**Stage 2 Biology**

**SHE question and possible suggested answers:**

Students must learn to identify the four SHE key concepts in articles, videos, talks etc. Students must then be taught how to write short explanations that explicitly show how recent innovations, developments or events illustrate particular SHE key concepts.

Reference to aspects of collaboration, application and limitation and influence in the stem of the question.

**Information**

The use of silica is common. However, recent studies by scientists working for both occupational health and safety agencies, and industry suggest that it is not safe for humans and animals and may have other negative consequences for the environment. Alternatives are being developed; however, more research into the safety of these materials is necessary before they can be used. The development of alternative materials may reduce both the environmental and health costs of using silica on a large scale in some applications. However, the cost of developing the new alternatives will require significant investment and careful consideration of the applications they might replace.

**Question**

Choose at least one on of the key concepts of Science as a Human Endeavour, and discuss how the development of alternative materials to silica may benefit the environment and/or humans.

Students may select either one or more than one SHE key concept to demonstrate the interaction between science and society.

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**Answer 1:**

The development of alternatives to silica will require collaboration and communication between scientists and industry. This will be influenced by the availability of adequate funding from business and/or government. The alternatives produced may also have certain limitations such as effectiveness or availability.

*Lists* some of the SHE key concepts- development, communication and collaboration but does not discuss them in any detail.

**Answer 2:**

Collaboration between health and safety agencies, and industry have led to questions about the safety of silica for the health of humans and for the environment. This collaboration will be further utilised to develop new alternatives to silica, which will require research and safety testing to determine if the development of these new materials are indeed safer for humans and the environment, or if they too will have limitations and negative consequences when used in particular ways. There is economic influence, as the cost of developing these new materials and the subsequent testing for safety will cost significant amounts of money. These new materials will also need to replace the many current uses, to ensure that it can be used in the various applications required, this could add further cost.

Links evident between two SHE key concepts, examples in the text and how it demonstrates an interaction between science and society.