

What is Air? *It Moves and It Smells*



Target Grade Levels

Kindergarten - Fifth

Time:

One hour

Materials

- small container
- household ammonia
- classroom map (included)
- four colored pencils or crayons
- large clock with second hand

Knowledge and Skills (TEKS)

- Science:
 - Make wise choices in the conservation of resources;
 - Describe ways technology influences human capacity to modify the environment;
 - Give examples of scientific discoveries and technological innovations that have shaped the world.
- Math:
 - Measure distance;
- Language Arts:
 - Compose journals, letters, reviews, poems, narratives, and instructions;
 - Listen and talk about experiences;
 - Make contributions to small or large group discussions; and
 - Know that organisms need food, water, light, air, and habitat.

Overview

This demonstration and exercise will help students understand the development of the movement of air, assist them in learning how to gather and analyze data, and hone their skills in both math and science.

Background Information

After pollutants are released, they are moved to other communities by the wind. Our own actions affect other people who might not even live near us, such as Corpus Christi.

Procedure

1) Vocabulary

- | | |
|------------|------------------|
| a) ammonia | c) wind speed |
| b) odor | d) wind velocity |

2) Activities

- Set a small, sealed container of household ammonia on your desk during a discussion on air.
- When all of the students are seated and you are discussing things we observe about air, open the lid on the ammonia container.
- See how long it takes for the first student to notice the smell.
- Students should observe that the odor moves from the source to the farthest place from the source. Does anything affect how the smell is carried through the room (such as a breeze from an open window or air flow from a vent)?
- Students can plot the time and distance, tracking how air (and the odor) moves through the room using the student handout, classroom map.
- Discuss with students activities that they or their parents do that affect the air?

3) Review

- a) Discuss wind patterns over Texas, how we receive other communities' pollution and who might receive ours based on wind velocity and direction. Students can perform math word problems to see how long it takes pollution from one Texas city to reach another Texas city based on wind velocity.
- b) Discuss national and global wind patterns and how pollution can be carried to different parts of the Earth. Texas frequently experiences ozone pollution from different parts of the U.S. and even receives dust or smoke from places as far away as China and the Sahara Desert. A good resource for recent national and global transported pollution events is:
www.tnrcc.state.tx.us/updated/air/monops/airpollevents/2004/sigevents_2004.html

4) Evaluation

- a) Students can be quizzed on transported pollution math problems based on wind velocity, destination city, and time to destination city.
- b) Students can be asked to name three things they can do to reduce pollution
- c) Students can perform the following extension activities as graded exercises.

5) Extension

- a) Students can time and mark distance from what points in their home they can smell dinner cooking. Then they can draw a floor plan of their home and track travel of smell.
- b) Students can make a smell diary. Many of us remember easily what we see or hear throughout the day, but we don't consciously recognize what we smell. Students could, for instance, journal what they smell on their way home from or to school.
- c) As an additional in-class activity, students can chart what are good smells and what are bad smells, sparking a discussion on the concept that different people may have different ideas of "smell pollution" and that a better definition of pollution is something that does damage to our health or livelihood.

Adapted from: "Ozone Action! Let's Clear the Air: Educational Activities Kindergarten-5th grade." West Michigan Clean Air Coalition. 2003. www.wmcac.org/gradesk5.pdf.

Air Carries Odor and Moves Classroom Map

Back of classroom

Front of classroom

Step One

Students will list the 15-second intervals for three minutes. At each interval, students will plot the intensity level (shown below) of the odor.

Intensity

- 1 - No Odor detected at all
- 2 - Begin to smell odor
- 3 - Odor is strong
- 4 - Odor is very strong

Step Two

Record the data on the map to track how the odor moved through the classroom. Create a separate map for each 15-second interval. Color only the areas where students claimed they began to smell the odor (intensity level number two). Plot the times where students began to smell the odor.