

Chernobyl Nuclear Power Plant Accident

April 1986

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By the time the Soviet Union fell apart in 1991, they had 17 nuclear power plants, with more being built. These plants provided 12.7% of all the electricity used in the Soviet Union.



Why did they build so many? And why did they build most of them close to large population centers?

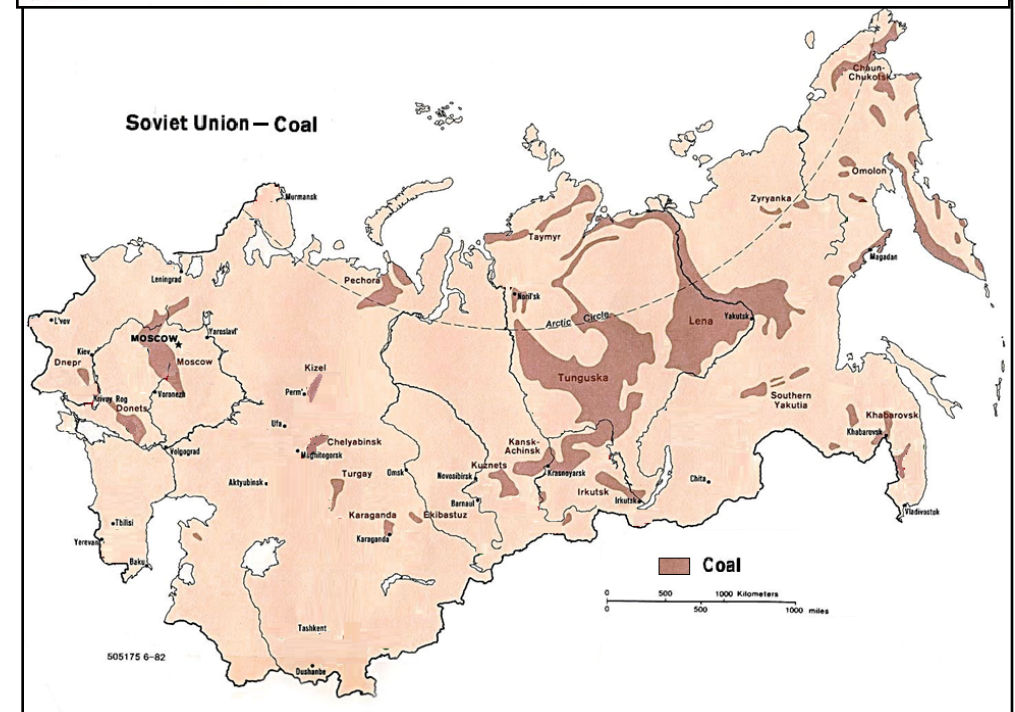
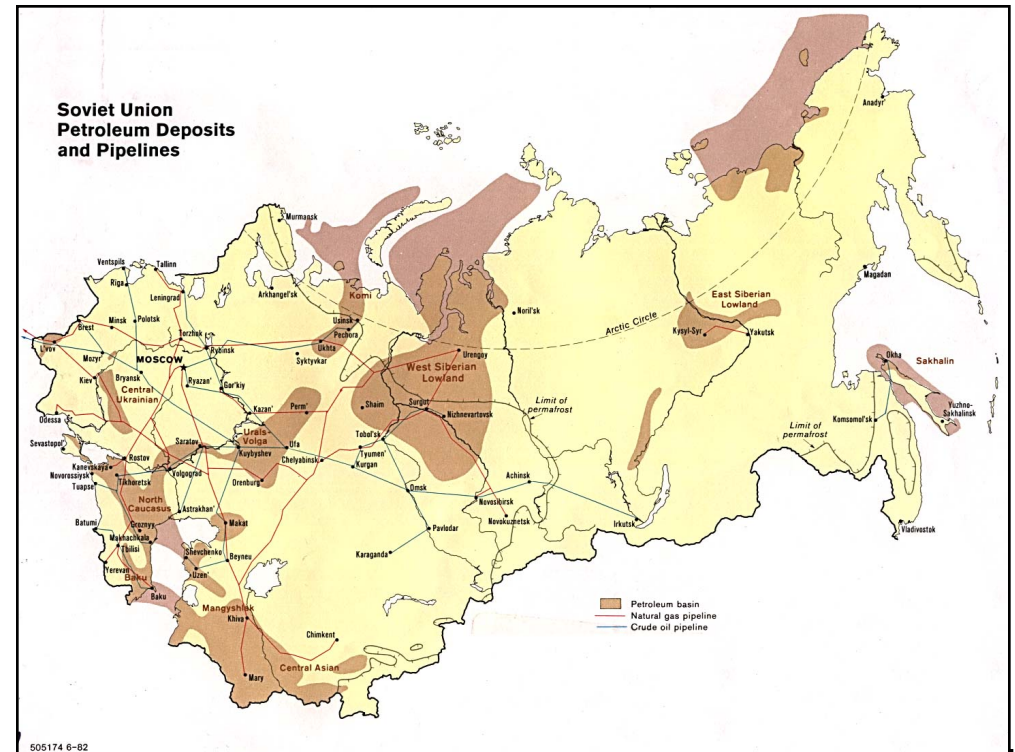


