

# Chernobyl nuclear disaster

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## The accident

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The Chernobyl disaster was a nuclear accident that occurred on 26 April 1986 at the No. 4 reactor in the Chernobyl Nuclear Power Plant, near the city of Pripyat in the north of the Ukrainian SSR in the Soviet Union.

At 01:23:04 a.m. the test began *explain test*, then 36 second later at 01:23:40 the "scram" *explain* *scram* button was pressed. We only know the final reading. Reactor No. 4 designed to operate at 3200 MW went beyond 33,000 MW we can only estimate to how far it went. During this time pressure builds in the reactor No. 4. At 01:23:45 the reactor exploded. (Valery Ilyich dies) lifts a 1,000-ton lid and split open the roof.

Multiple separate fires develop. An alarm goes off at a local fire station. The core would stop burning on May 10th.

At twenty minutes later firefighters arrive. They know nothing about radiation and aren't wearing any protective clothing. Driver Grigory Khmel later recalls: "We saw graphite lying everywhere. I kicked a bit of it. Another fireman picked up a piece and said 'hot.' Neither of us had any idea of radiation. My colleagues Kolya, Pravik and others all went up the ladder of the reactor. I never saw them again."

At 5 a.m. reactor No. 3 is shut down. Reactors No. 1 and 2 are stopped about a day later.

## Days after the accident

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An alarm goes off at a Swedish nuclear plant after the soles of shoes worn by a nuclear safety engineer there test positive for radioactivity. The radiation is traced to Chernobyl.

36h after the explosion the evacuation of Pripyat was ordered. Next day they decided on 10km evacuation radius ten days later on 30k which is still there. In total there were 350k ppl evacuated.

April 28th The Soviet Union publicly admits for the first time that an accident happened but gives few details.

Core fire extinguished by helicopters dropping more than 5,000 tons of sand, lead, clay, and neutron-absorbing boron onto the burning reactor. 600 pilots risked dangerous levels of radiation.

The smoldering graphite, fuel and other material above, at more than 1,200 °C, started to burn

through the reactor floor and mixed with molten concrete from the reactor lining, creating corium, a radioactive semi-liquid material comparable to lava. Feared that it could create a bigger explosion when coming in contact with water tanks. 3 ppl sent to open the valves (Alexei Ananenko, Valeri Bezpalov, Boris Baranov) received "Order For Courage" in 2018.

To construct the sarcophagus 100t of debris needed to be removed from the roof 10% were removed by robots the other 90% were removed by so called "bio-robots" aka. soliders. Wearing protective gear and only being allowed to go on the roof for 90s max. (Chernobyl liquidators)

## Why did it happen and who is responsible?

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Soviets trying to save money (less protection) Fatal flaw in RBMK reactors known for 3 years but not fixed. Night staff. Reactor management shifting the test.

## The aftermath

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There is now a 30km Exclusion Zone around the plant. (some ppl still live there)

Gorbachev, in a 2006 memoir, says "The Chernobyl meltdown was perhaps the real cause of the collapse of the Soviet Union."

## People

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Valery Legasov - first deputy director of the Kurchatov Institute of Atomic Energy Boris Shcherbina - Ukrainian Soviet politician who served as a Deputy Chairman Aleksandr Akimov - shift supervisor of the 4th power unit

## Killer lines

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There is a difference improvising a presentation at school and improvising controlling a nuclear reactor.

A catastrophe is a chain of unfortunate events.