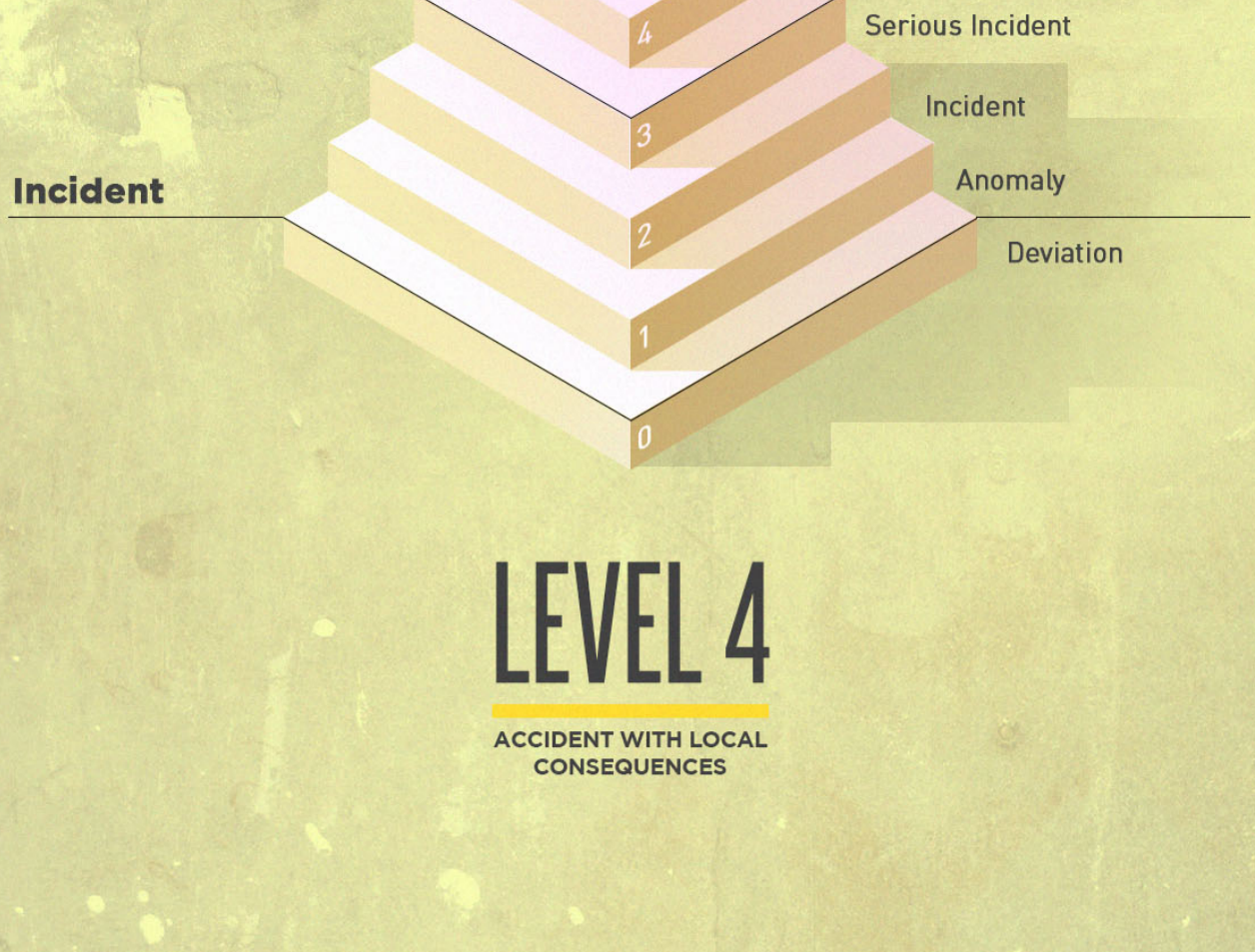


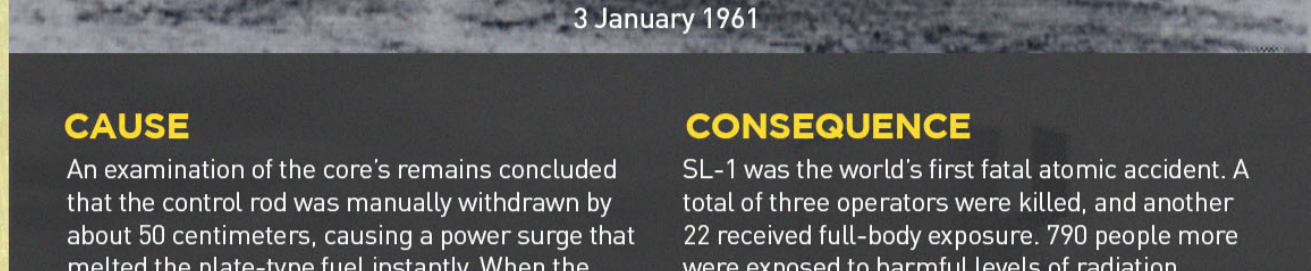
WORST NUCLEAR DISASTERS IN HISTORY

On April 26, 1986, the world's worst nuclear power plant accident to date occurred at Chernobyl in Ukraine. Experts believe that thousands of people died from radiation exposure, and as many as 70,000 suffered from severe poisoning, although the full toll is still being tallied to this day. On the occasion of the incident's 30th year, we round up some of the world's worst nuclear disasters, ranked by their placement on the International Nuclear and Radiological Event Scale (INES).



