



The end of life on Earth?

It weighed about 10,000 tons, entered the atmosphere at a speed of 64,000 km/h and exploded over a city with a blast of 500 kilotons. But on 15 February 2013, we were lucky. The meteorite that showered pieces of rock over Chelyabinsk, Russia, was relatively small, at only about 17 metres wide. Although many people were injured by falling glass, the damage was nothing compared to what had happened in Siberia nearly one hundred years ago. Another relatively small object (approximately 50 metres in diameter) exploded in mid-air over a forest region, flattening about 80 million trees. If it had exploded over a city such as Moscow or London, millions of people would have been killed.

By a strange coincidence, the same day that the meteorite terrified the people of Chelyabinsk, another 50m-wide asteroid passed relatively close to Earth. Scientists were expecting that visit and know that the asteroid will return to fly close by us in 2046, but the Russian meteorite earlier in the day had been too small for anyone to spot.

Most scientists agree that comets and asteroids pose the biggest natural threat to human existence. It was probably a large asteroid or comet colliding with Earth which wiped out the dinosaurs about 65 million years ago. An enormous object, 10 to 16 km in diameter, struck the Yucatan region of Mexico with the force of 100 megatons. That is the equivalent of one Hiroshima bomb for every person alive on Earth today.

Many scientists, including Stephen Hawking, say that any comet or asteroid greater than 20 km in diameter that hits Earth will result in the complete destruction of complex life, including all animals and most plants. As we have seen, even a much smaller asteroid can cause great damage.

The Earth has been kept fairly safe for the last 65 million years by good fortune and the massive gravitational field of the planet Jupiter. Our cosmic guardian, with its stable circular orbit far from the sun, sweeps up and scatters away most of the dangerous comets and asteroids which might cross Earth's orbit. After the Chelyabinsk meteorite, scientists are now monitoring potential hazards even more carefully but, as far as they know, there is no danger in the foreseeable future.

Types of space rocks

Comet - a ball of rock and ice that sends out a tail of gas and dust behind it. Bright comets only appear in our visible night sky about once every ten years.

Asteroid - a rock a few feet to several kms in diameter. Unlike comets, asteroids have no tail. Most are too small to cause any damage and burn up in the atmosphere. They appear to us as 'shooting stars'.

Meteoroid - part of an asteroid or comet.

Meteorite - what a meteoroid is called when it hits, Earth.

Task 1

Write the disasters in the correct group.

Disasters: solar flare, oil spill, volcano eruption, flood, nuclear accident, meteor strike, hurricane, space junk collision, global warming

Groups:

1. Natural disasters
2. Disasters from space
3. Manmade disasters

Task 2

Choose the best option to complete these sentences.

1. The damage caused by the Russian meteorite ____.
 - a. could have been much worse
 - b. was huge
 - c. was greatly reduced by the early warning system
 - d. was much worse than the one in Siberia one hundred years ago
2. The Siberian meteorite ____.
 - a. hit a forest
 - b. hit a big city
 - c. caused glass to shower over people
 - d. damaged trees when it exploded
3. On the same day as the meteorite exploded over Chelyabinsk, ____.
 - a. there was another, related, asteroid event
 - b. there was another, unrelated, asteroid event
 - c. scientists realised that an even bigger asteroid could hit Earth
 - d. scientists issued a warning for 2046
4. The Russian meteorite ____.
 - a. had been predicted by scientists
 - b. came as a surprise
 - c. was too small to worry about
 - d. will come close to Earth again in the future
5. Experts say that comets and asteroids could ____.
 - a. wipe out all animal life, leaving only plants
 - b. kill a significant proportion of the Earth's human population
 - c. put an end to all plant and animal life on Earth
 - d. cause as much damage as the Hiroshima bomb
6. A small asteroid ____.
 - a. can still cause a lot of damage
 - b. is not a problem if it is spotted early
 - c. cannot cause any significant harm
 - d. is actually more dangerous than a larger one
7. Earth has been relatively safe thanks to ____.
 - a. pure luck
 - b. luck and the protective force of another planet from our solar system
 - c. early warning systems set up by NASA
 - d. luck and our position in relation to the sun
8. Scientists say ____.

- a. it is impossible to monitor all the potential hazards
- b. we are not in any danger for the moment
- c. a meteorite is likely to hit Earth sooner or later
- d. their early warning systems will protect us

Task 3

Complete the gaps with a phrase from the box.

spot, injured, flattened, wiped out, cross, struck, monitor, cause

1. When the meteorite exploded on 15 February 2013, many people were _____ (hurt) by falling glass.
2. The explosion of another small object _____ (made flat) many trees.
3. Scientists weren't expecting the Russian meteorite because it had been too small for anyone to _____ (see or notice).
4. It was probably a large asteroid colliding with Earth that _____ (made extinct) the dinosaurs.
5. 65 million years ago, an enormous object _____ (hit) the Yucatan region of Mexico with a force of 100 megatons.
6. Even a much smaller asteroid can _____ (do) a lot of damage.
7. Jupiter protects Earth by diverting away the dangerous comets and asteroids that might _____ (pass from one side to the other of) Earth's orbit.
8. Scientists will now _____ (observe or check regularly over a period of time) potential hazards even more carefully.

Task 4

Discussion

Answer the following questions.

Do asteroids scare you? Why or why not? Have you ever experienced any type of natural disaster? What can be called a global issue? Can you name any?

What do you think are the three most serious issues the world/our country is facing at the moment?

Why do you think so many people become involved in crime? Is there a way to prevent them from doing it?

Do you think drug dealing and prostitution should be legal? What would change?

What social problems is this country facing now? Can anything be done about them?

What wars and conflicts are going on in the world? What are their causes? Do you think such problems can be solved peacefully?

Do you know any countries where human rights are violated? In what way?

How does the growth in population affect the environment?

Do you remember any natural disasters that have happened recently?

What can everyone do to help protect the environment?

Do you separate rubbish?

What does it mean when something is environmentally friendly?

What can cause global warming? Is there a way to reduce it?

Have you ever experienced floods or fire? What did you do? Can you do anything to protect yourself from them? What would you do if a flood was endangering your home?

Should we help people from other countries facing their own social issues or natural disasters? Why / why not? If yes, how could we help them?

Do you think we should clone animals and children? Why? Why not?

Should animals be kept in zoos?