

# The Chernobyl nuclear accident



The explosion at the Chernobyl nuclear power plant thirty years ago was – and remains to this day – the most destructive nuclear accident to occur, writes **Tony Moore**

**T**he huge explosion that blew the top off Reactor Four at the Chernobyl nuclear power plant released more than 50 tons of radioactive material into the atmosphere. The cause of the accident on April 26, 1986, the design flaws in the reactor, and the initial failure of the Soviet authorities to inform the world about what had happened, have been well documented. But diverse and complex questions remain on the human and environmental consequences.

The area immediately surrounding the plant was mainly farms and woodland, but there were two centres of population, the towns of Pripyat and Chernobyl.

Large areas of Europe were affected by radiation but the worst were wide areas of Belarus, the Russian Federation and Ukraine.

Some 50 emergency rescue workers died, either from the effects of radiation in 1986 or from other illnesses in later years. As a result of the ingestion of contaminated milk and other foods, between 4,000 and 6,000 people, the vast majority children or adolescents, contracted thyroid cancer.

A report by the United Nations Scientific Committee on the Effects of Atomic Radiation in 2005 suggested that the contraction of thyroid cancer was likely to continue for many years.

But apart from the dramatic increase in thyroid cancer, there has been no scientific evidence that cancer rates attributable to the accident have increased among the exposed populations. Increased incidences of cancer have been reported, but this is believed to be as a result of improved diagnoses and better reporting procedures. Nevertheless, based on the experience of other populations exposed to radiation, it is expected that the low to moderate doses

*Reactor Four is still covered by the original steel and concrete sarcophagus, which was due to be replaced by a new cover in 2005. Delays, principally caused by disagreements over funding, means this will not be done until 2017*

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**Tony Moore** is a regular contributor to CRJ. In 1996, while on the staff of the Cranfield Disaster Management Centre, he attended a workshop in Moscow, organised by the Ministry of the Russian Federation for Emergency Situations (Emercom) and sponsored by the United Nations, entitled 'Chernobyl: Ten Years On'

received will have led to a small increase in the risk of cancer.

Given the large number of individuals exposed, the total number of cancer cases caused by a small increase in the relative risk could be substantial, particularly in the future. Evidence to support this claim was given by the International Atomic Energy Agency in 2005, which said, based on statistical modelling of radiation doses received by workers and local residents, that a total of 4,000 deaths would eventually be attributable to the accident. Other sources have predicted that this figure could be much higher.

Environmental fallout from the accident affected cropland, forests, rivers, fish and wildlife. In the three most affected countries, nearly 800,000 hectares of land was removed from agriculture, and timber production halted on nearly 700,000 hectares of forest.

Perhaps the most devastating impact was the psychological effect on people. Over 100,000 were evacuated immediately after the accident, and the total number of evacuees from severely contaminated areas reached 340,000. While these resettlements helped reduce the effects of radiation, they were deeply traumatic for those involved.

International reports suggested that those who had been exposed to radiation experienced heightened anxiety levels. Despite relief efforts by the governments of the three affected countries and outside agencies, these people came to regard themselves not as 'survivors', but as helpless individuals, with no control over their futures.

This has been made worse by severe economic hardship, the exodus of skilled workers, especially young people, and a prevalence of misconceptions and myths regarding health risks, leading to what reports call a 'paralysing fatalism' that has led to both excessive health anxieties and reckless conduct. As a result, poverty, mental health problems, and 'lifestyle' diseases have posed a far greater threat to affected communities than radiation exposure.

Pripyat and Chernobyl remain deserted, except for scientists and a few former residents who have returned despite the risk. The accident at Chernobyl called into question the growth of nuclear power and remains a defining moment in the history of nuclear energy. 