

Earth-Impacting Objects from Space

In July 1992 a comet that had split into more than 20 large fragments impacted on the surface of Jupiter. The event was watched with amazement by astronomers on Earth, and it attracted enormous media attention. For the first time people became aware of the fragility of our own planet, as scientists and the public at large began to ask the inevitable question: “what would have happened if those massive chunks of cometary debris had impacted the Earth instead?”

Moreover, it soon became common knowledge that **besides** comets, which enter our solar system in a variety of ways, there are also many other Near Earth Objects (NEOs) such as the asteroids in our solar system. There is no way of excluding that these may have the potential for becoming dislodged from their orbits, and heading onto collision courses with the Earth and other inner planets.

In recognition of this threat, there has been increasing concern in recent years within the scientific community. Indeed, even before the Jupiter impact, scientists had already begun to track potential earth-impactors and to calculate the **likelihood** of their striking Earth. For example, in 1992 NASA held a ‘Near-Earth-Object Detection Workshop’. The **topics** discussed ranged from “Hazard of Cosmic Impacts”, and “The Near-Earth-Object Population”, to ideas and proposals for a ‘Search Strategy’. The workshop concluded with calls for International co-operation, and plans were made for what later became known as “The Spaceguard Survey”. This is now headed by the International SpaceGuard Foundation, currently based in Frascati (Rome), and hosted by the Istituto di Astrofisica Spaziale which is part of the Consiglio Nazionale di Ricerca (the Italian National Research Council).

By 1999, worry about impact-probability had grown so intense that another workshop was held in Turin (Italy) in which many leading astro-physicists, but also telecommunications and military experts involved in satellite operations, took part. The outcome of the discussions was the creation of the Torino Scale, described on the Nasa Impact Website as a sort of *Richter Scale* for categorizing the Earth impact hazard associated with newly discovered asteroids and comets. But governments were sceptical: in January 2000 Lord Sainsbury, the **then** Minister for Science in the UK, dismissed public fears by announcing: “There are currently no known large NEOs whose orbits put them on collision course with Earth”. Unfortunately, we cannot be sure this is true.

(394 words) (*Adapted from: The Guardian*)

1) According to the article

- a) some NEOs are on a collision course with Earth.
- b) even scientists are worried that some NEOs may impact our planet.**
- c) only large NEOs have orbits on a collision course with Earth.
- d) it can be excluded that some NEOs may represent a cosmic hazard.

2) According to the article

- a) scientists were so taken by surprise by the 1992 incident that they began research into NEOs.
- b) scientists had already started research into NEOs prior to the 1992 incident.**
- c) scientists were so taken by surprise by the 1992 incident that they decided to warn the general public.
- d) scientists had forgotten about the 1992 incident when the government decided to take action.

3) In the first paragraph the writer suggests that prior to the 1992 incident

- a) the general public had been afraid of NEOs.
- b) the general public had thought about the risks of the Earth being hit by NEOs.
- c) the general public had been warned by scientists about the risks of NEOs.
- d) the general public had never really considered the risks of NEOs.**

4) In the second paragraph the writer suggests that

- a) it is inconceivable that NEOs will crash into the Earth.
- b) the possibility that NEOs might crash into the Earth can be excluded.
- c) the possibility that NEOs might crash into the Earth exists.**
- d) it is likely that NEOs will crash into the Earth.

5) 'besides' in paragraph 2 means

- a) as well as**
- b) instead of
- c) in spite of
- d) even

6) 'likelihood' in paragraph 3 means

- a) desirability
- b) pleasure
- c) association
- d) chances**

7) 'topics' in paragraph 3 means

- a) arguments
- b) orbits
- c) subjects**
- d) physicists

8) At the 1999 Turin workshop it was decided to

- a) establish criteria for assessing the degree of risk presented by NEOs.**
- b) ask governments for more money.
- c) count how many comets and asteroids there were.
- d) concentrate on reducing the real risks threatening the world's population on a day to day basis.

9) 'then' in paragraph 4 means

- a) the Minister for Science at that time**
- b) the deceased Minister for Science
- c) the newly elected Minister for Science
- d) the shadow Minister for Science

10) The general tone of the article is

- a) reassuring.
- b) terrifying.
- c) slightly disturbing.**
- d) funny.