Introduction: Sorting out the Facts

Few names around the world are better recognized than "CHERNOBYL." And few events have evoked greater controversy among scientists, government officials and the public. Over the decade since explosions destroyed the nuclear power plant in Ukraine, the accident and its aftermath have been studied extensively. Today, there is a common understanding among experts about what happened, why it happened and the major implications. But to much of the broader public around the world, the accident remains an enigma—a phenomenon that is feared, but little understood.

Chernobyl was by far the most devastating accident in the history of nuclear power. Radioactive fallout was mainly concentrated in the three former Soviet Republics States closest to the plant, but it also came down at lower concentrations over much of the entire Northern Hemisphere. What do we now know about the health and environmental impacts of this massive discharge of radioactive material?

Measuring radiation in the vicinity of the Chernobyl power plant

Opening day of the Conference at the Austria Centre credit:Pavlicek/IAEA

This booklet attempts briefly to bring to light what has been learned after ten years of examining the consequences of the accident, reviewing both its immediate and long-term human health and environmental impacts. It is based principally upon the results of an international conference, "One Decade After Chernobyl: Summing Up the Consequences of the Accident," which brought together more than 800 experts from 71 countries in Vienna in April 1996 under sponsorship of the European Commission (EC), the World Health Organization (WHO) and the International Atomic Energy Agency (IAEA).[1]

Today, people in the countries most affected by the accident—Belarus, Russian Federation and Ukraine and Belarus—continue to live with the consequences. This booklet aims to help both them and the broader public to separate the facts from the fears, and the scientific evidence from the science fiction.

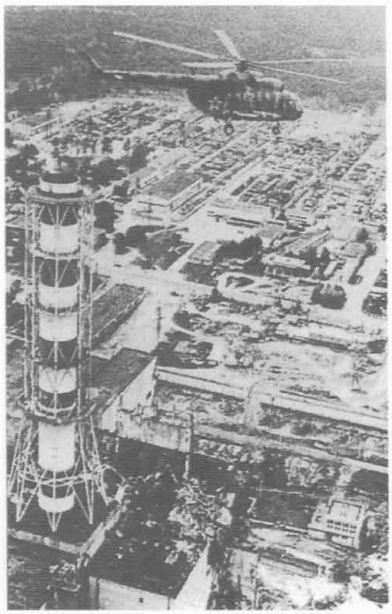
[1] *This conference took into account the results of major projects performed over the last ten years, including the International Chernobyl Project carried out in 1990-91, a 1995-96 IAEA project on the prospects for the contaminated territories, the WHO IPHECA (International Programme on the Health Effects of the Chernobyl Accident), and the Research Projects sponsored by the European Commission in collaboration with scientists in Belarus, Russia and Ukraine.*

Facts:

The accident was by far the most devastating in the history of nuclear power

- Chernobyl's No. 4 reactor was completely destroyed by explosions that blew the roof off the reactor building and released large amounts of uranium fuel and other radioactive material into the environment. The reactor's remains are currently contained within a larger structure known as the shield or "sarcophagus" built in the months following the accident. One of the four original reactors at the site is in operation.

- Large amounts of radioactive material—12 trillion (10^{18}) international units of radioactivity, termed "becquerels" — were released into the environment, particularly during the first ten days. The discharge included over a hundred, mostly short-lived radioactive elements, but iodines and caesiums were of main relevance from a human health and environmental standpoint. Radioactive material from the plant was detectable at very low levels over practically the entire Northern Hemisphere.



Radiation monitoring in the early days after the accident

- Compared with other nuclear events: The Chernobyl explosion put 400 times more radioactive material into the Earth's atmosphere than the atomic bomb dropped on Hiroshima; atomic weapons tests conducted in the 1950s and 1960s all together are estimated to have put some 100 to 1,000 times more radioactive material into the atmosphere than the Chernobyl accident.

- An estimated 200,000 workers (known as "liquidators"), from the local police and fire services, the Army and volunteers, were initially involved in containing and cleaning up the accident in 1986 and 1987, either in the front lines or administratively. Later, the number of people who became registered as liquidators rose to between 600,000 and 800,000 although many so listed received only low doses of radiation.

- An "exclusion zone" initially some 30 kilometers in radius was established around the site and about 116,000 people within it were evacuated to less contaminated areas in the months following the accident. The exclusion zone was later extended and now covers 4,300 square kilometers containing the areas with the highest amounts of radioactivity.

- Potassium iodide or iodate tablets were reportedly provided for 5.3 million people, of whom 1.6 million were children, although the efficiency of this distribution has not been quantified. The first to receive this preventive treatment were reported to be those from within the 30-km zone.

- The town of Pripyat (pop. 45,000), home to most of the plant personnel, was completely evacuated and a new town, Slavutich, was constructed outside the exclusion zone.

- In the years following the accident, an additional 210,000 people in the Republics of Ukraine, Belarus and Russia were evacuated from their homes under government orders and resettled in less contaminated areas.