Chemistry of the atmosphere

What is the effect of carbon monoxide on the body?

Properties and effects of atmospheric pollutants.

Chemistry of the atmosphere

What is formed by sulfur dioxide in the atmosphere?

Properties and effects of atmospheric pollutants.

Chemistry of the atmosphere

What is formed by oxides of nitrogen in the atmosphere?

Properties and effects of atmospheric pollutants.

Chemistry of the atmosphere

What are the effects of particulates on the body?

Properties and effects of atmospheric pollutants.

Chemistry of the atmosphere

What is the effect of particulates on the atmosphere?

Properties and effects of atmospheric pollutants.

Using resources

What do humans use the Earth's resources for?

Using the Earth's resources

Using resources

What do natural resources, supplemented by agriculture provide?

Using the Earth's resources

Using resources

What are processed finite resources from the earth, oceans and atmosphere used to provide?

Using the Earth's resources

Using resources

What is sustainable development?

Using the Earth's resources

Using resources

Give three examples of natural products and their synthetic replacements.

Using the Earth's resources

Acid rain.

Combines easily with haemoglobin in your blood and prevents oxygen from being taken up by the red blood cells.

Health problems such as aggravating asthma.

Acid rain.

To provide warmth, shelter, food and transport.

Global dimming.

Energy and materials.

Food, timber, clothing and fuels.

Rubber (a natural product) has been replaced by man made polymers. Cotton (a natural product) has been replaced by synthetic fibres such as polyester or Lycra. Plant dyes (a natural product) have been replaced by synthetic dyes.

Development that meets the needs of the current generations without compromising the ability of future generations to meet their own needs.

Using resources

What is a finite resource?

Using the Earth's resources

Using resources

Give three examples of finite resources.

Using the Earth's resources

Using resources

What is a renewable resource?

Using the Earth's resources

Using resources

Give three examples of renewable resources.

Using the Earth's resources

Using resources

What is potable water?

Potable water.

Using resources

What properties should drinking water have.

Potable water.

Using resources

Explain whether potable water is a pure substance or a mixture.

Potable water.

Using resources

What is the source of most of the potable water used in the UK.

Potable water.

Using resources

How is most of the potable water produced in the UK?

Potable water.

Using resources

Name three sterilising agents used to produce potable water.

Potable water.

Fossil fuels, nuclear fuels and metal ores.

Resources which are not formed quickly enough to be replaceable.

Timber, fresh water and food.

A resources that forms at a faster or similar rate than they are being used.

It should have only low levels of dissolved salts and microbes.

Water that is safe to drink.

Rain is the source of most water in the UK. It collects in the ground and in lakes and rivers.

Potable water contains dissolved substances so it is not pure.

Chlorine, ozone or ultraviolet light.

Water from a suitable source (e.g. reservoir or ground water) is passed through filter beds and then sterilised.

Using resources

What is the source of potable water, when fresh water supplies are limited?

Potable water.

Using resources

Name two methods of desalination.

Potable water.

Using resources

What is a drawback to using either of these methods?

Potable water.

Using resources

What are the main sources of waste water?

Waste water treatment.

Using resources

Why does agricultural and sewage waste water require treatment?

Waste water treatment.

Using resources

Why does industrial waste water require treatment?

Waste water treatment.

Using resources

Describe the four stages of sewage treatment.

Waste water treatment.

Using resources

Compare the relative ease of obtaining water from waste water, ground water and salt water.

Waste water treatment.

Using resources

Why are alternative methods required for extracting metals from ores?

Alternative methods of extracting metals (HT).

Using resources

Name two methods of extracting copper from low grade ores.

Alternative methods of extracting metals (HT).

Distillation or reverse osmosis.

Salt water or sea water.

Urban lifestyles, industrial processes and agriculture.

These processes require large amounts of energy.

These require treatment for the removal of organic matter and harmful chemicals.

These require treatment to remove organic matter and harmful microbes.

Waste water requires expensive treatment to remove potentially toxic chemicals and microbes from the water. Ground water water just needs to be filtered and sterilised before it is potable. Saltwater can be purified but the processes require a lot of energy.

Screening and grit removal; sedimentation to produce sludge and effluent; anaerobic digestion of sludge; aerobic biological treatment of effluent.

Phytomining and bioleaching.

Copper ores are becoming scarce.

Using resources

Describe how these new methods are different to traditional mining methods.

Alternative methods of extracting metals (HT).

Using resources

Describe the process of phytomining.

Alternative methods of extracting metals (HT).

Using resources

Describe the process of bioleaching.

Alternative methods of extracting metals (HT).

Using resources

What is a leachate?

Alternative methods of extracting metals (HT).

Using resources

How can the metal compounds extracted by alternative methods be processed to produce metal.

Alternative methods of extracting metals (HT).

Using resources

What are life cycle assessments (LCAs).

Life cycle assessment.

Using resources

What are the four stages assessed by LCAs.

Life cycle assessment.

Using resources

What is easy to quantify when carrying out LCAs?

Life cycle assessment.

Using resources

What is difficult to quantify when carrying out LCAs?

Life cycle assessment.

Using resources

How can LCAs be misused.

Life cycle assessment.

Phytomining uses plants to absorb metal compounds. The plants are harvested and then burned to form ash that contain metal compounds.

They do not involve digging, moving and disposing of large amounts of rocks.

A liquid removed from the ground containing dissolved substances from the ground.

Bioleaching uses bacteria to produce leachate solutions that contain metal compounds.

These are assessments of the environmental impact of a product at each stage of its life.

By displacement reactions with scrap iron or by electrolysis.

Use of water, resources, energy resources and the production of some waste.

Extracting and processing raw materials; manufacturing and packaging of product; use and operation of product; disposal of product.

Selective or abbreviated LCAs can be misused to reach pre-determined conclusions (e.g. for advertising campaigns).

Pollutant effects.

Using resources

List three ways end users can sustainably use resources.

Ways of reducing the use of resources.

Using resources

Name four effects of reduction in the use of materials.

Ways of reducing the use of resources.

Using resources

Name five materials which are produced from limited resources.

Ways of reducing the use of resources.

Using resources

Name two methods of obtaining raw materials from the earth.

Ways of reducing the use of resources.

Using resources

What is the effect of obtaining materials by these methods?

Ways of reducing the use of resources.

Using resources

Explain how glass products can be reused.

Ways of reducing the use of resources.

Using resources

What happens to other products which cannot be reused?

Ways of reducing the use of resources.

Using resources

Describe how metals can be recycled.

Ways of reducing the use of resources.

Using resources

What does the amount of separation required for recycling depend upon?

Ways of reducing the use of resources.

Using resources

How can scrap steel be recycled?

Ways of reducing the use of resources.

Reduce use of limited resources, reduce use of energy sources, reduction in waste and environmental impacts

Reduction in use, reuse and recycling.

Quarrying and mining.

Metals, glass, building materials, clay ceramics and plastics.

Glass bottles can be crushed and melted to make different glass products.

Environmental impacts.

By melting, recasting or reforming into different products.

They are recycled for a different use.

Scrap steel can be added to iron from a blast furnace to reduce the amount of iron that needs to be extracted from iron ore.

Depends on the material and the properties required of the final product.