

Name: _____



You will need

3 different colours of plasticine rolled into small balls to represent atoms (colours can be changed):

- (red = oxygen)
- (blue = carbon)
- (yellow = hydrogen)

Box of toothpicks to represent bonds



What to do

Making carbon dioxide: CO₂

1. Take 1 blue atom, 2 red atoms and 4 toothpicks (double bonds).
2. Gently put together the atoms to make a molecule.
3. Draw the CO₂ molecule below and label the atoms:

Making methane: CH₄

1. Take 1 blue atom, 4 yellow atoms and 4 toothpicks.
2. Gently put together the atoms to make a molecule.
3. Draw the CH₄ molecule below and label the atoms:

Name: _____



What's happening?

The balls that you have used represent atoms, while the toothpicks represent bonds. The bonds are at different angles in each molecule because the electrons that surround the atoms hold them together differently in each case.

CO₂ is best known as a greenhouse gas (GHG) in the earth's atmosphere. It is produced by humans and other animals during respiration – the process that breaks down the energy that they all need to live.

CO₂ is taken up from the atmosphere by plants during photosynthesis – a process that stores the Sun's energy and the carbon from the CO₂, then releases the oxygen from the CO₂ that humans and animals need to breath.

Large volumes of CO₂ are also produced when fossil fuels (coal, oil and gas) are burnt for energy.

There is great concern that humans' daily activities are causing the release of too much CO₂ into the atmosphere, contributing to climate change.

Methane (CH₄) is the simplest 'hydrocarbon', formed from carbon and hydrogen. It is the main component of natural gas, and is also a GHG.

Source: adapted from CSIRO CarbonKids Carbon Chemistry Curriculum Unit page 20.