Foxford Learning Plan

KS4 Chemistry – Using Resources

Understanding - Over the course of the topic, I will understand:

- ☐ What humans use resources for – providing warmth, shelter, food and transport.
- ☐ That natural resources can be supplemented by agriculture to provide food, timber, clothing and fuels.
- ☐ Finite resources are limited and will run out eventually.
- ☐ Finite resources come from the Earth, oceans and atmosphere are processed to provide energy and materials.
- ☐ Understanding how chemistry is used to improve industrial and agricultural processes to make new products and improve sustainable development.
- ☐ State examples of natural products that have been supplemented or replaced by agricultural and synthetic products.
- ☐ Distinguish between finite and renewable resources.
- ☐ Be able to define the term potable water.
- ☐ Describe different methods that can be used to produce potable water.
- ☐ Describe the different processes for desalination when fresh water sources are limited.
- ☐ Complete RP8 – Analysis and purification of water samples form different sources, including pH, dissolved solids and distillation.
- ☐ Understand that waste water requires treatment before being released into the environment.
- ☐ Describe the process of sewage treatment
- ☐ Describe different ways in which ores can be extracted – including phytomining and bio leaching.
- ☐ Should be able to evaluate alternative biological methods of metal extraction, given appropriate information.
- ☐ Describe what a lifecycle assessment is.
- ☐ Complete a comparative lifecycle assessment for shopping bags made from plastic and paper.
- ☐ Discuss ways of reducing the use of materials.
- ☐ Reduce, reuse and recycle of different materials.
- ☐ Evaluate ways of reducing the use f limited resources given appropriate information.
- ☐ Define what is meant by corrosion and explain how it can be prevented
- ☐ Explain what an alloy is and where they are used everyday.
- ☐ Describe what ceramics, polymers and composites are, and their uses.
- ☐ Explain what the Hager process is and how NPK fertilisers are used.

Skills - Over the course of the topic, I will:

- ☐ MS 2h Students should be able to use orders of magnitude to evaluate the significance of data
- ☐ WS 3.2, MS2c, 4a – Students should be able to extract and interpret information about resources form charts, graphs and tables

Resources. – uses and where from

Finite resources are limited in amount and will eventually run out. (EG metal ores, fossil fuels such as coal, oil or gas)

Natural resources come from the earth, sea and air.

Humans need to use resources for a variety of different things, from our physical homes, to generating energy / electricity, food etc.

Agriculture can provide conditions where natural resources that we need can be enhanced to meet our needs (eg increased crop yields).

Potable and Pure water

Potable water is water that is safe to drink, and will often contain other dissolved substances such as fluorine.

Potable and Pure water - RP

1.

Waste water treatment

Alternative methods of metal extraction

Reuse and recycling, and Lifecycle assessment

The Haber Process

NPK fertilisers

Ceramics, composites and polymers

Properties of materials and corrosion

Key Vocabulary	
Potable water	Water that is safe to drink
Finite	Resources where there is a limited supply that will eventually run out one day.
Desalination	The removal of salt from salt water
Composites	A material that is made of two or more different materials. E.g Fibreglass.
Corrosion	Where a metal reacts with substances in their environment and are gradually destroyed.
Sustainability	An approach to development that takes account of the needs of present society while not damaging the lives of future generations.
Life cycle assessment	This looks at every stage of the products life to assess the impact it would have on the environment. From getting the raw materials, through the manufacturing process to using the product.
NPK fertilisers	Formulations that contain salts of nitrogen (N), phosphorous (P) and potassium (K)