

Chernobyl Children's Project International



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Chernobyl: The Facts **What You Need to Know Almost 20 Years After the Disaster**

In the early morning hours of 26 April 1986, a testing error caused an explosion at the Chernobyl nuclear power station in northern Ukraine. During a radioactive fire that burned for 10 days, 190 tons of toxic materials were expelled into the atmosphere. The wind blew 70% of the radioactive material into the neighboring country of Belarus.

Almost 20 years later, the people of Belarus continue to suffer medically, economically, environmentally and socially from the effects of the disaster. These are the facts:

The Accident

- The Chernobyl power plant is located on the border area between Ukraine and Belarus.
- The explosion of the reactor at Chernobyl released 100 times more radiation than the atom bombs dropped on Hiroshima and Nagasaki. (1)
- At the time of the accident, about 7 million people lived in contaminated territories, including 3 million children.
- About 5.5 million people – including more than a million children – continue to live in contaminated zones. (2)

Radiation and Health

A common misconception is that only about 31 people died as a result of the Chernobyl disaster. In order to understand the full extent of the health impact of the Chernobyl disaster, we have to understand two types of exposure to radiation.

- 1) **Acute Exposure** is a high dose of radiation over a short period of time. Approximately 134 power station workers were exposed to extremely high doses of radiation directly after the accident. About 31 of these people died within 3 months. Another 25,000 “liquidators” – the soldiers and firefighters who were involved in clean up operations – have died since the disaster of diseases such as lung cancer, leukemia, and cardiovascular disease.
- 2) **Long Term Exposure** refers to various lower doses of radiation that result in tumors, genetic mutations, and damage to the immune system. In the case of Chernobyl, millions of people will continue to be exposed to such doses of radiation for decades to come.

The unstable radioactive elements iodine-131, caesium-137, strontium-90 and plutonium-239 do their damage when they are spread via inhaled dust particles, deposited in the earth by rainfall, or enter the food chain through plants and animals. When the human body is exposed to these elements, free radicals impair cellular function and may damage DNA. The cells of the embryo, lymphatic system, thyroid, bone marrow, intestines, breast and eggs are very vulnerable to the effects of radiation.

Health Impact: What We Know So Far

Only with the passage of time, and additional research, will we understand the extent of the impact of the Chernobyl disaster on the health of those in the affected regions.

Experts disagree on how many of the following problems are specifically caused by radiation, and also recognize that poverty, poor diet, lifestyles – and even fear of radiation – are contributing factors to the health problems seen in Chernobyl affected regions. Programs designed to help Chernobyl affected populations medically need to focus on all potential causes of poor health.

* **Thyroid Cancer:** Thyroid cancer in children has increased since the disaster, particularly in the Gomel region of Belarus. The World Health Organization predicts that, in this region, 50,000 children will develop the disease during their lifetime. Throughout Belarus, the incidence of this rare disease in 1990 was 30 times higher than in the years before the accident. (3)

- **Leukemia:** In the Gomel region of Belarus, incidence of leukemia has increased 50% in children and adults. (4)
- **Other Diseases in Children:** In addition to thyroid cancer and leukemia, UNICEF reports that between 1990 and 1994, nervous system disorders increased by 43%; cardiovascular diseases by 43%; bone and muscle disorders by 62%; and diabetes by 28%. UNICEF cautioned that it is difficult to prove whether these increases were caused by radiation or another unknown factor.
- **Other Cancers:** *Swiss Medical Weekly* recently published findings showing a 40% increase in all kinds of cancers in Belarus between 1990 and 2000. (5) Some tumor specialists fear that a variety of new cancers may emerge 20-30 years after the disaster. (6) Cases of breast cancer doubled between 1988 and 1999. (7)
- **Birth Defects:** Maternal exposure to radiation can cause severe organ and brain damage in an unborn child. Five years after the disaster, the Ukrainian Ministry of Health reported three times the normal rate of deformities and developmental abnormalities in newborn children, as well as in increased number of miscarriages, premature births, and stillbirths. (4)
- **Genetic Mutations:** Hereditary defects in Belarusian newborns increased in the years after the disaster. (8) Scientists have observed that congenital and hereditary

defects have passed on to the next generation, as young people exposed to radiation grow up and have their own children. (9)

- **Cardiac Abnormalities:** Heart disease in Belarus has quadrupled since the accident, caused by the accumulation of radioactive caesium in the cardiac muscle. (10) Doctors report a high incidence of multiple defects of the heart – a condition coined “Chernobyl Heart.”

