

E. T. - A LOCAL WAY OF LEARNING

**Title:** AIR MONITORING

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Environmental Education Team

**Grade Level:** 5-8

<b>Concepts:</b>	<b>Disciplines:</b>
5. Air	1. Science
9. Change	2. Social Studies

**Objective:**  
Through the directions given, students will make a simple air quality monitoring device and by making comparisons and recording data under different conditions, will show such variations on the chart.

**Rationale:**  
Concern with particulate matter in the air, one aspect of air pollution, stems from the realization that in the main, it's a one way passage of particles of matter into the lungs where they remain for the duration of your life.

**Materials Needed:**  
Sturdy cardboard, facial tissue, a 1" x 2" X 6 or 8' piece of wood, thumb tacks, yardstick, hand lens or microscope.

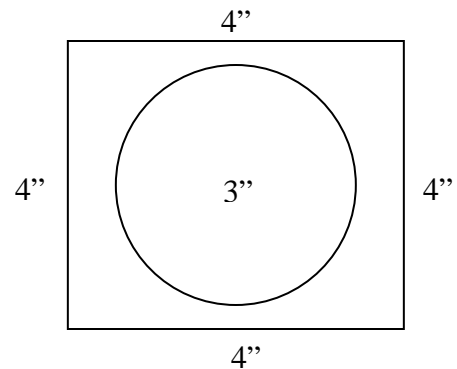
**Directions:**  
A readily constructed inexpensive device is used to introduce students to simple monitoring of air quality in the schoolyard. This activity could be repeated periodically during the school year. The directions for the activity and the material needs are outlined in the different activity steps.

**Activity:**  
1. Have the students in the class make a cardboard frame to which they glue the single ply of a 4" X 4" piece of toilet or facial tissue:

- a. Cardboard frame  
4 inch square, outside dimensions

Center, and cut out a hole, 3 inches in diameter.

- b. Using a single ply piece of toilet tissue, glue/paste securely over the hole to the cardboard frame.

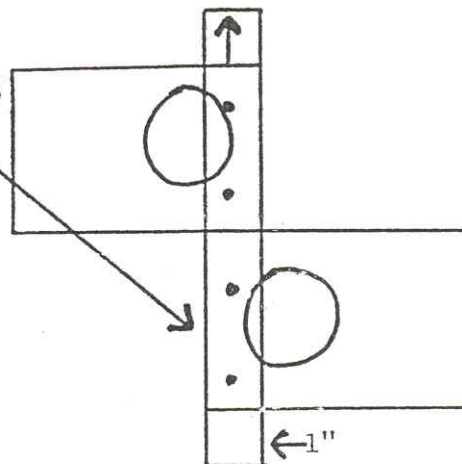


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Obtain a long board (1" x 2" x 6' or 8'); some soft wood like pine. Using thumb tacks, secure the tissue holding cardboard frames to one edge of the board, alternating sides, starting about 15-inches from the bottom:

cardboard frames attached with thumb tacks, alternating sides, going up as many as the class has made. (Depending on number of frames available, they could be spaced, measuring each for distance from ground level to record on data sheet.)



3. Locate an open space in the schoolyard where it would be possible to place the device upright by driving the bottom into the ground, about 10 inches; or you might have to dig a hole, place the device and fill back the soil and tamp securely. Decide beforehand what the prevailing winds are and face the frames into such winds.

4. Different types of observation can now be made using the sheets to record the information.

a. Leave the air monitor device in place for one school day. Remove the cardboard frames and bring in to study in class the next day. Mark each frame in succession, starting with the one closest to the ground so that you may note any difference in particulate matter on the frames higher above the ground.

b. Place the air monitor device after school, and leave out until the following morning. Mark and remove the frames for study as "a" above.

c. Leave the air monitor device in place for a full day, 24 hours, and make a comparative study.

d. The frame comparisons can be made by sight alone, with a hand lens (magnifying glass) or microscope, if the latter is available. (In working with the frames, handle carefully so as not to shake off any dust or particulate matter).

e. Record data and description starting with frame #1 at bottom and indicate measured height above ground level for each.

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f. After examination, a representative sample portion of tissue from each frame may be cut out and taped to data sheet in space so provided.

OBSERVATION RECORD SHEET

FRAME	TISSUE SAMPLE	WRITTEN DESCRIPTION OF TISSUE APPEARANCE
No. _____ Height _____		
No. _____ Height _____		
No. _____ Height _____		
No. _____ Height _____		

OBSERVATION TYPE (circle)      School Day              Overnight              24 hours  
 ANALYSIS TYPE (circle)          Visual Only              Hand Lens              Microscope  
 Number of frames \_\_\_\_\_      Time of Year \_\_\_\_\_      Wind Direction \_\_\_\_\_  
 (use additional sheets if necessary, but keep the frames in order)