

Chemistry – Year 11 – Using Resources

A	Using Earth's Resources	
1	Human Use	Provides: Warmth Shelter Food Transport
2	Finite Resources	Used up at a faster rate than they can be replaced. Eventually will run out. Crude oil to make polymers. Crude oil to make petrol & diesel. Limestone to make cement & concrete. Metal ores used to extract metals.
3	Renewable Resources	Can be replaced at the same rate as they are being used up. Crops to make biofuels.
4	Sustainable Development	Development that meets the needs of current generations without compromising the ability of future generations to meet their own needs.

B	Water Safe to Drink	
1	Potable Water	Water safe to drink. Contains some dissolved substances. Can be produced from ground water (rainwater) or salty water (sea water).
2	Desalination (Salty Water)	Removal of salt. Done by distillation or reverse osmosis. Requires large amounts of energy.
3	Pure Water	Does not contain dissolved substances.
4	Safe to Drink	For humans, drinking water should have sufficiently low levels of dissolved salts and microbes.
5	Water Treatment (Ground Water)	Passed through filter beds to remove solids. Chlorine, ozone or UV light are used to sterilise the water.
6	Waste Water Treatment	Screening and grit removal. Sedimentation to produce sewage sludge and effluent. Anaerobic digestion of sewage sludge. Aerobic biological treatment of effluent.

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C Life Cycle Assessments & Recycling		
1	LCA's (Life Cycle Assessments)	Carried out to assess the environmental impact of products in each of these stages: Extracting and processing raw materials. Manufacturing and packaging. Use and operation during its lifetime. Disposal at the end of its useful life, including transport and distribution at each stage.
2	Reduce, Reuse, Recycle	Reduce: Our use of limited resources. Our use of Energy. The waste we produce. Environmental impacts.
3	Glass Bottles	Crushed. Melted. Moulded into new product
4	Recycling Metals	Saves Energy. Saves limited resources. Saves finite metal ores. Saves fossil fuels. Pollution caused by mining and extracting metals is reduced.

D Alternative Methods of Extracting Metals		
1	Copper Ores	Becoming scarce. New ways of extracting copper from low-grade ores: phytomining and bioleaching.
2	Phytomining	Plants absorb metal compounds. The plants are harvested and burned to produce ash. The ash is mixed with sulphuric acid to make copper sulphate. Copper is extracted by electrolysis or scrap iron.
3	Bioleaching	Uses bacteria to produce leachate solutions that contain metal compounds. Electrolysis or scrap iron is then used to extract the metal.