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# Trapping Smog Particles



## What Is Smog?

Smog is a form of air pollution. It is a combination of the words *smoke* and *fog*. Smog can be a result of weather conditions such as lack of wind or cool air holding down warm air. Mountain ranges near cities help trap and increase smog.

Our homes, factories, power plants and automobiles all cause smog. Sunlight acting on some smog ingredients creates even more harmful smog.

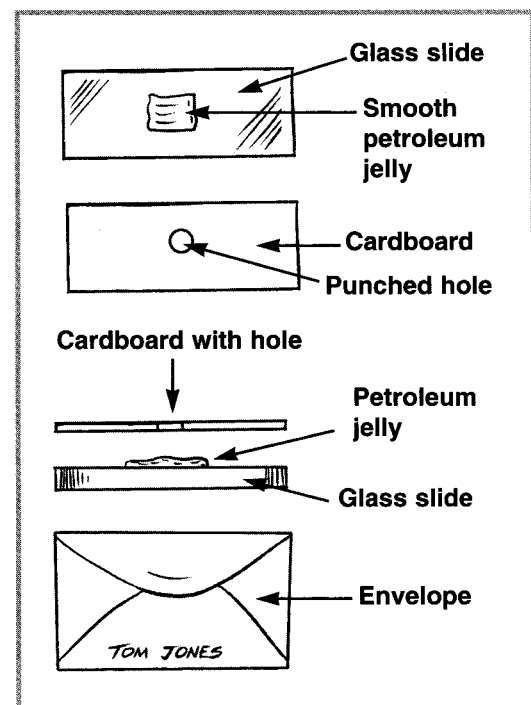
Smog contains invisible gases as well as solid particles. In this lab you are going to try and trap smog particles.



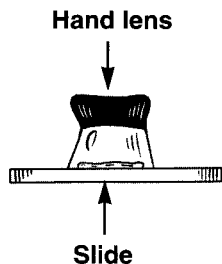
## Preparing Your Smog Traps

1. Obtain four microscope slides and some petroleum jelly.
2. Use a toothpick or pencil to smooth the jelly over the *center only* of all four slides.
3. Cut four pieces of cardboard the *same* size as your glass slides.
4. Use a paper punch to punch a clean hole exactly in the center as shown.
5. Tape your cardboard cover to the glass slide. If done correctly, the smooth jelly should be just below the hole.
6. Place your slides in an envelope labeled with your name.

Now you have to decide on four places near your home or school where you will expose your slide to trap smog particles.



## Trapping Smog Particles



Name \_\_\_\_\_

Name the four places where you plan to expose your slides.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Your slides are made of glass; carry them carefully in the envelope to and from school.

7. Expose your slides for the three or four days and then return them to class for "Peering at Particles."



## Peering at Particles

You will be observing your smog particles with either a hand lens or a microscope.

1. Observe your first slide. You will see many large and small particles. It is impossible to count them all. Ignore the very small ones and count only the reasonably sized particles.

What is the estimated particle count on the first slide? \_\_\_\_\_

Repeat using the other slides.

What is the count on the second slide? \_\_\_\_\_

What is the count on the third slide? \_\_\_\_\_

What is the count on the fourth slide? \_\_\_\_\_

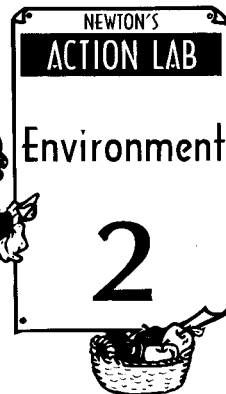
Which slide had the most smog particles? Where was it exposed? \_\_\_\_\_

Which slide had the least smog particles? Where was it exposed? \_\_\_\_\_

Describe the general appearance of the smog particles that you collected.

**Materials Needed:** Microscope slides, petroleum jelly or cold cream, cardboard, hole punch, envelopes, toothpicks and hand lenses.

**For the Teacher:** Stress a smooth petroleum jelly surface.

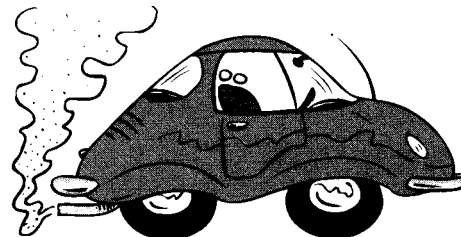


# Investigating Smog



## Our Unpure Air

Most American cities have done much to reduce air pollution levels. Air pollution is called **smog**. Smog can come from many sources, but the main polluters are factories, power plants, cars and trucks.



Smog can affect our lungs, throat, eyes, head and stomach. Smog can cause breathing problems, coughing, tearing, headaches and nausea.

Here are some of the harmful ingredients found in smog.

WHAT SMOG IS MADE OF		
Polluting Substance	Source of Pollutant	Harmful Effect of Pollutant
Sulfur Compounds	From burning coal and gasoline	Can kill plants and fish. Eats away at metal, stone, plastic and rubber.
Carbon Monoxide	Over 80% comes from auto exhausts	Can cause nausea, dizziness, drowsiness and, in extreme cases, death.
Carbon Dioxide	From burning coal, gasoline, gas and wood	Too much carbon dioxide can harm the Earth's atmosphere and possibly cause the Earth to warm.
Nitrogen Compounds	From power plants, autos, diesel engines and home furnaces	Forms nitric acid and results in acid rain.
Hydrocarbons	Auto and plane engines	Can cause lung cancer.

Describe any personal experiences you may have had on smoggy days. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_