

Dead satellites are filling space with trash. That could affect Earth's magnetic field

Level 1: Elementary / Pre Intermediate

1 Warmer

a. Discuss these questions with a partner.

- Why are there satellites in space?
- What happens to satellites when they stop working?

2 Key words

a. Match the words from the wordpool to complete the definitions. Then, find and highlight them in the article so that you can read them in context.

currently damage disposable linked

1. If you _____ something, you harm it or ruin it.
2. If something is _____, it is intended to be used once and then thrown away.
3. If two things are _____, they are connected.
4. _____ means *at the moment*.

power research rubbish weaken

5. _____ means *become less strong or powerful*.
6. _____ means *things that are no longer useful or needed*.
7. If you carry out _____, you study a subject in detail.
8. If you _____ something, you provide it with energy.

b. Complete the sentences with words from the previous activity. You might have to change the form of the word.

1. We should use fewer _____ products to protect our planet.
2. They are _____ working very hard.
3. You should be careful not to _____ anything valuable.
4. These two ideas are obviously _____.
5. We should do some _____ and find out what people think about this.

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Sierra Solter

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- 1 A dead spacecraft the size of a lorry turns into rubbish. This is what happens to internet service satellites during re-entry. And this could damage our atmosphere or even our magnetosphere.
- 2 Space entrepreneurs are investing in disposable satellites to become richer. There are currently around 10,000 active satellites and companies are working as fast as possible to get thousands more into orbit – for a projected one million in the next thirty to forty years.
- 3 Those satellites power internet services and may turn some billionaires into trillionaires – but they will cover the planet with toxic rubbish. The problem is that, despite what people think, space cannot clean itself.
- 4 Space has a system called the magnetosphere that protects our atmosphere and keeps us alive. It is easy to think that the magnetosphere is too strong for humanity to have any impact on it, but I don't think that's true. I'm a plasma physicist and the author of recent research that found that the space rubbish generated by dead and dying commercial satellites could damage our ionosphere or magnetosphere, also known as our planet's plasma environment.
- 5 This pollution is going to affect our plasma environment one way or another. But few people are discussing this potential crisis – maybe because space research and commercial space projects are closely linked.
- 6 How could we possibly think that burning rubbish in our atmosphere 24/7 is going to be fine? Although researchers are studying how satellite rocket chemicals fill the atmosphere, no one else is studying the pollution of the magnetosphere except me.
- 7 Damaged spacecrafts are huge and consist of aluminium and other materials that conduct electricity well and can act as a magnetic shield. The Earth is a ball magnet that we're surrounding with metal rubbish. This can in turn weaken our atmosphere and make it hard for life to survive on Earth.
- 8 Our magnetosphere keeps us alive, so any pollution of it should be studied and monitored. Space companies need to stop launching satellites if they can't show that their pollution will not damage the stratosphere and magnetosphere.

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3 Comprehension check

a. Are these sentences True (T) or False (F) according to the article? Correct any that are false.

1. Companies are working on a new type of satellite.
2. Many people think that space cannot hold a lot of rubbish.
3. Nothing we do can damage the magnetosphere.
4. The writer is the only one studying the effect of pollution on the magnetosphere.
5. Space rubbish may make life on Earth impossible.
6. Space companies should study the magnetosphere before launching more satellites.

4 Key language

a. Complete the sentences from the article with the correct modal auxiliaries.

1. This _____ (opportunity, possibility) damage our atmosphere or even our magnetosphere.
2. Those satellites power internet services and _____(possibility) turn some billionaires into trillionaires...
3. ... but they _____ (certainty) cover the planet with toxic rubbish.
4. The problem is that space _____ (impossibility) clean itself.
5. This _____ (ability, opportunity) weaken our atmosphere.
6. Our magnetosphere keeps us alive, so any pollution of it _____ (recommendation) be studied and monitored.

b. Complete the sentences.

1. Next year, I will...
2. In the near future, people may ...
3. To prevent space rubbish, space organisations could...
4. Governments should...
5. I cannot (can't) ...

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5 Discussion

a. Discuss these statements.

- 'This pollution is going to affect our plasma environment one way or another. But few people are discussing this potential crisis – maybe because space research and commercial space projects are closely linked.'
- 'How could we possibly think that burning rubbish in our atmosphere 24/7 is going to be fine?'
- 'Space companies need to stop launching satellites if they can't show that their pollution will not damage the stratosphere and magnetosphere.'

6 In your own words

- a. With a partner, make a list of the pros and cons of using disposable satellites.**
- b. Do some research online to check your ideas.**
- c. Prepare a presentation about disposable satellites, the pros, the cons and what may happen in the future.**