

Airborne Particulate Lab

Airborne particulates are among the unhealthiest components of air pollution to humans. Very small particulates can lodge deep inside lung tissue where they can stay throughout the life of a person. The sources of particulates can be natural as well as anthropogenic. Airborne dust, pollen, soil, or particles from the smoke and exhaust of automobiles, factories, and power plants all contribute to the total amount of particulates in the air.

Every member of the class will measure the particulate concentration inside and outside their home, and then contribute their individual data to the efforts of the entire class to uncover trends in the distribution patterns of particulates in the community.

Materials:

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| <input checked="" type="checkbox"/> 1-petri dish | <input checked="" type="checkbox"/> tape (invisible) |
| <input checked="" type="checkbox"/> graph paper | <input checked="" type="checkbox"/> tape (masking or duct) |
| <input checked="" type="checkbox"/> petroleum jelly | <input checked="" type="checkbox"/> dissecting microscope |

Procedure

1. Prepare a particulate collector by smearing a circle of petroleum jelly in a one-inch diameter circle in the center of both the top and bottom of a petri dish. Examine and sketch a picture of the particulate collector under a dissecting microscope using both a black and a white background.
2. Take the particulate collector home, install one half indoors and one half outdoors, 6 feet above the ground or floor, and measure particulates during the time period prescribed in class.
3. Bring the particulate collector to school and use the dissecting microscope and graph paper to determine the particulate concentration.
4. Sketch a picture of the exposed particulate collector as seen through a dissecting microscope using both a black and a white background.

Data Analysis

1. Add your data to the class data.
2. Draw conclusions about your data, as well as the distribution of airborne particulates in the community.
3. Write a discussion, which includes your conclusions from number 2 above, and a discussion of the accuracy of the measurements and the sources of error in the lab.