

# EXCELLENT ELEMENTS!

## Reflecting on the Impacts of Science

Matter is all around us and is made up of 118 different elements. What are the properties of these elements? Where do these elements come from or how are they produced and what problem do they solve? What are the pros and cons of using this element to solve that problem?



**TASK:** You will choose an **element** you use in your everyday life, and then learn more about how **element** has used as part of a human innovation. For example, Copper is used in electrical wiring, platinum is used in catalytic converters that are found in cars. On the other hand, oxygen being used for breathing would **NOT** be an example of an element being used as part of human innovation.

**PRODUCT:** You will write a **report** that includes the following components:

- 1. Introduction** - What is your **element** and what application is it used in?
  - What are the properties of your element?
    - Symbol, Origin of element's symbol, Atomic Number, Atomic Mass, Number of protons, neutrons and electrons, colour, odour, metal vs. non-metal, state at room temperature etc.
  - How and when was the element discovered? How is the element produced - naturally or synthetically?
  - Why is that element used in a human innovation of your choice?
  - How do the properties of the element relate to how it is used in the human innovation?
- 2. Positive Implications** - What are the advantages of using this **element** in your human innovation?
  - Justify your advantages using evidence from your research
  - Relate to at least one of the following **factors**: Social, Economic, Environmental
  - Make sure to name the factor(s) in your explanation
- 3. Negative Implications** - What are the disadvantages of using this **element** in your human innovation?
  - Justify your disadvantages using evidence from your research
  - Relate to at least one of the following **factors**: Social, Economic, Environmental
  - Make sure to name the factor(s) in your explanation
- 4. Conclusion/Evaluation** - Should this **element** continue to be used in this human innovation?
  - Discuss and analyze whether the **element** should continue to be used
  - Opinions supported by evidence (research of limitations and benefits) in your discussion

### WHAT IS A "FACTOR"?:

Moral - Personal view of what is right or wrong

Ethical - Society's rules or code of conduct

Social - Related to people, groups (including issues around health)

Economic - Related to profitability (the ability to make money)

Political - Related to government

Cultural - Ideas, customs and behaviours of a society

Environmental - Human impact on the natural world

### **FORMAT: General Scientific Report Formatting**

- Completed in the "Excellent Elements Report Outline" Google Doc

- Writing is scientific (concise, and to the point, with proper sentence structure and spelling)
- Double spaced, 12 pt font, normal margins
- Bibliography Table Completed for ALL sources used.

## ASSESSMENT

Criterion D: Reflecting on the Impacts of a Material				
(0)	Beginning (1-2)	Developing (3-4)	Accomplished (5-6)	Exemplary (7-8)
<i>I have not achieved a standard described to the right.</i>	<i>I am able to:</i> <b>state</b> the ways in which a <i>material</i> is used to address a specific problem or issue	<i>I am able to:</i> <b>outline</b> the ways in which a <i>material</i> is used to address a specific problem or issue	<i>I am able to:</i> <b>summarize</b> the ways in which a <i>material</i> is applied and used to address a specific problem or issue	<i>I am able to:</i> <b>describe</b> the ways in which a <i>material</i> is applied and used to address a specific problem or issue
	<b>state</b> the implications of the use of a <i>material</i> to solve a specific problem or issue, interacting with a factor	<b>outline</b> the implications of using a <i>material</i> to solve a specific problem or issue, interacting with a factor	<b>describe</b> the implications of using a <i>material</i> and its application to solve a specific problem or issue, interacting with a factor	<b>discuss and analyse</b> the implications of using a <i>material</i> and its application to solve a specific problem or issue, interacting with a factor
	<b>apply</b> scientific language to communicate understanding but does so <b>with limited success</b>	<b>sometimes apply</b> scientific language to communicate understanding	<b>usually apply</b> scientific language to communicate understanding <b>clearly and precisely</b>	<b>consistently apply</b> scientific language to communicate understanding <b>clearly and precisely</b>
	document sources, <b>with limited success.</b>	<b>sometimes</b> document sources <b>correctly.</b>	<b>usually</b> document sources <b>correctly.</b>	document sources <b>completely.</b>

### Command Terms for Science

**Analyse** - Break down in order to bring out the essential elements or structure. To identify parts and relationships, and to interpret information to reach conclusions.

**Apply** - Use knowledge and understanding in response to a given situation or real circumstances

**Describe** - Give a detailed account or picture of a situation, event, pattern or process

**Discuss** - Offer a considered and balanced review that includes a range of arguments, factors or hypotheses. Opinions or conclusions should be presented clearly and supported by appropriate evidence

**Outline** - Give a brief account

**State** - Give a specific name, value or other brief answer without explanation or calculation

**Summarize** - Abstract a general theme or major point(s)