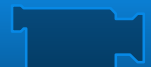


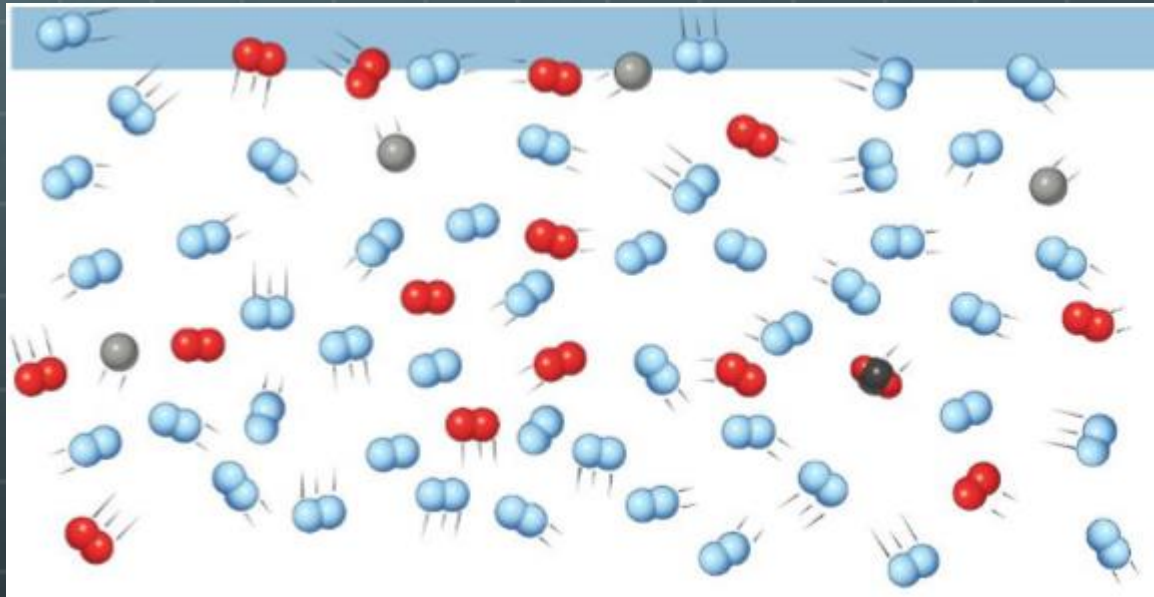
# Chapter 1.2: Oxygen and Hydrogen

O<sub>2</sub>



# Properties of Air

- Like all matter, air is made up of tiny \_\_\_\_\_.
- The air we breathe is not \_\_\_\_\_, it is a mixture of different gases.



# Hydrogen

- Hydrogen is a diatomic element with the chemical symbol H, and is the 1<sup>st</sup> element in the periodic table.
- It is the lightest element, and as a result will float upwards.
- It is a colourless and odourless gas.
- It is very explosive and that is why it is not used to fill balloons.
- It is very scarce in the atmosphere but it is very abundant on our planet and in the universe.



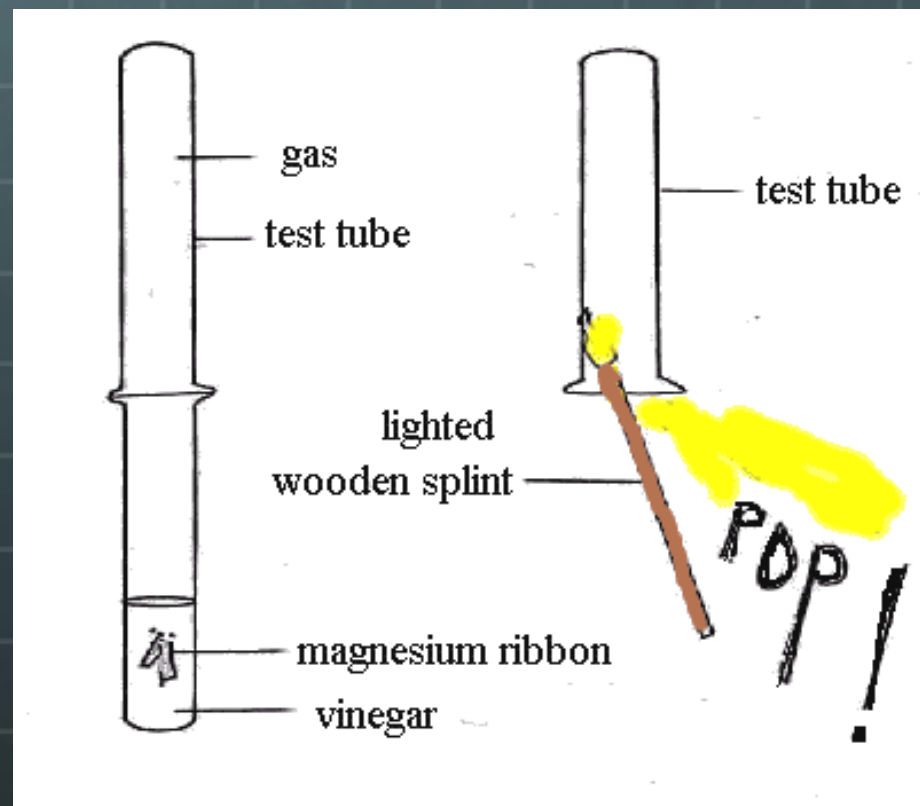
# Production of Hydrogen

- Hydrogen can be produced by reacting zinc and hydrochloric acid.
  - Write down the word equation for the production of Hydrogen:
- 



# Testing for Hydrogen

- To test if a test tube contains hydrogen, a burning match is placed next to it. If it burns with a pop, then hydrogen is present.