Map source: <http://chnm.gmu.edu/1989/files/display/390/fullsize>

Power plant sites source: "Nuclear Power Plants." *The Radiation Legacy of the Soviet Nuclear Complex: An Analytical Overview*. Ed. Egorov Nikolai. 1st ed. Routledge, 2000. 52-53.

The Soviets had lots of coal and petroleum, but most was in the east, far from most workers AND far from most energy customers.

Sending petroleum and coal back west – by rail or pipeline – was expensive.



So, in the 1950s, the Soviets began building nuclear power plants. They used a graphite cooling system instead of the water cooling system used in the U.S. and other countries. This was cheaper for the Soviets, but also less safe.



The day before the Chernobyl nuclear disaster, plant operators were getting ready to shut down reactor number 4. The plan was to do routine maintenance work on the reactor, then start it up again.

Chernobyl NPP, before the accident



The senior operator was supposed to be on duty, but had left. Less experienced workers were left in charge. They broke safety rules when they *also* shut down the automatic



safety system that was supposed to protect the system if anything went wrong.

At 1:23 a.m., on April 26, two explosions occurred seconds apart in reactor number 4. The explosions killed two plant workers immediately. The second explosion was so strong that it blew the reactor building apart, sending burning material through the air and starting several fires.

Chernobyl NPP, three days after the accident



SHONE/GAMMA/GAMMA-RAPHO/GETTY IMAGES

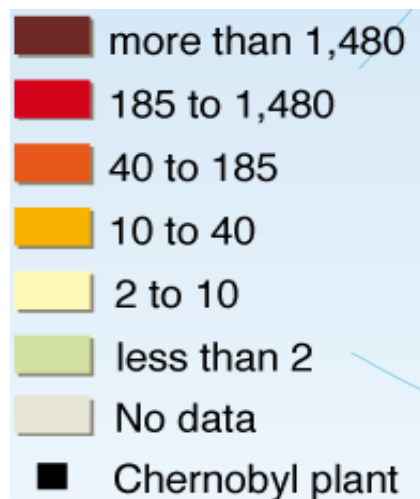
The firefighters who arrived first had no idea the fire was from the reactor core. They didn't know their bodies were taking on high levels of radiation.



