



## Learning Journey – C10 Using Resources

Ad Astra

What have I done previously in my learning journey?								
Previously....		You have learnt previously about the Earth and its resources. This has involved learning about: <ul style="list-style-type: none"><li>the order of metals and carbon in the reactivity series</li><li>the use of carbon in obtaining metals from metal oxides</li><li>properties of ceramics, polymers and composites (qualitative)</li><li>Earth as a source of limited resources and the efficacy of recycling</li><li>the production of carbon dioxide by human activity and the impact on climate.</li></ul>						
In this topic...		You will learn that industries use the Earth’s natural resources to manufacture useful products. In order to operate sustainably, chemists seek to minimise the use of limited resources, use of energy, waste and environmental impact in the manufacture of these products. Chemists also aim to develop ways of disposing of products at the end of their useful life in ways that ensure that materials and stored energy are utilised.						
We will develop our learning by studying the following each lesson:						RAG	Skills in Science checklist	
C10.01 Finite and Renewable Resources <ul style="list-style-type: none"><li>State what humans use Earth's resources for, give some examples of natural resources that they use</li><li>Define the term finite and distinguish between finite and renewable resources</li><li>Explain what sustainable development is and discuss the role chemistry plays in sustainable development, including improving agricultural and industrial processes</li><li>State examples of natural products that are supplemented or replaced by agricultural and synthetic products.</li><li>HT ONLY: Name and describe alternative biological methods for extracting metals, including phytomining and bioleaching</li><li>HT ONLY: Evaluate alternative methods for extracting metals</li></ul>							<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
C10.02 Life Cycle Assessments (LCAs) <ul style="list-style-type: none"><li>Describe, carry out and interpret a simple comparative life cycle assessment (LCA) of materials or products</li><li>Discuss the advantages and disadvantages of LCAs</li><li>Carry out simple comparative LCAs for shopping bags made from plastic and paper</li><li>Discuss how to reduce the consumption of raw resources and explain how reusing and recycling reduces energy use (inc environmental impacts)</li></ul>							<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
C10.03 Potable Water <ul style="list-style-type: none"><li>Discuss the importance of water quality for human life, including defining potable water</li><li>Describe methods to produce potable water, including desalination of salty water or sea water and the potential problems of desalination</li></ul>							<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
C10.04 Waste Water Treatment <ul style="list-style-type: none"><li>Describe waste water as a product of urban lifestyles and industrial processes that includes organic matter, harmful microbes and harmful chemicals</li><li>Describe the process of sewage treatment and compare the ease of obtaining potable water from waste water as opposed to ground or salt water</li></ul>							<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
Required Practical <i>Analysis and purification of water samples from different sources, including pH, dissolved solids and distillation.</i>							<input type="checkbox"/> Scientific Methods <input type="checkbox"/> Practical <input type="checkbox"/> Number Skills <input type="checkbox"/> Application <input type="checkbox"/> Communication	
Key Vocabulary								
Finite	Renewable	Reuse	Recycling	Natural	Waste	LCA	Potable	Pure
Surface water	Ground water	Sterilisation	Filtration	Desalination	Sewage	Screening	Sedimentation	Digestion



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<b>Future Learning</b>	In A-Level Biology you will learn that humans are part of the ecological balance and their activities affect it both directly and indirectly. You will also learn that there needs to be effective management of the conflict between human needs and conservation help to maintain sustainability of resources.
<b>In careers</b>	Pollution, disposal of waste products and changing land use has a significant effect on the environment, and environmental chemists study how human activity has affected the Earth's natural cycles, and how damaging effects can be minimised.