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Chernobyl: 25 Years Later

What Happened and How Bad Was It?

On April 26, 1986, a routine test on a nuclear reactor at the Chernobyl plant near the border of the Ukraine and Belarus turned into a catastrophe when the emergency shut down system failed and the reactor exploded, releasing radioactive contamination across the region. The reactor had only operated for two years.[1] Some agencies have denied that radiation from the Chernobyl disaster has seriously harmed anyone other than the workers at the site and the initial clean up crew.

> ***"At least 2 million children in Belarus, Ukraine and the Russian Federation require physical treatment (due to the Chernobyl accident). Not until 2016, at the earliest, will we know the full number of those likely to develop serious medical conditions."***
> **–Kofi Annan, Former Secretary General of the United Nations**

But the 2005 study by the National Academy of Sciences, *Health Risks from Exposure to Low Levels of Ionizing Radiation: BEIR VII Phase 2*, found that even very low levels of ionizing radiation have a significant biological impact and can cause cancer. In short, there is no safe level of ionizing radiation exposure.[2] Figures on the full impact of the Chernobyl accident have varied, and at times conflicted, due in part to the difficulty in making direct connections between current health issues and the accident. Further the quality of the studies performed has a significant affect on the outcome of the findings; "*the absence of an observed effect is not proof of no effect*."[3] The following summarizes some information and statistics on environmental, health related and social problems in the regions in and around the disaster site.

Extent of Environmental Contamination

In the immediate area of the reactor, hundreds of square miles were so badly contaminated with radioactivity that they were closed to habitation or food production and will be for a long time into the future. A massive exclusion zone of about 1000 square miles remains in effect, twenty-five years since the accident.[4] The Nuclear Information and Resource Service (NIRS) reports that radiation continues to spread, steadily seeping into the water table, especially through the Dnipro River and its tributaries, threatening the water supply of millions of people over the next few decades.[5]

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[1] Nuclear Information Resource Service (NIRS), *Chernobyl Can Happen Here*, April 2005. http://www.nirs.org/factsheets/chernobylcanhappenhere2005.pdf
[2] National Academy of Science (NAS). *Health Risks from Exposure to Low Levels of Ionizing Radiation, BEIR VII.* The National Academies Press, 2005. http://www.nap.edu/openbook.php?isbn=030909156X
[3] Seth Tuler, PhD, *Health risks of the releases of radioactivity from the Fukushima Daiichi nuclear reactors: Are they a concern for residents of the United States?*, March 2011. http://www.psr.org/resources/health-risks-releases-radioactivity.pdf
[4] Institute of Energy & Environmental Research press release, *Radioactive Iodine Releases from Japan's Fukushima Daiichi Reactors May Exceed Those of Three Mile Island by Over 100,000 Times*, March 25, 2011. http://www.ieer.org/comments/Fukushima_IEER_press_release_2011-03-25.pdf
[5] Nuclear Information and Resource Service, *Remembrance for the Future: Chernobyl Health Impact.* http://www.nirs.org/c20/fctsheetkuzma.html

The Austrian Institute for Applied Ecology found that 40% of the total forest area in the Ukraine was contaminated. The dead plant material has since concentrated the contamination in the upper layers of the soil, which is absorbed into shallow rooted plants and fungi.[6] Fallout from the explosion spread across Europe and reached as far as Rhode Island.[7]

Health Problems in the Disaster Region

An analysis of Belorussian health statistics by the United Nation's Children's Fund showed that between 1990 and 1994 disorders of the nervous system increased by 43%, cardiovascular diseases by 43%, gastrointestinal diseases by 28%, disorders of bone, muscle and connective tissues by 62% and diabetes by 28%.[8] NIRS reported that 50% of men in the Ukraine between the age of 13 and 29 have fertility problems, which is the highest rate in the world.[9] The Chernobyl Children's Lifeline found that only 5% of children living in the Chernobyl region could be characterized as "healthy."[10] In 2006, the highest incidences of cancer were expected to be observed within the next decade, meaning that no accurate assessment of prediction of Chernobyl's overall impact could be made until this period has passed.

