

OCR (B) Chemistry GCSE

C7.4 - How do science and technology impact society?

Flashcards

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Give examples of applications of science that have had a positive impact.



Give examples of applications of science that have had a positive impact on society.

- The invention of the battery, enabling handheld technology
- Haber-Bosch process (which allows large-scale production of ammonia) making food production sustainable
- Invention of fertilisers and pesticides, increasing crop yields
- Synthesis of modern medicines



Give examples of scientific applications that have had unintended negative impacts.



Give examples of scientific applications that have had unintended negative impacts.

- Reduced biodiversity from the use of pesticides, insecticides and fertilisers.
- The synthesis of many chemical compounds has resulted in their use in foods and cosmetics, and their subsequent absorption into our bodies. Many are carcinogenic
- Plastics were synthesised by chemists but the overuse of plastic has resulted in huge amounts of landfill waste



How is the size of a risk estimated?



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The size of the risk is estimated based on the chance of it occurring in a large sample over a period of time.



Suggest why an individual may be willing to accept a risk.



Suggest why an individual may be willing to accept a risk.

A person is usually more willing to accept the risk if the effects of it are short-term, rather than long-term. Furthermore, a person may accept the risk if they chose to, rather than having it imposed on them.



What is the difference between a
perceived risk and a calculated risk?
(higher)



What is the difference between a perceived risk and a calculated risk? (**higher**)

A perceived risk refers to a person's perception of how large the risk is, whereas the calculated risk is the actual, statistically estimated risk. The perceived risk may differ from the calculated risk - for example, a person's perception of the risk of flying in an aeroplane may be higher than the calculated risk.



What does 'ethical implication' mean in terms of science?



What does 'ethical implication' mean in terms of science?

If an area of science has an ethical implication, it means that we have to ask the question of whether the work is morally right or wrong, and consider it from an ethical viewpoint.



Give examples of scientific research that may have ethical implications.



Give examples of scientific research that may have ethical implications.

- Tissue regeneration
 - ‘Unnatural’, ‘playing God’
- Gene editing
 - ‘Unnatural’, ‘playing God’, designer babies future?
- Sample-return space missions (collection of rocks and minerals from other celestial bodies for analysis on Earth)
 - Is it okay to contaminate another planetary body with Earth’s bugs?



Outline the factors that have to be considered when making decisions about scientific work.



Outline the factors that have to be considered when making decisions about scientific work.

- The risks to individuals or groups
- The benefits to these same individuals or groups
- The ethical implications of the work
- The cost



Give reasons why different decisions
may be made on the same issue.



Give reasons why different decisions may be made on the same issue.

The people deciding may have different personal circumstances, social or environmental contexts, or economic positions.

