

Environmental Studies Program
Science Enrichment and Extensions



AIR

1. Recycle Patrol

Many of our actions contribute to the greenhouse effect. Each of us needs to begin to contribute to slowing down the greenhouse effect. One thing we can do is to stop producing so much garbage. Materials can be recycled or reused rather than thrown away. This will save energy and resources.

For a one week period, have your family help you separate your recyclable garbage. (Including glass, plastic, cardboard, metal, and newspapers.) At the end of the week, weigh how much garbage you can recycle. How many pounds of garbage can your family recycle each week? How many pounds would this be in a month? In a year?

Make a poster-sized graph indicating your results.

2. Garbage Dig

Reducing garbage saves energy and resources, and thus helps keep our air clean. Can you and your family reduce your garbage by reusing things that cannot be recycled? Dig through your family's garbage. Make a list or chart of the garbage that cannot be recycled. Evaluate the garbage and make a list of ways you can reduce this garbage, such as by buying in bulk quantities.

Find an object in your family's garbage and invent a creative, useful purpose for the object. Be ready to demonstrate your creation's usefulness.

3. Lichen Hunt

Lichens are sensitive to pollution and can show how polluted the air is.

Shrubby lichens are very sensitive to pollution. They grow only where the air is very clean. They look like tiny bushes with long, hairy stems, and are usually gray or green.

Leafy lichens can tolerate some pollution. They grow in patches of flat, rounded, leaf-like shapes, and are gray, green, yellow, orange, or black. The cleaner the air, the higher up on a tree or a building this lichen grows.

Crusty lichens are the most tolerant of pollution. They grow low down on trees in town centers and higher up on trees growing on the outskirts of town. These lichens form flat, crazy-paving patterns, and are often green or gray.

Do a lichen hunt in your community. Be sure to locate lichens in several different settings so you can make comparisons. Ask for a copy of lichen illustrations from your teacher, or find your own resources about lichens. Use these resources to identify the various kinds of lichens you found. See if you can make inferences about why you found various types of lichens in various places. What do the lichens you found tell you about the air quality in our community? Using diagrams, maps, and/or photos, record your observations and illustrate your findings.

4. Marketing Mania

Try to locate some car advertisements from the mid-1980s, mid-1970s, and mid-1960s. Can you detect any changes? Do any of the advertisements indicate that society at that time was concerned about fuel efficiency? How do these advertisements compare with those of today? Can you make some inferences about why car advertisements may have changed over the years? Look at the pictures and the words in the advertisements, and determine your own strategy for presenting your conclusions.

Trees work hard to decrease the amount of pollution produced by cars. It takes 160 trees to eliminate the carbon dioxide produced by one car which travels 10,000 miles in a year and that averages 30 miles per gallon of gasoline. Using this information, have your parent(s) help you figure out the number of trees necessary to eliminate the carbon dioxide produced by your family car. Include this information in your project conclusion.

5. Smog Patrol

It's easy to talk about air pollution, but more difficult to imagine what it's doing to things, plants, and people. This experiment will help you see what it actually does.

You will need eight natural rubber bands, two coat hangers, a large plastic bag, and a magnifying glass.

A. Bend each coat hanger into a rectangle, and slide the four rubber bands onto each coat hanger. Make sure the bands are stretched tight. You may need to bend the hangers out until the bands are snug. (See *photo below.)

B. Hang one coat hanger outside in a SHADY place. The other coat hanger goes in the plastic bag. Seal it tightly, and keep it indoors in a drawer.

C. After a week, examine the rubber bands with the magnifying glass. Is there a difference between the bands that were outside and the ones that were inside? Record and describe the differences you observe.

D. If the bands from outdoors are still in good shape, hang them back up and keep them out for a few more weeks. See what happens to them over a longer period of time.

If you live in a place where the air is clean, it will take a long time for rubber bands to show damage. But if you live in an area where the air is very polluted, the rubber bands will break in a few weeks. That's because, unseen by you, smog has been eating away at them.

E. Summarize your results, and brainstorm a list of things you and your family can do to decrease air pollution.

*

6. Particle Pollution

Cover several panes of glass or clear plastic container lids with a thin coating of vaseline. Place the panes or lids in various locations around the school, in the home, and in the community. Examine the particles that collect in the vaseline every few days over a period of two or more weeks.

Try to identify or describe the variety of particles in the vaseline, and try to determine the sources of the particles. Make a chart or graph of the different numbers and types of particles collected, and list or illustrate the sources of the particles. Create a plan of action to reduce or eliminate the sources of the particle pollution. For example, if you see ashes in the vaseline, perhaps this type of pollution could be reduced by enforcing laws against open burning.

7. Air Aware

Do a research project. Use books, articles, newspaper clippings, pictures, and/or personal interviews to gather information. Make a chart, poster, or display to illustrate your project. Choose one of the following as your focus:

A. Research the causes of air pollution in your own home. Develop a plan to help reduce air pollutants in your household.

- OR -

B. Research the effects of air pollution on people's health. Illustrate the harmful effects of air pollution on a person's body.

- OR -

C. Research the effects of air pollution on farming, industries, architecture, or works of art. Be sure to show the extent of the problem and to indicate possible solutions.

8. Creative Capers

Do you have something that you would like to investigate? Create your own

environmental science project which deals with air quality.