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Nanotechnology - the next big thing?

Nanotechnology, the technology of materials of microscopic size, is seen as **controversial** by many. This article looks at some of the benefits – and potential dangers.

Imagine a world in which kitchens clean themselves, tiny brushes clean up pollutants in water, and **minute** robots move through the body **seeking out** and destroying cancerous tissue. If all this sounds like something from a 1960s science fiction movie, you should think again, **1** .

Scientists working in this new **branch** of technology see these ideas as only some of the possible **applications** of their research. There is even speculation that materials can be developed that will allow machines to **repair** themselves in much the same way that the human body does, **2** .

Although the idea of using microscopic robots to fight disease is still futuristic, nanotechnology is already being used by doctors. For example, magnetic nanoparticles have been given to patients suffering from certain cancers. These tiny metal balls concentrate in the body's unhealthy tissues, giving doctors a useful tool **3** .

Unfortunately, as with so many new ideas, it is not all good news. People are already expressing **concerns** **4** . It has even been suggested that the world could **rapidly** be reduced to grey dust as the result of some disaster involving this new technology.

Part of the problem is the fact that nanoparticles are minute. They are so small that they are readily taken up by the body. Normally, the skin acts as a natural barrier **5** . However, nanoparticles are able to cross biological membranes and penetrate tissues and organs. Studies have already shown that nanoparticles can cause DNA **mutation** and the destruction of cells.

Despite the fears, there are signs that nanomaterials can actively **benefit** the environment and help in the fight against global warming. They can also be used to improve the efficiency of traditional materials. For example, a nanoparticle is being added to engines in buses in Britain **6** .

However, if we are to avoid another environmental catastrophe, then, as with most advances in technology, the message must be: '**proceed** with extreme caution.'

- A which prevents invasion by foreign bodies
- B which would be an incredible development
- C because it is a world that may not be far off
- D which will improve their fuel efficiency
- E which means an operation is necessary
- F which they can use to track the spread of the disease
- G that nanotechnology may be difficult to control


5 Complete the phrases with the words below. Use the completed phrases to make sentences based on the text.

• fuel • biological • extreme • potential • foreign
• cancerous • fight • traditional • global • natural
• environmental • science

- | | | |
|--------------------|--------------------|-------------------|
| 1 dangers | 5 efficiency | 9 ... catastrophe |
| 2 tissue | 6 bodies | 10 caution |
| 3 fiction | 7 warming | 11 barrier |
| 4 to disease | 8 materials | 12 membranes |

- 6 Match the words in bold to these meanings: quickly, go ahead, area, fix, worries, tiny, looking for, uses, help, change, debatable.

Listening & Speaking

- 7  Listen as you read the text again. Then tell your partner what the positive and negative effects of nanotechnology would be.

Writing

- 8 **THINK!** Do you think nanotechnology will change people's lives? Spend three minutes writing about the topic.