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20 Years Later: The Significance and Continuing Impacts of the Chernobyl Accident

More than twenty years ago, on April 26, 1986, the fourth reactor at the Chernobyl nuclear power station in Ukraine exploded, sending out a radioactive cloud over Ukraine, Belarus, and Russia, then across western Europe, and ultimately the entire globe. People in Ukraine and Belarus—especially children—are still suffering the consequences of the worst industrial accident and environmental catastrophe in history.

Incredibly, many countries—including Ukraine and the United States—are considering building new nuclear power plants. As this anniversary approaches, we need to remember this terrible accident—and not allow it to be repeated. Nuclear reactors continue to pose serious safety and security risks, and produce radioactive waste that remains dangerous for hundreds of thousands of years. Contrary to the nuclear industry’s claim that nuclear power is the answer to climate change, building 2500 new reactors globally would only minimally reduce carbon emissions. The cost of these reactors would prevent other meaningful solutions to the climate crisis, and the waste would require the construction of a geologic repository somewhere in the world every three to four years.

What Happened on April 26, 1986 at Chernobyl?

The accident at Chernobyl was caused, like most accidents, by human error. In the early morning of April 26, 1986, engineers at the site decided to conduct an experiment. The purpose of the experiment was to see if they could take electricity from the turbine generator of the fourth reactor to run the water pumps in case of an emergency in which the turbine was not receiving power from the reactor, but still spinning.[i] After all of the safety mechanisms were disabled, the reactor was supposed to be powered down to 25% of its capacity.[ii] But workers powered down the reactor too quickly.[iii] In order to compensate, they withdrew most of the “control rods” (used to control the rate of the nuclear reaction in a reactor) to increase power. The experiment continued even though the reactor was operating with only 6 of 30 required control rods.[iv]

Shutting down the turbine generator caused the flow of cooling water to the reactor to decrease and boil. As the water turned into steam, it was not able to act as a coolant for the fuel rods and the power level rose. In an effort to control the reaction quickly, the operators inserted the rest of the control rods all at once. The control rods actually increased rather than decreased the reaction. Within 30 seconds of the test, an unexpected power surge caused the temperature to rise to over 2,000°C (3,632°F) and the gases and steam generated caused the fourth reactor to explode.[v] The 1,000 ton sealing cap blew off the reactor building and fire engulfed the building, releasing massive amounts of radiation into the atmosphere—one hundred times more than released by the atom bombs dropped over Hiroshima and Nagasaki.[vi]

[i]Rhodes, Richard. Nuclear Renewal. Excerpt from “Chapter 5: A Matter of Risk.”
<http://www.pbs.org/wgbh/pages/frontline/shows/reaction/readings/Chornobyl.html>

[ii]Cohen, Bernard. The Nuclear Energy Option. “Chapter 7: The Chornobyl
Accident—can it happen here?”. Plenum Press, 1990.
<http://www.phyast.pitt.edu/~blc/book/chapter7.html>

[iii]Cohen, Bernard.

[iv]Rhodes, Richard. Nuclear Renewal.

[v]Chornobyl.info. “The Explosion of the Reactor”.
<http://www.Chornobyl.info/index.php?userhash=10786534&navID=10&IID=2#Sources>

[vi]Chornobyl.info. “The Explosion of the Reactor”.