

2018 Sample Chemistry Examination

Possible answers to the SHE question

9. (c) There are currently more than twenty large carbon capture and storage (CCS) projects in operation globally. An industrial-scale CCS project in Australia has successfully stored 80 000 tonnes of CO₂ underground. This prevents more than 95% of CO₂ emissions from reaching the atmosphere. Australian scientists have shared information about the effectiveness of the new technologies used in this project with scientists around the world.

Discuss how **collaboration and communication** between **international scientists** contributes to the effectiveness of new CCS **technologies**, and the **benefits** that this will have for the **global community**.

Possible answers

Any three well-explained points, such as:

The enhanced greenhouse effect is a global problem that has effects on biodiversity and life everywhere on the planet. It is therefore important that scientists around the world **collaborate** on methods to reduce this problem.

Safe and effective methods of removal of CO₂ from the atmosphere are vital to reduce the effects of global warming. It is therefore helpful if scientists in all parts of the world **communicate** with each other on their successes and also areas for improvement when **designing new methods**.

Collaboration between scientists from different countries will help speed up **improvements to technologies** leading to their increased effectiveness. Discussion of potential hazards from the process can lead to the development of safe workplace practices in all countries.

The fact that this **technology** enables more than 95 per cent of CO₂ can be saved from reaching the atmosphere makes carbon capture and storage a critical component in a modern, fuel-efficient future. No other technology offers such significant reductions in carbon dioxide emissions to industry.

Communication between scientists from CCS projects being conducted in different countries enables a large pool of data to be formed. This can increase the reliability of results.

Analysis of this data will hopefully lead to better designs of CCS. International **communication** can prevent unnecessary duplication of initial research by individuals working in isolation.

Collaboration allows for cost-sharing so that one country is not responsible for bearing the entire cost of research.