



Activity 13.1

TRANSPORT AND AIR POLLUTION

Aim:

When you have completed this activity you will understand air pollution and the link between it and the use of petrol driven vehicles. You will also have considered how they both impact on your community and environment.

WHAT ARE WE BREATHING IN?

Read the Fact Sheet and note especially the information in the second section of the table.

In clean air there are many small particles of matter and invisible gases. If there are too many of these they may affect people's health and the environment, and the air is then considered polluted. These small particles and gases can come from many sources, including wood fires and volcanic explosions. However, most air pollution comes from the exhaust of motor vehicles.

When we breathe in polluted air, gas and particles lodge in our lungs. When there is a high level of pollution in a city, you may be able to see a brownish haze hanging in the air. There may be an increase in asthma attacks and in deaths from heart and lung disease at these times.

In this activity, you will do an experiment to show the particles in the air, and you will do a survey to see if the results of your test can be related to motor vehicle use. Pairs of students will test and survey different areas and compare notes with other pairs.

You will need:

- Cardboard, petroleum jelly and string
- A piece of paper to tally numbers on
- A high traffic bitumen road

Procedure:

Cut out several small squares of cardboard (about 7 cm square), one per student.

If you are going to tie your cardboard to a post, make two small holes on one side of each square and thread through a long piece of string, long enough to go around a post.

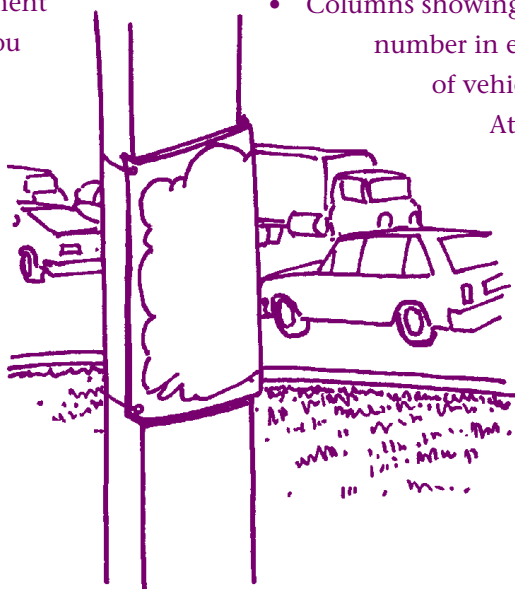
Cover one side of the cardboard with petroleum jelly.

Each pair of students places a square at a chosen place near a road and leaves it there for a week. If you cannot find a place where it will not be disturbed, use the string to tie the square to a telephone post or other post, to keep it off the ground. Make sure that you include a place near a road near the school.

At some point during the week, each pair of students surveys the number of motor vehicles using that road over one hour. This could be done after school. A tally sheet could be made up by each pair showing:

- The name of the street
- The day and time the survey was conducted (for example 4.15 – 5.15 Tuesday)
- Columns showing cars, trucks and buses. Tally the number in each column and the total number of vehicles.

At the end of the week, each pair collects their square and examines it. Are the particles that settled on the petroleum jelly light or dark in colour? Where might they have come from? What evidence is there of fossil fuels being burned? (Think of an exhaust pipe).





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Form into groups of four to compare the density and colour of the particles on squares with the number of vehicles using the road. Can you see any connection between the colour of the squares and the level of road use? Can you make any further comments about the squares and the types of vehicles using the road?

Remember to be careful to consider many possibilities when making comments.

Groups report back to the class and the class discusses the possible connection between air pollution and vehicle use.



PREDICTING A POLLUTION FREE FUTURE

Remember that everything in our world is connected. When air is polluted, so is water, and animals and plants are less healthy. In this activity you are encouraged to think about the impacts of reducing air pollution by driving better and driving less. Remember, regular car maintenance and smooth driving can significantly reduce fuel consumption. You will use a visual strategy called the Fishbone for showing cause and effect (the impacts), as you make your predictions for the future.

You will need:

One copy each of the Fishbone strategy in the Introduction and the template following.

Procedure:

Form into small groups so that you can discuss each prediction for the future. Be sure to listen to everyone's opinions.

At the place on the fishbone where it says 'Effect', write 'Reduction in air pollution'.

At the top of each of the four large fishbones write 'Air', 'Getting to places', 'Health' and 'Environment'.

On the little fishbones beside each large one, write what you think will be the effects of reducing air pollution. (For example, for 'Health', you might predict that lower air pollution might reduce the number of people with asthma).

Compare group predictions as a whole class.



CAUSES

CAUSES

DETAILS

DETAILS

DETAILS

DETAILS

CAUSES

CAUSES

EFFECT