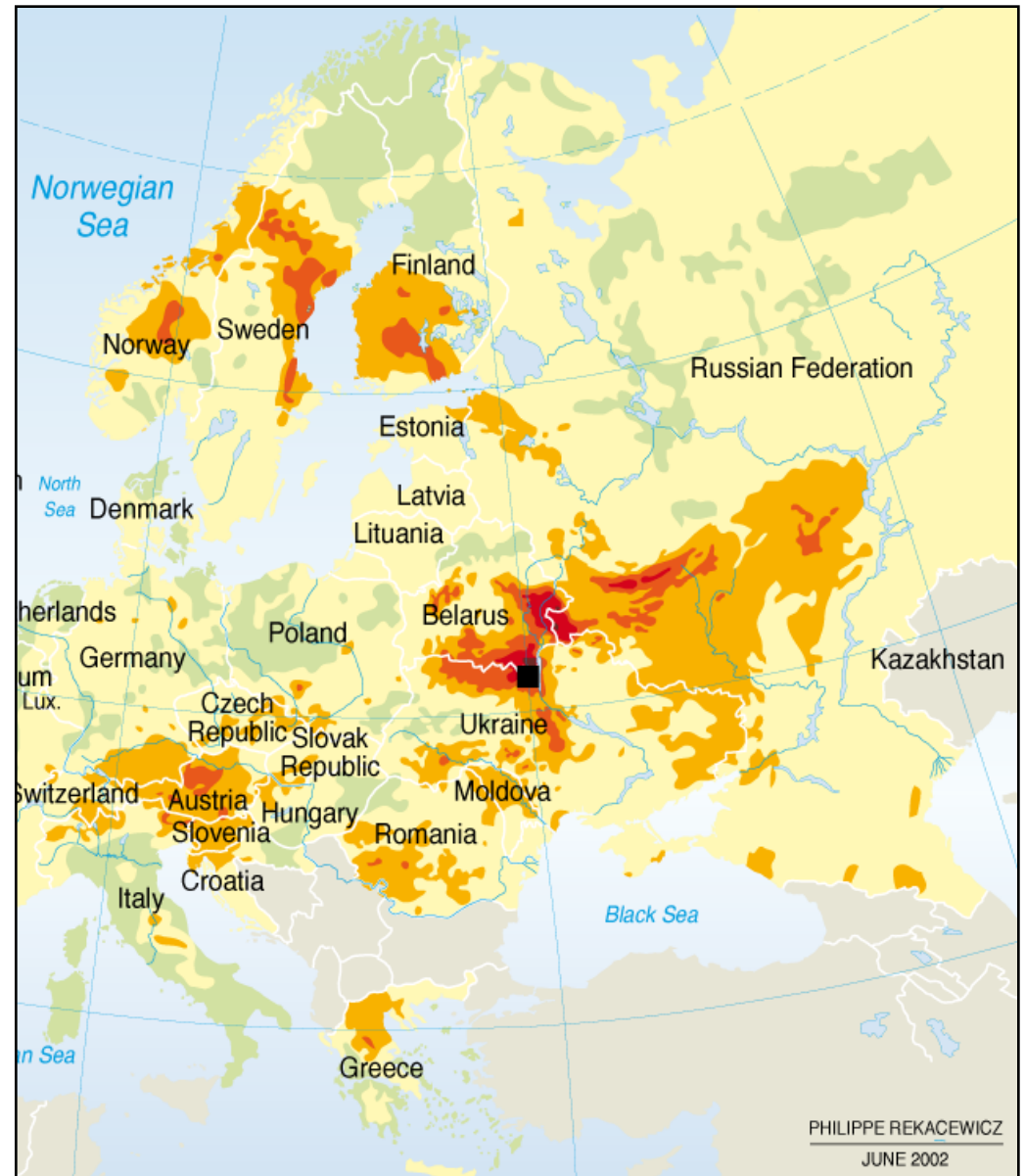
Twenty-eight emergency workers died within a month of the explosion from severe radiation poisoning.



The Soviet Union did not admit to the world what had happened. A nuclear scientist in Sweden figured it out based on high levels of radiation in Sweden.



RADIATION FROM CHERNOBYL



About 1000 square miles around Chernobyl was made mostly off-limits to people. A few elderly people were allowed to return there to live out their lives. Scientists and government workers also go in to monitor and to do research.



But for the most part, the zone is full of
empty buildings,



<http://i1.wp.com/alexkane.co.uk/wp-content/uploads/2013/09/DSC06789.jpg?resize=600%2C400>

abandoned houses,



http://images.nationalgeographic.com/wpf/media-content/photos/000/838/cache/83804_990x742-cb1410904296.jpg

and
overgrown streets.



http://i.dailymail.co.uk/i/pix/2012/07/23/article-2177704-142ED1B1000005DC-533_964x628.jpg



Vehicles used in the cleanup were contaminated and left behind in the Exclusion Zone.

