



Particulate Pollution Activity

Materials:

- Microscope slides (Two per location to be studied or one slide plus one cover slip)
- Markers
- Rulers in mm
- Masking tape
- Self-adhesive labels
- Microscopes or magnifying glasses
- Petroleum jelly or double-sided tape

Procedure:

1. Place label across the short side of the slide as a label for information about the site where the slide will be placed and duration.
2. If microscopes are not being used, draw a 2 cm by 2 cm square on slides to be placed, using a marker. Draw lines at 1 cm in both directions inside square to aid in counting particles.
3. Determine site placement of slides. It is suggested that slides be placed indoors, including some near electronic appliances, which attract particulate matter, and some placed outside near roads and also farther away, some near parking lots, pedestrian-only areas, etc. List locations in lab notebook, and label slides accordingly. (Label also with time period if that is to be varied.) Students should hypothesize which site would have the greatest particle pollution.
4. Lightly spread petroleum jelly inside square drawn on slides, or place double-sided tape on slides, leaving the tape cover strip on until placed at site.
5. Place slides with petroleum jelly-side up in the locations noted, or with tape side up and remove cover strip. Two slides per location may be used to increase data or to average. Adhere

This lesson plan is available thanks to a grant from The Harland Foundation.

The Clean Air Schools program is helping educate future leaders about air quality and transportation.
Learn more at CleanAirCampaign.org.

8/25/2009



- with masking tape to keep slide in place where the air easily reaches it and it will not be disturbed.
6. Leave slides in place for 24 hours or more; alternatively, multiple slides could be placed in one location, and the time left varied from 24 hours to one week.
 7. When slides are retrieved, carefully place a cover slip or another slide on top to preserve particles trapped by petroleum jelly or tape.
 8. Using the microscope or hand lens, students should count the number of particles within each 2 cm square and record in their lab notebooks. If microscopes and mm rulers are available, students may record the number of particles per mm^2 .
 9. If a microscope is available, students may measure particle size or record the various particles seen, and note color, shape, and size.
 10. Students graph data and compare results.

Lab reports should include answers to the following questions:

1. Which site(s) had the highest and lowest particle density?
2. Was there a pattern of particle density noted?
3. What factors might account for the difference in particle size and density at the various locations?
4. If slides were placed for various time periods, does the data gathered follow the expected results?
5. Were there any specific particles that could be identified?
6. Are any of the results different than expected? Why?
7. What factors might have influenced the data collected? (season, traffic patterns, etc.)
8. What type of air pollution does this experiment track? Does it correlate with published Air Quality Index data for the same dates?
9. What type of air pollution is not measured by this experiment?

This lesson plan is available thanks to a grant from The Harland Foundation.

**The Clean Air Schools program is helping educate future leaders about air quality and transportation.
Learn more at CleanAirCampaign.org.**