Measuring Air Pollution

Background Information:

Breathing is crucial for human existence, but is the air we breathe clean? This experiment will provide students with an example of how “dirty” our air is. Students have the opportunity to choose a location where they would like to examine the air quality.

Purpose:

To determine the amount of foreign air particles in a specific area.

Required Materials:

- White posterboard (paper plates could also work)
- Scissors
- Hole punch
- Magnifying glass
- String
- Vaseline
- Permanent marker
- Notebook
- Pencil

Procedure:

1. Find an area in which you can hang several cut out pieces of the poster board. You can perform this experiment in your home, yard or another area of your choice depending on where you would like to examine how clean the air is.

2. Cut the poster board into several 3x3 inch squares.

3. Draw a square with the marker on each cut out piece of poster board, a little smaller than the square itself.

4. Punch a hole in the top of each piece of poster board and tie pieces of string in the holes so you can hang the cut outs in the area of your choice.

5. Smear a thin layer of Vaseline inside the drawn square on each cut out and hang them in different places within the area you've decided to examine. Record the areas you've hung each cut out in your notebook.

6. Wait 6-10 days to collect your squares and examine your results.

* You may need adult supervision when working with scissors, the hole punch, as well as assistance with hanging the squares in high places so the squares are not disturbed during your experiment.

Observation:

Using your magnifying glass, count the number of particles that are visible that are stuck to your squares. In your notebook or in the space provided below, draw the particles where you would find them from each individual square.

Square 1	Square 2	Square 3	Square 4

Results/Critical Thinking:

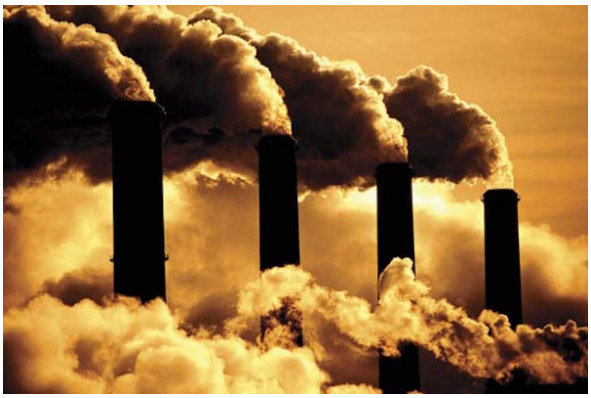
At the end of your experiment, you should find some particles stuck to the square cut outs.

- Did you find your squares to collect a lot of particles or very little?
- Does the amount of particles found on each individual square differ from one another? What does this mean and what would cause it?
- How would your results change if you chose a different location to test your experiment?
- Could the wind have an effect on your squares?
- What would happen if you tested your experiment in an area with high levels of air pollution, such as a large industrial city?
- Would there be more or less particles stuck to your squares?
- What are some possible effects from breathing in highly polluted air?
- Are there any preventative measures we can take to help clean the air?

Conclusion:

Breathing clean air is very important for our lungs and our overall health. The Vaseline that had been used on the square cut outs was designed to collect air particles. You may have noticed that air pollutant particles can be big or small, and colored or colorless. The air particles that you observed are made up of dust, soot, smoke, and other chemicals that can be inhaled can block the movement of oxygen into the lungs. Higher particle concentrations are caused from areas with large populations with increased manufacturing and automobile emissions.

References/Pictures



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