H<sub>2</sub> test

# Oxygen

- 🌐 Oxygen plays an essential role in the lives of humans and other living organisms.
- 🌐 As well as being important for health and medical treatments, it also helps us to burn fuels, treat water and even protects us from dangerous UV light thanks to the ozone layer.



# Facts about Oxygen

-  Oxygen is a diatomic element with the chemical symbol O, and is the 8<sup>th</sup> element in the periodic table.
-  It is a colourless and odourless gas.
-  Oxygen makes up 1/5 of our atmosphere.
-  Oxygen is essential to life. It is found in the air we breathe and in the water we drink (H<sub>2</sub>O)

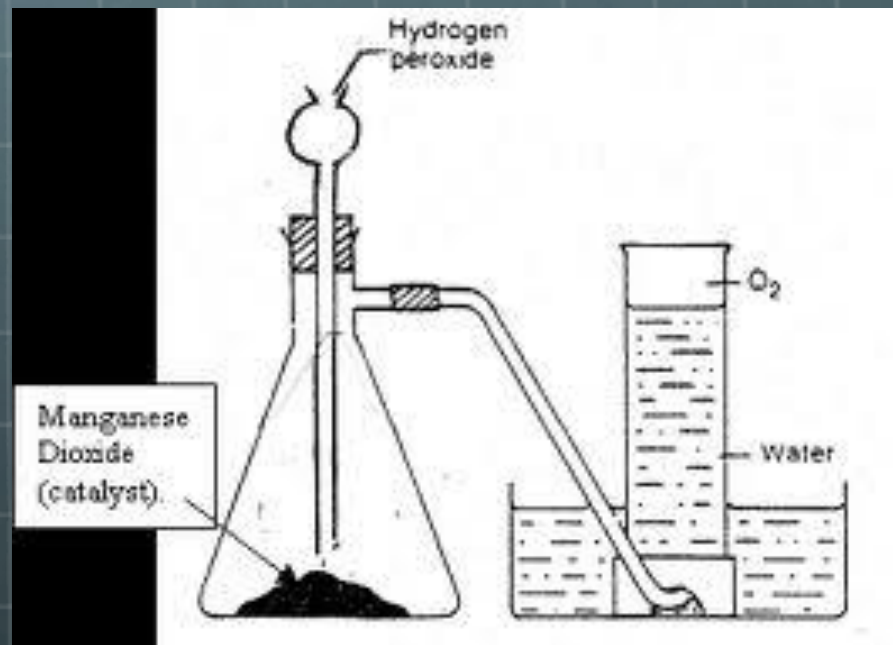
- 🌐 Ozone is a special form of oxygen as it has 3 oxygen atoms chemically combined together.
- 🌐 At ground level ozone is an air pollutant, whilst the ozone layer in the Earth's upper atmosphere provides protection from the sun's harmful rays by filtering UV light.
- 🌐 Oxygen is a very reactive element that easily forms compounds such as oxides.
  - 🌐 Ex: Magnesium + Oxygen  $\rightarrow$  Magnesium Oxide





# Production of Oxygen

- 🌐 Oxygen can be produced by reacting Manganese (IV) oxide with hydrogen peroxide.
  - 🌐 Write down the word equation for the production of oxygen:
- 



# Testing for Oxygen

- To test if a test tube contains oxygen, a red glowing splint is placed in the test tube. If oxygen is present, it will relight the glowing splint.



Test

# Testing for Oxygen

- After observing the test for oxygen, write a set of instructions to explain to someone how we test for oxygen gas.
- Draw a diagram to help them!



# Carbon Dioxide

- It is a \_\_\_\_\_ made of carbon and oxygen \_\_\_\_\_ chemically combined.
- Its symbol is \_\_\_\_\_.
- It is a \_\_\_\_\_ and \_\_\_\_\_ gas.
- It is used in solid form in gas machines known as \_\_\_\_\_.



# More on Carbon Dioxide

- 🌐 It is a very \_\_\_\_\_ gas.
- 🌐 In air it usually \_\_\_\_\_ downwards.
- 🌐 It is responsible for the \_\_\_\_\_.
- 🌐 It is needed by plants for \_\_\_\_\_.
- 🌐 We also \_\_\_\_\_ it out.

# Test for Carbon Dioxide

- 🌐 Bubble some Carbon Dioxide through clear limewater.
- 🌐 If Carbon Dioxide is present it turns milky white.