Chernobyl Memorial for Liquidators

Economic and Social Effects

The Committee on Problems of the Chernobyl Nuclear Power Plant Catastrophe Consequences estimated that for Belarus alone, the total cost of the Chernobyl related damages is projected to be $235 billion dollars over the 30-year period following the disaster. The Ukraine government is still trying to secure $1 billion to pay for the massive new arched roof, slated for completion in 2015, that will "seal" the Chernobyl site for one hundred years as the current sarcophagus has steadily decayed and radiation continues to be released.[11]

Millions of people still live on contaminated land and hundreds of thousands were permanently evacuated from their homes. Stress from relocation caused a new set of psychological problems. Agricultural production, fishing, hunting, wild foods collection and pastoral activities have been prohibited in contaminated areas, which has shut down cottage industries and caused a drastic increase in unemployment.[12] A study monitored by the International Advisory Committee found that labor resources have become demographically disproportionate with an abundance of the elderly and a shortage of skilled workers to provide needed services.[13]

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[6] Gabriele Mraz, Antonia Wenisch: *Der Reaktorunfall in Tschernobyl.* Darstellung der Folgen fur Umelt und Gesundheit ausder Sicht verschiedener Interessengruppen*,* Austrian Institute for Applied Ecology, Wein, 986/87, p. 18.
[7] NAS, BEIR VII.
[8] Sahm, Astrid: *Transformation im Schatten von Tschernobyl, Munster,* 1999, p. 193.
[9] NAS, BEIR VII.
[10] Chernobyl Children Life Line: Guernsey Link: http://www.chernobyl-children.com/
[11] Gomez and Krasnolutska, Bloomberg, "*Chernobyl, Still Leaking, Forces Ukraine to Seek $1 Billion*," April 18, 2011. http://www.bloomberg.com/news/2011-04-17/chernobyl-leak-forces-ukraine-to-seek-1-billion-after-25-years.html
[12] Committee on the Problems if the Consequences of the Catastrophe at the Chernobyl NPP: Interview, Minsk, 16.04.2002
[13] International Advisory Committee. "*Present and Future Impact of the Chernobyl Accident*." *www-pub.iaea.org/MTCD/publications/PDF/te_1240_prn.pdf*

The Japanese Nuclear Crisis

On March 11, 2011, just six weeks before the 25th anniversary of the Chernobyl disaster, a massive earthquake and tsunami in Japan triggered events that have led to multiple nuclear accidents occurring simultaneously at the Fukushima Daiichi nuclear facility. Though thus far less radiation has been released, the Japan accident has been classified at the same level as Chernobyl, a level 7 on the International Nuclear Event Scale. Multiple reactors have suffered hydrogen explosions, their containment vessels are compromised and nuclear fuel is suspected to be in partial meltdown in at least three reactors and two of the spent fuel pools. Over six weeks since the disaster began, electric cooling systems have still not fully been restored. Radiation from the reactors continues to spew into the atmosphere and the sea around the plant, threatening people and ecosystems near and far. Already, elevated levels of radiation have been reported in milk, rainwater, and drinking water in the United States as a result of the fallout from the Fukushima Daiichi disaster. Current reports state that it may take six to nine months or more just to bring the damaged nuclear complex under control. The full health, environmental, economic and societal impacts of this disaster will take years to learn, as is already evidenced in the aftermath of the Chernobyl disaster.

Even though there are cleaner, safer ways to produce energy that do not pose such high risks to our communities in the Southeastern United States, nearly every major nuclear utility in our region is proposing to build new nuclear power reactors, often at existing nuclear plants. In fact, of the 30 current new reactor proposals for the U.S., more than half, seventeen, are proposed in North and South Carolina, Tennessee, Georgia, Florida, Alabama, Louisiana, and Mississippi.[14]

Together, we can stop this risky and expensive nuclear relapse and provide more secure, affordable and safe energy supplies to future generations. Join Southern Alliance for Clean Energy at www.cleanenergy.org.

Chernobyl Information

Chernobyl: Consequences of the Catastrophe for People and the Environment, Annals of the New York Academy of Sciences, Volume 1181:
http://www.strahlentelex.de/Yablokov%20Chernobyl%20book.pdf
Chernobyl Children Life Line: www.chernobyl-children.com
Health Effects: http://www.ippnw-students.org/chernobyl/index.html
Nuclear Information Resource Service Factsheet: http://nirs.org/c20/fctsheetkuzma.htm

Fukushima Information:

Union of Concerned Scientists ABCs of Japans Disaster:
http://www.ucsusa.org/nuclear_power/nuclear_power_risk/safety/clarifying-japans-nuclear-disaster.html?utm_source=SP&utm_medium=link3&utm_campaign=SP-japan-nuke-link3-3-14-11
SACE blog coverage: http://www.cleanenergy.org/index.php?/Learn-About-Detail.html?form_id=52&item_id=107

[14] U.S. Nuclear Regulatory Commission. http://www.nrc.gov/reactors/new-reactors/col/new-reactor-map.html