There are at least three “vehicle graveyards” in the Exclusion Zone.



abandoned control room of reactor #4



<http://www.lovethesepics.com/2013/03/chernobyl-exclusion-zone-adrenaline-radiation-urbex-a-good-day-to-die-hard/>

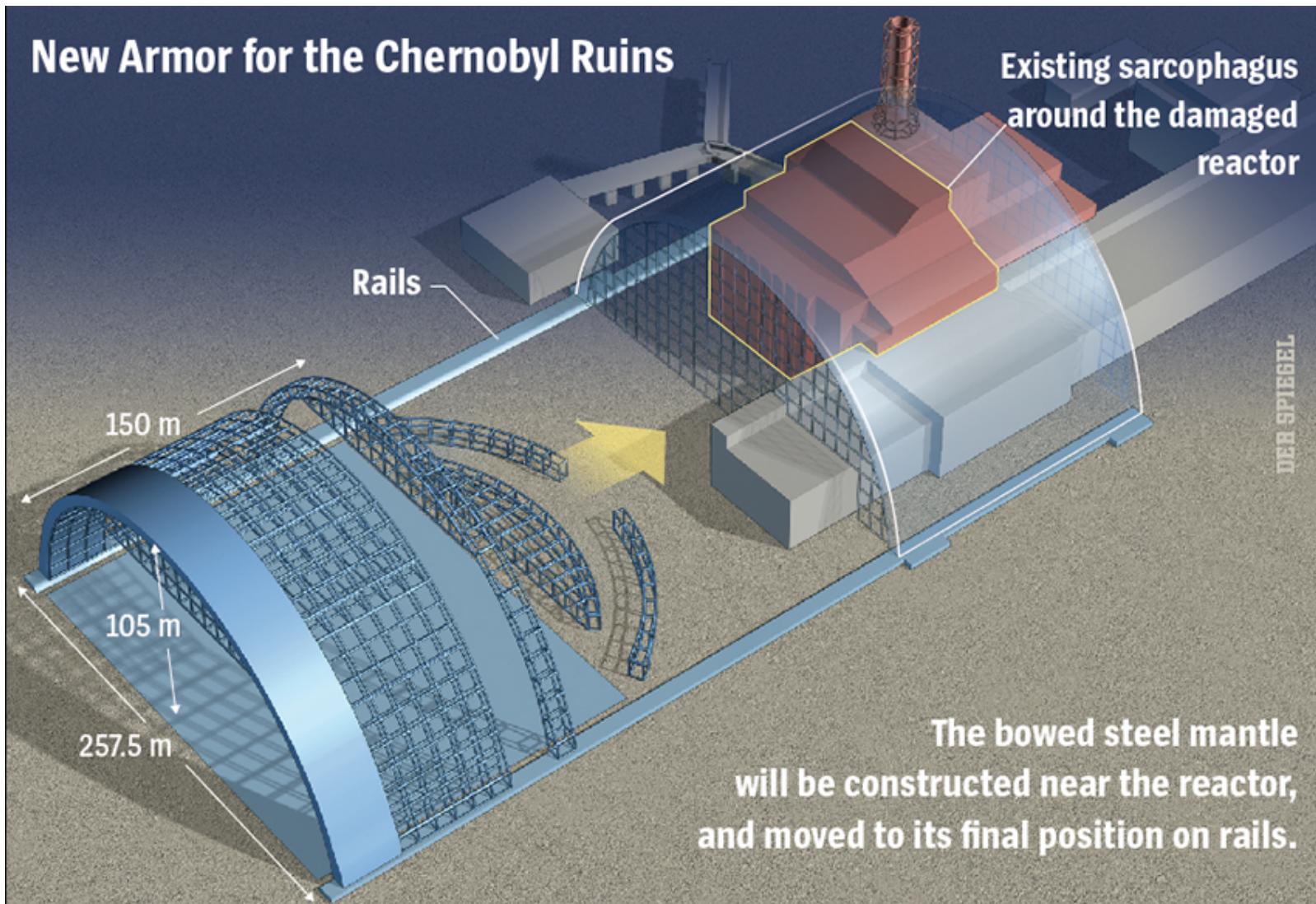
Because there is concern that the seal on reactor #4 is not permanently secured, a larger seal, expected to last 100 years, is being built.