LEVEL 4

ACCIDENT WITH LOCAL CONSEQUENCES



SL-1 EXPERIMENTAL POWER STATION

Idaho, USA
3 January 1961

CAUSE
An examination of the core's remains concluded that the control rod was manually withdrawn by about 50 centimeters, causing a power surge that melted the plate-type fuel instantly. When the molten fuel met water, an explosive amount of steam was generated, exacerbating the damage.

CONSEQUENCE
SL-1 was the world's first fatal atomic accident. A total of three operators were killed, and another 22 received full-body exposure. 790 people more were exposed to harmful levels of radiation during cleanup.



RA-2 FACILITY

Buenos Aires, Argentina
23 September 1983

CAUSE
An operator who was making core configuration changes to the test reactor failed to drain the moderator water as dictated by facility procedures. The core immediately went prompt critical, causing the moderator to expand rapidly, and exposing the operator to significant radiation.

CONSEQUENCE
The operator died two days following exposure to massive doses of gamma and neutron rays. 17 others in the facility absorbed varying levels of radiation, but none besides the operator were killed.



DONEN NUCLEAR PROCESSING PLANT

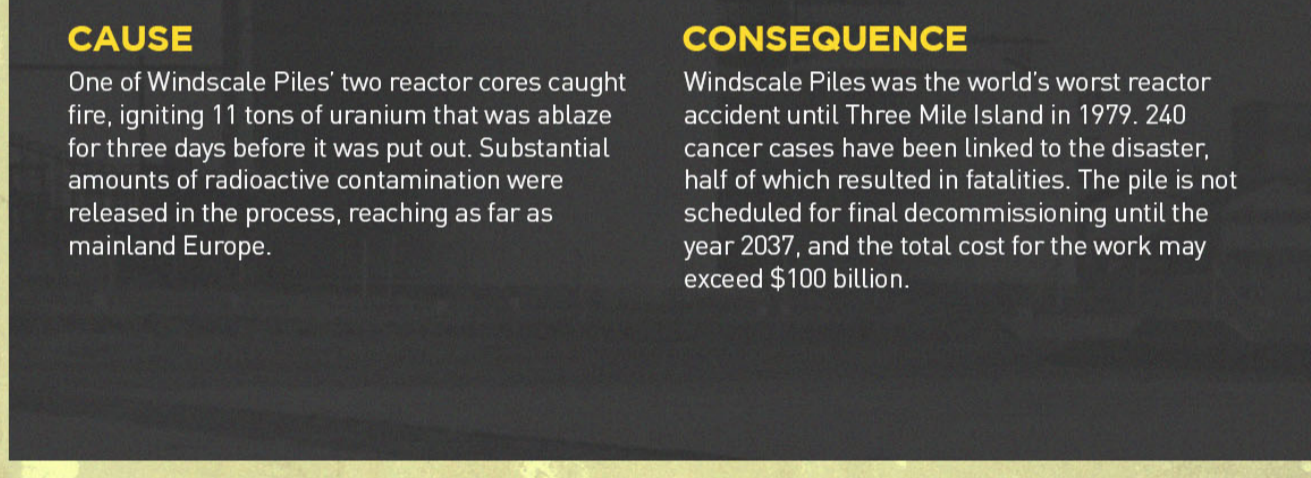
Tokaimura, Japan
30 September 1999

CAUSE
Three plant workers prepared a batch of uranyl nitrate for an experimental fast breeder reactor that was far too concentrated for the precipitation tank to handle. The solution contained some 16 kg of uranium when the tank could only handle 2.7 kg. The move resulted in instantaneous and uncontrolled nuclear fission.

CONSEQUENCE
Donen was the worst civilian nuclear radiation accident in Japan up until the Fukushima disaster. Two of the three workers involved died within a few months. 667 more—workers, emergency personnel and nearby residents—were exposed to excess radiation.

