

The Chernobyl Catastrophe 29 Years On: It's Not Over Yet! The Solution: Phase Nuclear Out

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by Kendra Ulrich

The stricken 4th reactor at Chernobyl presents a massive long term hazard, writes Kendra Ulrich. A planned €2.15 billion containment arch remains underfunded, and even if it's ever completed, it will only last 100 years. Meanwhile the intensely radioactive nuclear fuel will remain in place representing a long term risk of further huge radiation releases.

In short, it must be stated that 29 years after the worst nuclear disaster the world has yet seen, the damaged reactor is still a danger. A real solution to the situation is nowhere in sight.

Yesterday, 26th April marked the 29th anniversary of the worst nuclear disaster in world history - the Chernobyl catastrophe.

And unfortunately, it's not over yet: preventing further major releases of radioactivity into the environment seems to be a race against time.

As a [new Greenpeace report](#) detailing the efforts at the site shows, there are no real solutions in sight.

Nearly three decades after the start of the Chernobyl disaster, its atomic legacy is a stark and ominous reminder that nuclear power can never be a safe energy source.

In 1986, two explosions destroyed Chernobyl reactor unit 4, located in the Ukraine. Its graphite core burned for ten days. The radioactive releases heavily contaminated what became a 2,600 sq.km exclusion zone - which included 76 cities, towns, and villages.

Due to the power of the explosion, fire, and reactor core meltdown, radioactivity was projected to high enough altitudes that the plume was carried thousands kilometers away, sweeping across the whole of Europe and contaminating vast tracts of land.

In terms of radioactive caesium (Cs137), a total of at least [1.3 million sq.km](#) of land was contaminated to varying degrees - an area roughly twice the size of France. And this contamination will last for many generations, given the 30-year half-life of Cs137.

Hundreds of thousands of citizens and cleanup workers were exposed to significant levels of radiation - at least 300,000 of these workers received radiation doses that were 500 times the limit for the public over one year.

The Catastrophe Continues

Twenty-nine years later, people continue to suffer from the affects of the [accident](#), with well-founded scientific estimations in the range of many tens of thousands of [cancers and deaths](#).

One of the increasing concerns at the site is the integrity of the building structures. The explosion in 1986 caused serious damage. And, due to the high radiation levels, work on the damaged building after the accident had to be scrapped.

Ageing and corrosion have only further deteriorated these structures. In addition, some that were damaged in the accident, for example by cracking, are only now being discovered due to the inaccessibility of the site.

A collapse of the sarcophagus, leading to a release of radioactive substances into the environment around the site, cannot be ruled out. And this could pose serious problems.

There are more than 1.5 million tonnes of radioactive dust inside the ruins. If the sarcophagus were to collapse, a high volume of radioactive material would be released, and could lead to an exposure to radiation as far as 50 kilometers away.

There are also nearly 2,000 tonnes of flammable materials inside the sarcophagus. In the event of a fire, even without a collapse, heat from the fire could cause the release of a high level of radioactive dust particles.

Containment Remains Underfunded

In order to help minimize this risk, the Shelter Implementation Plan was agreed to in 1997. The cornerstone of this medium-term proposal is the New Safety Confinement (NSC) – a massive, self-supporting, domed, hall-like steel structure: 257 metres wide, 165 metres long, and 110 metres high.

It cannot be assembled directly above the destroyed reactor due to high radiation levels. However, it is currently being assembled in two parts to the side of the damaged reactor. These will be joined together, and then slide over the reactor on a hydraulic lifting system – a process that will take three days to complete. When it is completed, it will be the largest movable structure on earth.

The total cost of the Shelter Implementation Plan is [currently estimated at €2.15 billion](#). Due to delays and significant cost increases, there is now a shortfall of hundreds of millions of euros.

This week, an international conference hosted by the German government will focus on the on-going threats from Chernobyl. The nations who have funded this project will discuss how to fill these enormous deficits.

The shelter itself is designed with the exceedingly limited goals of preventing further water leaking into the destroyed reactor and becoming contaminated – as has happened as the current sarcophagus has deteriorated – and to contain radioactive material in the event of the total collapse of the existing reactor sarcophagus.

It is projected to last for only 100 years.

No Plans to Remove the Fuel that Represents the Main Hazard

As the author of the new Greenpeace report concludes, “a major drawback of the SIP, however, is that recovering the fuel-containing material is not part of the project, although the greatest threat to the environment and people comes precisely from these fuel-containing, highly radioactive substances.

“While the protective shell is designed to make it possible for this fuel-containing material to be recovered at a later point in time, the financial means to actually implement fuel containing material recovery are not provided by the SIP. Thus, the long-term threat posed by the destroyed reactor block will not have been averted by the current efforts underway.

“In short, it must be stated that 29 years after the worst nuclear disaster the world has yet seen, the damaged reactor is still a danger. A real solution to the situation is nowhere in sight.”

As with the more recent Fukushima Daiichi nuclear disaster, there is no foreseeable solution for Chernobyl. Despite the continuing [decline](#) of the nuclear power industry worldwide, hundreds of [ageing](#) nuclear reactors continue to operate, while new reactors are being built – which increases nuclear risks significantly.

No Such Thing as ‘Nuclear Safety’

Almost certainly whenever the next accident happens in the 21st century, efforts will still be underway to contain and manage the Chernobyl and Fukushima Daiichi sites.

What Chernobyl, Fukushima, and hundreds of smaller nuclear accidents have clearly shown is the inherent risk of the nuclear technology: there will always be an unforeseen combination of human failure, technology error, and natural disaster that could lead to a major reactor accident and massive release of radiation.

The lessons are clear – there is by definition no such thing as ‘nuclear safety’. The only way to make sure that the next Chernobyl and Fukushima does not happen is to phase nuclear out.

Kendra Ulrich is a senior global energy campaigner with Greenpeace Japan.

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