

# Chernobyl disaster

NUCLEAR ACCIDENT, SOVIET UNION [1986]

**Chernobyl disaster**, accident in 1986 at the Chernobyl nuclear power station in the Soviet Union, the worst disaster in the history of nuclear power generation. The Chernobyl power station was situated at the settlement of Pryp'yat, 10 miles (16 km) northwest of the city of Chernobyl (Ukrainian: Chornobyl) and 65 miles (104 km) north of Kiev, Ukraine. The station consisted of four reactors, each capable of producing 1,000 megawatts of electric power; it had come online in 1977–83.

The disaster occurred on April 25–26, 1986, when technicians at reactor Unit 4 attempted a poorly designed experiment. Workers shut down the reactor's power-regulating system and its emergency safety systems, and they withdrew most of the control rods from its core while allowing the reactor to continue running at 7 percent power. These mistakes were compounded by others, and at 1:23 AM on April 26 the chain reaction in the core went out of control. Several explosions triggered a large fireball and blew off the heavy steel and concrete lid of the reactor. This and the ensuing fire in the graphite reactor core released large amounts of radioactive material into the atmosphere, where it was carried great distances by air currents. A partial meltdown of the core also occurred.

On April 27 the 30,000 inhabitants of Pryp'yat began to be evacuated. A cover-up was attempted, but on April 28 Swedish monitoring stations reported abnormally high levels of wind-transported radioactivity and pressed for an explanation. The Soviet government admitted there had been an accident at Chernobyl, thus setting off an international outcry over the dangers posed by the radioactive emissions. By May 4 both the heat and the radioactivity leaking from the reactor core were being contained, albeit at great risk to workers. Radioactive debris was buried at some 800 temporary sites, and later in the year the highly radioactive reactor core was enclosed in a concrete-and-steel sarcophagus (which was later deemed structurally unsound).

Some sources state that two people were killed in the initial explosions, whereas others report that the figure was closer to 50. Dozens more contracted serious radiation sickness; some of these people later died. Between 50 and 185 million curies of radionuclides (radioactive forms of chemical elements) escaped into the atmosphere—several times more radioactivity than that created by the atomic bombs dropped on Hiroshima and Nagasaki, Japan. This radioactivity was spread by the wind over Belarus, Russia, and Ukraine and soon reached as far west as France and Italy. Millions of acres of forest and farmland were contaminated, and, although many thousands of people were evacuated, hundreds of thousands more remained in contaminated areas. In addition, in subsequent years many livestock were born deformed, and among humans several thousand radiation-induced illnesses and cancer deaths were expected in the long term. The Chernobyl disaster sparked criticism of unsafe procedures and design flaws in Soviet reactors, and it heightened resistance to the building of more such plants. Chernobyl Unit 2 was shut down after a 1991 fire, and Unit 1 remained on-line until 1996. Chernobyl Unit 3 continued to operate until 2000, when the nuclear power station was officially decommissioned.



Monument to the emergency workers (known as “liquidators”) who responded to the 1986 accident at the Chernobyl nuclear power station; the monument is located in Chernobyl

Following the disaster, the Soviet Union created a circle-shaped exclusion zone with a radius of about 18.6 miles (30 km) centred on the nuclear power plant. The exclusion zone covered an area about 1,017 square miles (2,634 square km) around the plant. However, it was later expanded to 1,600 square miles (4,143 square km) to include heavily radiated areas outside the initial zone. Although no people actually live in the exclusion zone, scientists, scavengers, and others may file for permits that allow them to enter for limited amounts of time.