



# Activity 13.2

## PRODUCTION AND CONSUMPTION OF OIL

### Aim:

When you have completed this activity you will understand the effects of burning oil on the environment and the economy, and graphically show the links between all these effects.

Exploration for oil is a very expensive business. Find out more about the production of oil in other Fact Sheets in this kit.

Oil is used as a fuel for transport on land and sea and in the air through the burning of refined oil in combustion engines. This releases large quantities of gases into the air including carbon dioxide and nitrous oxides, both of which are greenhouse gases. Most air pollution (about 70 per cent) can be traced to the use of motor vehicles. The most hazardous gases released are carbon monoxide and nitrogen oxides. Air pollution, including photochemical smog, causes many health problems.

When rain falls it collects the chemicals in the air and they enter the water cycle, with subsequent damage to living things which use that water.

### EACH CAR EMITS GREENHOUSE GASES

#### You will need:

- Writing materials and a calculator

#### Procedure:

- Ask your parents or guardian to estimate how many kilometres per week the family car travels. If there is more than one car in the family, ask the drivers to do estimates for each one.
- For this exercise, we will assume all the cars are small cars. Assuming that a small car (1.6 litre engine) produces 200 grams (0.2 kilogram) of carbon dioxide per km, how many kilograms of carbon dioxide did



your car/cars emit this week? That is: number of kilometres x 200. Then divide by 1000 to calculate the amount in kilograms.

- Add together the weekly totals in kilograms calculated by each class member to get a class total of carbon dioxide emissions per week.
- Calculate how much carbon dioxide is produced per year by multiplying the class weekly total in kilograms x 52. By now you will need to further divide by 1000, because you will be calculating in tonnes!

### HOW CAN WE REMOVE CARBON DIOXIDE FROM THE AIR?

#### You will need:

- The class total of carbon dioxide emissions for a year from your calculation
- Writing materials
- Calculator

#### Procedure:

- Assume that one hectare of trees (approximately 1000 trees) takes up 20 tonnes of carbon dioxide each year through photosynthesis.
- Calculate how many hectares of trees would be needed to use up your class total of carbon dioxide.

Do this by dividing the class total by 20.

- Do you think your class could plant that many trees?
- The Australian Conservation Foundation estimates that about 63 million tonnes of carbon dioxide are released by cars and trucks in Australia each year. How many hectares of trees should Australia plant to absorb this much carbon dioxide? To do this, divide 63 million by 20.
- How many individual trees would that amount to? Remember, there are 1000 trees per hectare.



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- Discuss as a class what could be done to ensure that sufficient trees are planted in Australia to reduce carbon dioxide levels in the atmosphere. Remember also, that at the same time as trees are being planted, much land in this country is also being cleared for farming.
- Then consider what might be second order consequences for both environmental and economic impacts of the use of oil, using two lines from the first order consequences. If you can think of third order consequences, connect these with three lines.

## MAKING THE LINKS

### You will need:

- An example of a consequences wheel (see the Introduction) and a blank consequences wheel to write on
- Information from this Fact Sheet and other relevant topics in this kit

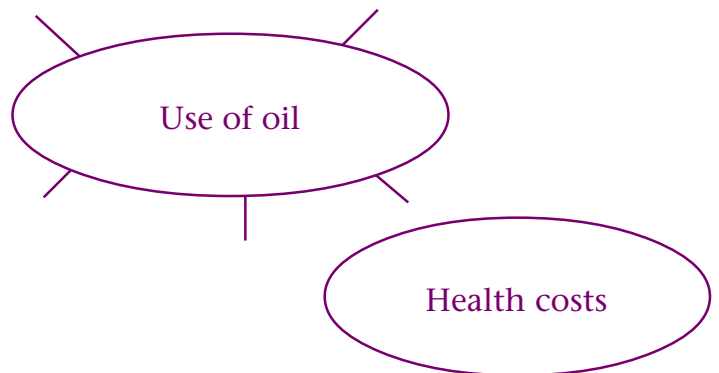
### Procedure:

- Write 'Oil Production and Consumption' in the middle of the consequences wheel.
- Using all the information you have, think of first order consequences of oil use that are environmental and connect these to the top of the centre circle using one line.
- Now think of first order consequences of oil use that are economic and connect them to the bottom of the centre circle using one line.



## Environmental effects

For example:



Economic effects