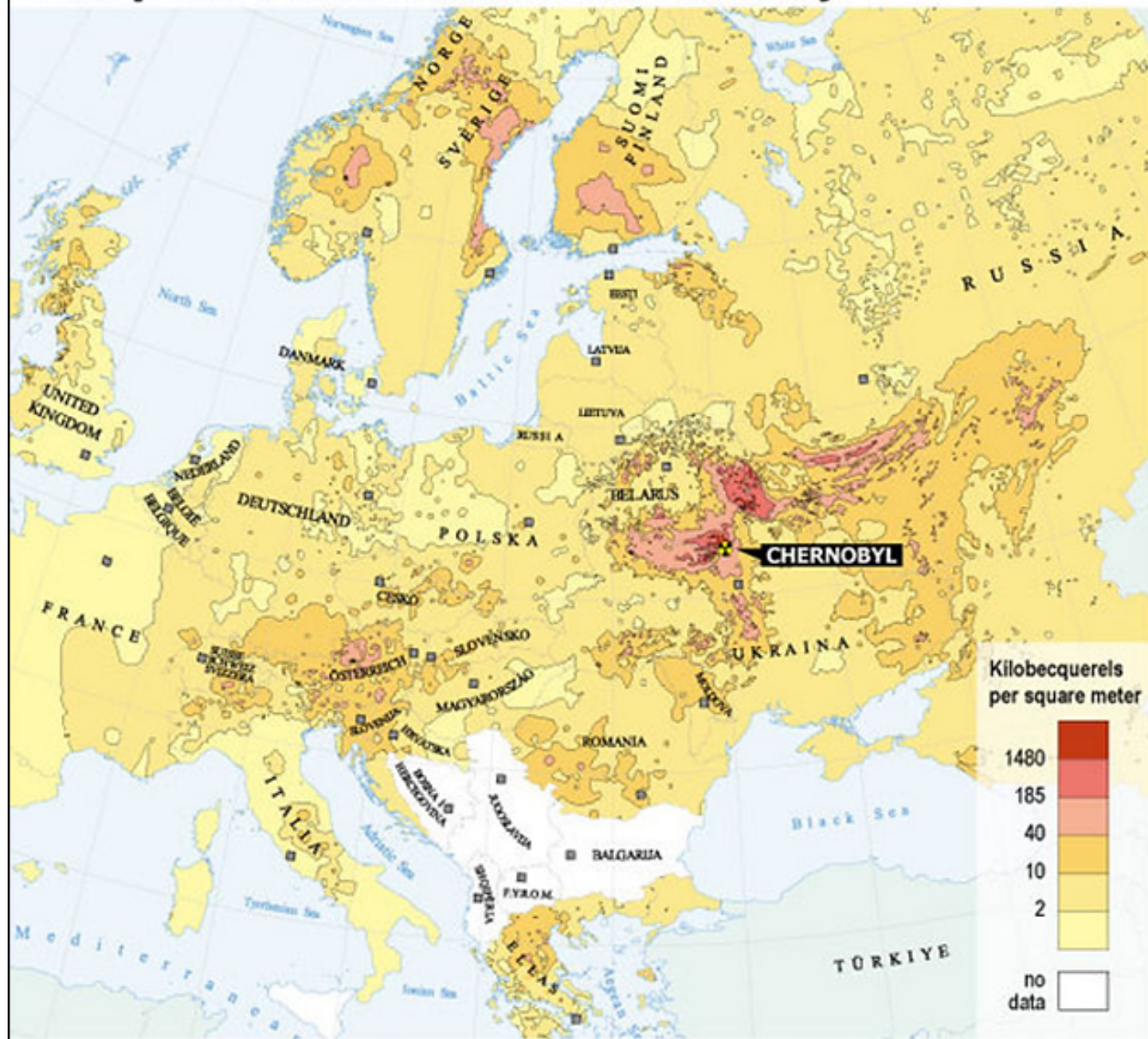
Since the danger from Chernobyl can affect much of the world, many countries are helping pay for and build the new seal.



When finished, it will be slid over reactor #4 on rails. Then it will be secured into position.



Widespread contamination from Chernobyl



Map shows how radioactive cesium-137 spread throughout Europe following the Chernobyl disaster.