

GLOSSARY

1 the closing

Nuclear and radiation accidents

The **International Atomic Energy Agency** (IAEA) defines a nuclear and radiation accident as “an event that has led to significant consequences to people, the environment or the facility.” The INEA judges nuclear accidents according to an International Nuclear Event Scale (INES), ranging from 1 to 7. The most serious events (“major accidents”) are classified as a 7, while a 1 is considered minor “anomaly”. The most serious ones among the 99 accidents reported so far include Three Mile Island accident and Chernobyl and Fukushima Daiichi nuclear disasters.

The biggest nuclear disaster in U.S. history – level 5 on the INES – occurred at the **Three Mile Island** Plant near Harrisburg, the capital of Pennsylvania, on March 28, 1979. A cooling system failed, causing a partial meltdown at a reactor core. Soon 140,000 people were forced to evacuate their homes. The U.S. Nuclear Regulatory Commission determined that no one had died of causes related to the incident, but found there might be one excessive cancer death over a 30-year period as a result of radiation. Nevertheless, Three Mile Island had a profound impact on the public’s attitude toward nuclear energy.

The worst nuclear catastrophe in history occurred at the nuclear power plant at **Chernobyl**, Soviet Union (which is now in Ukraine) on April, 26, 1986. The accident, level 7 on the INES, took place in the reactor number 4

The **International Atomic Energy Agency** (IAEA) is an intergovernmental agency for scientific co-operation in the nuclear field. It works to improve and strengthen national nuclear security programmes worldwide. It was set up in 1957 as the world’s “Atoms for Peace” organization within the United Nations.

during an experiment. The reactor’s emergency shutdown¹ failed and a nuclear meltdown followed, together with a series of violent explosions. A cloud of radioactive dust, far more radioactive than the material released with the atomic bombing of Hiroshima, was sent into the atmosphere. Not only the area around Chernobyl, but also large parts of the western USSR and Europe were involved. The Soviet government tried to cover the incident: the world first learned of the disaster when a nuclear facility in Sweden recorded abnormal radiation levels in the air, and the workers found radioactive particles on their clothes. More than 30 people were killed immediately and about 350,000 had to be permanently relocated. A U.N. report of 2005 says that 56 deaths could be linked directly to the accident, but it goes on to estimate that up to 4,000 people may die from long-term diseases related to the accident: the full extent of the damage is unlikely to ever be known.



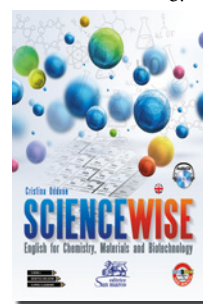
Chernobyl Nuclear
Power Plant and
shelter facility.



On March 11, 2011, an earthquake measuring 9.0 on the Richter scale struck Japan causing also a destructive tsunami along parts of the coastline. One of the results was that the **Fukushima Daiichi** nuclear power plant experienced a partial meltdown two days after the quake. Japanese officials initially assessed the accident as level 4, but the level was successively raised to 5 and eventually 7. The accident caused nuclear contamination in the surrounding environment, water, milk, vegetables and other food items. People living in the area were moved to safe shelters². About 300 people received significant radiation doses. Although there were no deaths or serious injuries due to direct radiation exposures, future cancer deaths due to accumulated radiation exposures have been estimated at between 100 and 1,000.



C. Oddone
SCIENCEWISE
English for
Chemistry, Materials
and Biotechnology



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2 a place providing cover and protection

The outbreak of the unprecedented Great East Japan Earthquake and tsunami

ACTIVITIES

1 Read the text and find the following information.

- 1 Definition of nuclear and radiation accident.
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- 2 How a nuclear disaster can be estimated.
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- 3 The number of nuclear accidents so far.
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- 4 The most serious nuclear accident ever.
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- 5 A nuclear accident occurred in the USA.
.....
- 6 The most recent among the accidents mentioned in the text.
.....
- 7 The levels of the INES of the three accidents mentioned.
.....

3 Match the following words from the text to the corresponding definition.

- | | |
|---------------|--|
| 1 Environment | A Any condition different from normal physiological function affecting an organism |
| 2 To cool | B Malignant growth or tumour |
| 3 To fail | C To become less hot |
| 4 Core | D Series of vibrations at the earth's surface |
| 5 Cancer | E External surroundings where plant and animals live |
| 6 Catastrophe | F To be unsuccessful |
| 7 Disease | G A sudden, extensive disaster |
| 8 Earthquake | H The central part of a nuclear reactor, where the reaction takes place |

4 Make a list of other major nuclear disasters, then in groups look for information about some of them and report to the class.

2 Answer the following questions.

- 1 Where and when did the Three Mile Island accident occur?
- 2 What caused the accident?
- 3 How many people were forced to leave their homes?
- 4 How many people died?
- 5 What happened at the Chernobyl nuclear plant in April 1986?
- 6 What was the immediate consequence?
- 7 Who found out about the accident in Europe?
- 8 What were the consequences on the people?
- 9 What was the primary cause of the Fukushima Daiichi disaster?
- 10 What were the immediate consequences?

5 The thriller China Syndrome, about a nuclear plant meltdown, was released in the USA only eleven days before the Three Mile Island accident took place. Find out more about the film and watch it.