Environment and Food

Large families in rural areas – people who farm and collect their food – continue to receive large doses of radiation from the food supply. Tragically, these people will need to change their traditional ways forever in order to preserve their own health. (11)

- **Soil:** Twenty-one percent of prime Belarusian farmland remains contaminated from the decaying components of plutonium. (11)
- **Groundwater:** Radiation concentrated in sediments at the bottoms of lakes and ponds – the population continues to contaminate itself by fishing there. The average concentration of radionuclides in the groundwater has risen 10- to 100-fold. (11)
- **Air:** Although the air outside the Exclusion Zone is generally safe, plowing, summer forest fires, and wind erosion continue to put the air at risk. (12)
- **Food:** The food and water supply is continuously contaminated by rainfall and by the movement of radioactive dust. Mushrooms – a national dish of Belarus – are severely contaminated in half the country but still collected and eaten. Livestock such as cattle and goats accumulate radioactivity in their meat and milk.

Economic Impact

- Belarus was once a thriving agricultural community, as part of the “breadbasket” of the former Soviet Union.
- The economic damages to Belarus after the accident over 30 years (1986 – 2015) will be \$235 billion, or over 32 annual national budgets. (11)
- The Belarusian economy has suffered loss of agricultural land, mineral resources, and production.

Social Impact

- **Loss of a Culture:** After the Chernobyl accident, almost 400,000 were forced to leave their homes for their own safety – homes and villages that had been part of their families for generations. Over 2,000 towns and villages were bulldozed the ground, and hundreds more stand eerily silent.
- **Fear and Uncertainty:** Many Belarusian live in fear, uncertain about the extent to which their health and that of their children is at risk and not knowing where to turn for accurate information. This natural fear is exacerbated by the fact that the extent of the accident was not openly disclosed for many years. “Radiophobia” makes it hard for many in the community to move on with their lives and help themselves.

The Crumbling Sarcophagus

- 97% of the radioactive materials from the Chernobyl plant remains inside a hastily constructed, crumbling sarcophagus. The sarcophagus was meant to be an interim measure, designed with a maximum lifetime of 20-30 years.
- According to a 2003 report by the Russian Atomic Energy Minister, Alexander Rumyantsev, “the concrete shell surrounding the Chernobyl nuclear reactor is in real danger of collapsing at any time.”
- A new shelter -- a 1.3 million euro project scheduled to be completed in 2009 – is hoped to safely contain Chernobyl for 100 years.

NOTES

- (1) Green Cross: CD: Guide to Chernobyl consequences in Belarus, Minsk, 2001, introduction
- (2) UNDP/UNICEF: The Human Consequences of the Chernobyl Nuclear Accident, January 2002
- (3) Lengfelder, Edmund: 14 Jahre nach Tschernobyl/2000
- (4) Otto Hug Strahleninstitut: Informationen, Ausgabe 9/2001 K, 2001
- (5) A.E. Okeanov / E.Y. Sosnovskaya / O.P. Priatkina: A national cancer registry to assess trends after the Chernobyl accident, Swiss Medical Weekly, Basel, 2004
- (6) Garnets, Oxana; Tschenobylexpert at UNDP Kiev: Interview, Kiev, 26.02.2002, p. 2.
- (7) European Commission, OCHA et. al., International Conference: Fifteen Years after the Chernobyl Accident. Lesson Learned. Executive Summary, Kiev, April 2001, p. 10
- (8) Lazuk, GI: Study of possible genetic impact of the Chernobyl accident using Belarus national registry of congenital malformations, Belarus Institute for Hereditary Diseases, Minsk.
- (9) Yuri E. Dubrova: Monitoring of radiation-induced germline mutation in humans, Swiss Medical Weekly, 2003, 133: 474-478
- (10) Y. Bandazhevsky: Chronic Cs-137 incorporation in children's organ, Swiss Medical Weekly, 2003, 133:488-499
- (11) Committee on the Problems of the Consequences of the Catastrophe at the Chernobyl NPP: Interview, Minsk, 16.04.2002
- (12) Hartung, Arno: Okologische Auswirkungen des Reaktorunglucks von Tschernobyl in Weissrussland, Europa Regional, 4. Jg. 1986, Nr. 2, p.33

Source: Chernobyl.info, a partnership of the United Nations and the Swiss Agency for Development and Cooperation.

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Chernobyl Children's Project International provides medical, humanitarian and community development programs designed to provide hope to the youngest and most vulnerable victims of the Chernobyl disaster of 1986 – the children. The United Nations recognizes that 3-4 million children were affected by the disaster. The people of Belarus continue to suffer medically, economically, and socially.

Chernobyl Children's Project International (CCPI) was started in Ireland 14 years ago. In 2002, the organization was established in the United States to continue to alleviate the suffering of children in the region. CCPI was featured in the film *Chernobyl Heart*.

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