RAFT IDEAS

Topics: Health, Biology, Ecology

Materials List

- ✓ Sticky paper or sticker
- ✓ Index cards or heavy paper
- ✓ Hole punch
- ✓ Tape or other adhesive
- ✓ String
- ✓ Cm grid on a transparency
- ✓ Hand lens or microscope

This activity can be used to teach:
Next Generation Science Standards:

- Organisms and survival (Grade 3, Life Science 4-3)
- Organisms and their environment (Grade 3, Life Science 3-2)
- Body structures (Grade 4, Life Science 1-1)
- Evaluating & Reducing Human Impacts (Middle School, Earth and Space Science 3-3; High School, Life Science 2-7)

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Something's in the Air

Detecting Particulate Matter

How much particulate matter is in the air? Students can use this pollution catcher to measure and to compare the visible part of air pollution.

Assembly

1. Punch a hole in an index card and attach a string loop.
2. Label the card with the date and placement location.
3. Glue or tape a sticker to the other side of the index card **with the sticky side exposed**.
4. Repeat for each investigation location.

To Do and Notice

1. Place an assembled "pollution catcher" in a location away from heat sources and sheltered from rain. Possible locations include: kitchens, cars, places where people smoke, rooms with a fireplace, busy urban areas, and parks.
2. After 1 day, collect the experiment cards with samples.
3. Cover the exposed, sticky collection area with the centimeter grid printed on transparency.
4. Use a hand lens or microscope to examine the particles collected to count the particulates, calculating the average per square centimeter. You may wish to use a random sampling of 10 squares on the grid.

The Science Behind the Activity

Air contains particulate matter that may have unhealthy effects when inhaled. These particulates are classified into 2 categories: Coarse particles (ranging in size from 2.5 to 10 micrometers in diameter and Fine particles (diameters smaller than 2.5 micrometers). Some of these particles are from fires, car exhausts, and factory emissions, while others occur naturally in the environment such as dust, mold, pollen, and spores**.** Tobacco smoke is also source of particulates. Because the dangerous effects of tobacco smoke are well established, smoking is now restricted in many public places.

Taking it Further

Instead of focusing on pollution, focus on allergens such as pollen. Collect outdoor samples in the spring and compare them to indoor locations.

Web Resources (Visit www.raft.net/raft-idea?isid=394 for more resources!)

- http://www.stateoftheair.org/2014/health-risks/health-risks-particle.html
- http://www.airinfonow.org/html/ed_particulate.html
- http://www.epa.gov/air/particlepollution/index.html

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