. Why is it *dangerous* to touch dry ice with your bare *hands*? _____
4. What are the 3 *states of matter*? _____
5. What are the two states of matter present in the dry ice? _____
6. Draw how the molecules would look in a solid, liquid, or a gas.

Solid	Liquid	Gas

7. What is the difference between a liquid and a gas? _____
   _____
8. If you can't see a gas, what is the fog coming off the dry ice. _____
   _____

Read each lab portion carefully before beginning each portion.

Lab 1

Place a small piece of *dry ice in a 50-mL plastic cup*. Tightly *cover* the cup with the palm of your hand.

1. What do you experience? Why? _____
   _____

Lab 2

Place the dry ice on the countertop. Using *tweezers push a coin* vertically down into the ice.

1. What do you observe? _____
   _____
2. *Why* does *icy frost* form on the surface of the coin? _____
   _____

Lab 3

Obtain a piece of dry ice with a flat surface. Lay your pen/pencil down on the table top. Using another pen/pencil, slide the block of dry ice across the table. Attempt to have the block of ice come to rest as close as possible to the pen/pencil laying on the countertop.

1. Why does dry ice slide so easily? (*Is it because ice is slippery, is it because it is riding on liquid, or is it because it is riding on a layer of gas?)* Explain your choice, how do you know?
   _____
   _____

Lab 4

Using an eyedropper, make a small (the size of a quarter) puddle of water on the counter. Using forceps, place a tiny piece of dry ice in the puddle.

1. What do you observe? _____
   _____

Lab 5

Add enough apple juice to the plastic cup to cover the dry ice.

1. Write your observations. _____
   _____
2. What is inside the bubbles that form? _____
3. Explain what is happening. _____
   _____

Lab 6

Fill a beaker with warm water and add a squirt of liquid dish soap. Use the tongs to place a small piece of dry ice into the soapy water. Add a few drops of food coloring.

1. Write your observations? _____
   _____
2. Explain what is happening. _____
   _____

Lab 7

This lab will be done at the aquarium station. Add a few pieces of dry ice to the warm water. Using the bubble wand and bubbles, blow a few bubbles into the aquarium.

1. Write down your observations? _____
   _____
2. Explain what is happening. _____
   _____

Lab 8

Can we blow up a balloon with dry ice?

Follow the steps: 1. Blow up a balloon and tie it off so no air leaks out. 2. Take the lid off the plastic soft drink bottle. 3. Drop a few pellets of dry ice into the plastic bottle. 4. Fit the balloon over the top of the plastic bottle. 5. Notice that the balloon begins to inflate as the dry ice sublimates. You can shake the bottle to make it expand a bit faster (air currents make the dry ice sublimate faster). 6. Once the balloon is full, tie off then end so no carbon dioxide leaks out. 7. Take the balloon filled with carbon dioxide and the balloon you blew up and drop both at the same time.

1. Which balloon falls faster? Why? _____
   _____

Conclusion Questions: Answer the following questions in complete sentences onto notebook paper.

1. What is dry ice?
2. Compare what happens to the dry ice as it goes from a block to a gas with the ice in the front of the room. What similarities and differences do you notice?
3. Why doesn't ice act the same way as dry ice?
4. What is the change of state from a solid to a gas called?