DEQ in the Classroom:

How Clean is the Air?

IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY

1410 North Hilton
Boise, ID 83706
208/373-0502

www.deq.state.id.us

Grade Level:

4th Grade

Objective:

To make a simple tester to collect and observe pollution in our air.

Focus:

Tell the students, "As we look outside, we see a clear blue sky. Where is the pollution? We are going to make a simple tester so we can see air pollution."

Materials: (makes one tester)

- ✓ A plastic square (5 x 5cm)
- ✓ Petroleum jelly
- ✓ Masking tape
- ✓ Block of wood
- ✓ White paper

Background:

The atmosphere is almost completely made up of invisible gaseous substances. Most major air pollutants are also invisible, although large amounts of them concentrated in one area such as a city can be seen as smog. One often-visible air pollutant is particulate matter, which is made up of tiny particles of solid matter and/or droplets of liquid. Natural sources include volcanic ash, pollen, and dust blown about by the wind. Coal and oil burned by power plants and industries and diesel fuel burned by many vehicles are the chief sources of manmade particulate pollutants, but not all important sources are large scale. The use of fireplaces and wood burning stoves also produces rather significant amounts of particulate matter in localized areas, although the total amounts are much smaller than those from vehicles, power plants and industries.

Procedures:

Divide class into groups. Make one tester for each group. To make a tester, use masking tape to fasten the plastic square to the wooden block. Then, coat the plastic square with a thin, even coat of petroleum jelly.

Place the testers outdoors in several locations such as a post, fence, wall, and windowsill. Leave for 24 hours. Collect the squares and bring them back to the classroom. Remove the plastic square from the block and lay each square on white paper, with the petroleum jelly side up. Let the students examine the pollution collected on the petroleum jelly. Let the groups record the findings of their testers. Have each group share its findings. Did your group collect any dirt particles? How does your square compare to those of the other groups? In what places does the air seem to be the dirtiest?

Evaluation:

Students will write a paper and explain the differences among the plastic squares they observed.

Alternatives:

Students can take their tester home to test air pollution for 24 hours in different parts of the city. Students will then report their findings to the class.

Students can leave the testers outside for a week or a month. Students will keep a journal of its progress each day and report to the class. Students will compile data on their findings.

Acknowledgments:

Holt Science 6th, Holt, Rinehart, and Winston Publishers, New York. P. 257.

Texas Natural Resource Conservation Commission.