California State University of Bakersfield, Department of Chemistry

Tornado in a Box

Standards:

4.ESS3.B: Natural Hazards; a variety of hazards result from natural processes. Humans cannot eliminate the hazards but can take steps to reduce their impacts.

MS-ESS2-5: Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.

Introduction:

The science behind this experiment is similar to the way real tornados form. It revolves around the idea of updrafts and wind-shear. As the fan pulls air out of the chamber, air comes in from the slot in the side. This then forms a vortex as the air is sucked in. The fog created by the dry ice is utilized by enhancing the visibility of this effect.

Materials:

- Copier paper box
- Small 12 volt computer fan. Can be found at a computer or electronics store.
- Clear plastic food wrap
- Small plastic food container

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- Dry ice
- Black construction paper
- Tape
- Power source for fan
- Adult help

Safety:

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments
- Practice caution when handling the dry ice

Procedure:

1. Cut out openings in the top and bottom of the box. The top hole should be slightly smaller than the fan size. The bottom hole should be slightly larger than the plastic container
2. Tape the black construction paper to the inside of the box. Leave little open space
3. Tape the plastic wrap to the front of the box at the four corners. Leave a small gap on the right hand edge of about 1 in.
4. Power the fan on.
5. Put dry ice chunks with warm water into the plastic container
6. Place the container under the hole on the bottom

Data and Observations:

1. Does the size of the gap make a difference in the tornado's size?

2. Does the fan size affect the tornado's size?

3. What effects doe different amounts of dry ice have on the experiment?

References:

1. "Build Your Own Fog Tornado!" *Build Your Own Fog Tornado!* N.p., n.d. Web. 04 Aug. 2014.

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