LEVEL 5

ACCIDENT WITH WIDER CONSEQUENCES

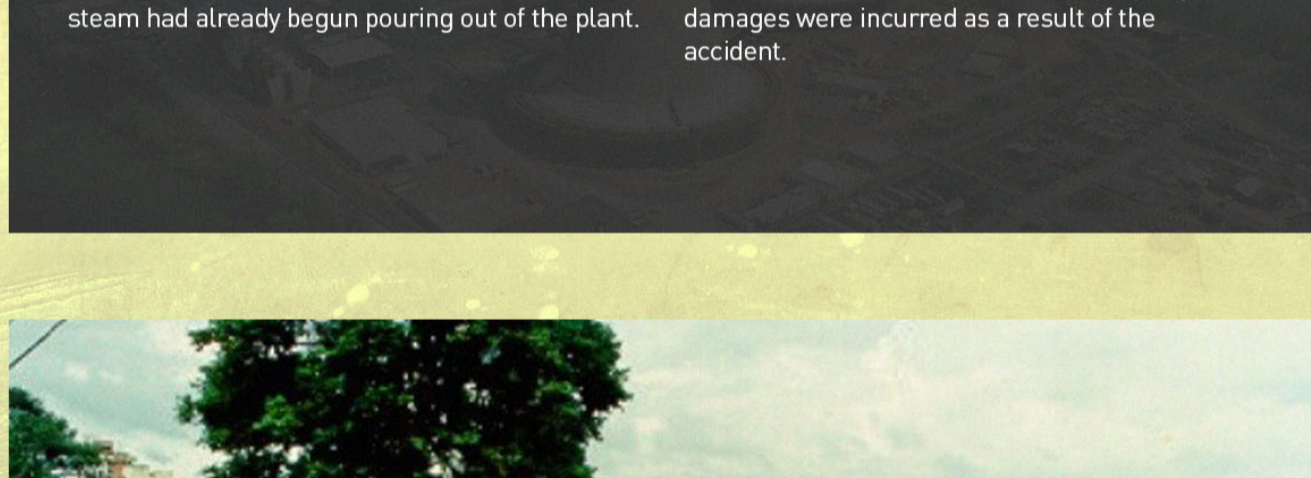


WINDSCALE PILES

Cumberland, UK
10 October 1957

CAUSE
One of Windscale Piles' two reactor cores caught fire, igniting 11 tons of uranium that was ablaze for three days before it was put out. Substantial amounts of radioactive contamination were released in the process, reaching as far as mainland Europe.

CONSEQUENCE
Windscale Piles was the world's worst reactor accident until Three Mile Island in 1979. 240 cancer cases have been linked to the disaster, half of which resulted in fatalities. The pile is not scheduled for final decommissioning until the year 2037, and the total cost for the work may exceed \$100 billion.



THREE MILE ISLAND

Pennsylvania, USA
28 March 1970

CAUSE
A pressure valve in one of the reactors failed to close, releasing contaminated cooling water into adjoining buildings. Operators made critical containment errors, and by next morning the core heated short of meltdown. However, radioactive steam had already begun pouring out of the plant.

CONSEQUENCE
140,000 people were evacuated. Fortunately, there were no deaths, although a study found a significant increase in cancer cases among residents who lived within ten miles of the area. Overall, an estimated \$2.4 billion in property damages were incurred as a result of the accident.



GOIÂNIA ACCIDENT

Goias, Brazil
13 September 1987

CAUSE
Two thieves broke into an abandoned private hospital, disassembled a teletherapy unit, and took off with a small steel capsule containing highly radioactive caesium chloride. Several people handled the capsule and ultimately exposed some of its contents.

CONSEQUENCE
A total of four people were killed, and another 112,000 people were examined and tested. 249 of those were found to harbor high radiation levels, while another 1,000 were found to have been exposed to small doses.

LEVEL 6

SERIOUS ACCIDENT



MAYAK PLANT

Kysgytym, Russia
29 September 1957

CAUSE
Mayak harbored a large liquid nuclear waste storage facility that was built in 1953. Nearly a year before the accident, one of the waste tank's cooling systems failed and was never repaired. It would eventually cause a non-nuclear explosion with a force equivalent to ~75 tons worth of TNT.

CONSEQUENCE
Mayak was the third worst nuclear accident ever recorded, behind Chernobyl and Fukushima. 200 people are believed to have died from radiation, while another 10,000 were evacuated. A total of 470,000 people may have been contaminated in some capacity. Radioactive fallout cloud reached 300 kms away.

LEVEL 7

MAJOR ACCIDENT



CHERNOBYL NUCLEAR PLANT

Chernobyl, Ukraine
26 April 1986

CAUSE
The Chernobyl accident began with an electrical test conducted by workers who were trying to find a way to mitigate the risks of a power outage. That very test would create a sudden power surge, leading to a series of blasts that blew off the reactor's 1,000-ton steel top.

CONSEQUENCE
32 died at Chernobyl and dozens suffered radiation burns. 600,000 people involved in cleanup and recovery were exposed to radiation. Total number of cancer deaths may reach 4,000 from among those exposed.



FUKUSHIMA DAIICHI NUCLEAR POWER PLANT

Fukushima, Japan
11 March 2011

CAUSE
A major earthquake triggered a 15-meter high tsunami that struck Fukushima, disabling the power supply and halting the cooling of three Daiichi reactors. Within a few days, all three cores had reached full meltdown. As workers tried to cool and shut them down, a few hydrogen-air explosions occurred.

CONSEQUENCE
159,128 residents were evicted from exclusion zones, and 18,636 square meters of land area was contaminated. 573 deaths in the area have since been certified as 'disaster related'. However, no deaths or serious injuries have been reported due to direct exposure to radiation.

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