

Reference note on the medical consequences of the Chernobyl accident

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On the medical consequences of the Chernobyl nuclear power plant accident

According to operational and official sources from leading specialists at the All-Union Scientific Centre for Radiation Medicine of the USSR Academy of Medical Sciences, demographic and epidemiological studies and clinical observations have yielded data indicating changes in the health of children and adults exposed to radiation as a result of the Chernobyl accident.

In most monitored areas, a decrease in the number of births and an increase in the number of induced abortions have been observed in the post-accident years. This is primarily explained by parents' reluctance to have children due to the radiation situation.

The mortality rate has not changed significantly over the three years since the accident. For example, in the Narodichi District in 1985 it was 19.3 (per 1,000 population), and in 1988 it was 18.4; in the Polesie District in 1984 it was 19.0, and in 1988 it was 19.7; in the Cherikov District of the Mogilev Region in 1985 it was 17.5, and in 1988 it was 16.1. No general pattern has yet been identified in the change in the mortality rate of children under one year of age. In some districts, in 1987–1988, an increase in this indicator was noted (Krasnopol'sky in Mogilev Oblast, Ivankovsky in Kyiv Oblast, Narodichi and Ovruchsky in Zhitomir Oblast), while in others a decrease was noted (Cherikov'sky and Kostyukovich'sky in Mogilev Oblast, Polessky in Kiev Region).

Furthermore, there is evidence of a deterioration in the health of so-called critical populations living in the controlled areas: children, newborns, and pregnant women. Toxicosis in the second half of pregnancy is showing an increasing trend.

In a number of districts, the number of registered congenital malformations and diseases in newborns has increased, as has the overall incidence of illness in children of all ages. Respiratory and digestive diseases, anaemia (decreased haemoglobin levels), and vegetative-vascular dystonia have become one and a half to two times more common in children.

To date, no excess cases of leukemia and lymphoma (a form of blood disease) have been detected above the general level in the monitored areas. However, in 1987–1988, the incidence of iron deficiency anaemia (a change in blood composition due to insufficient iron intake) increased in all monitored areas.

Thyroid damage is among the most significant medical consequences of the accident. Therefore, as scientists note, special attention is being paid to the thyroid glands of children and adolescents evacuated from the 30-km zone and living in areas contaminated with radioactive iodine, as well as adults who worked in the immediate vicinity of the damaged reactor during the so-called "iodine period" — April-June 1986.

The highest average radiation doses to the thyroid (over 2,000 mSv) were observed in children in the Chernobyl and Polesie districts of the Kiev region, and in the Narodichi and Ovruch districts of the Zhytomyr region. According to the Centre's scientists, this could lead to radiation-induced tumours in 464 people and radiation-induced hypothyroidism in 733 people over the next 70 years. Combined with the current incidence rate of 2 cases per 100,000 people per year, the incidence of thyroid cancer in children in these regions of Ukraine could increase fivefold.

During the four years following the accident, 17 people developed thyroid cancer in several strict control districts with a population of 135,000. The average annual rate was 1.3 per 100,000 people, lower than the Ukrainian average for 1989. However, cases of thyroid cancer among residents of districts adjacent to the 30-km zone are of concern.

Between 1988 and 1990, five patients with poorly differentiated thyroid cancer were registered in the Ivankovsky district, and three in the Polessky district. This disease was also diagnosed in five children in the Narovlya and Khoynitsky districts of the Gomel region.

The incidence of cancer in the Kiev Region was and remains higher than the Ukrainian SSR average, while it is lower in the Zhytomyr Region. The average annual cancer rate is 2.6% for the Ukrainian SSR, 3.8% for the Zhytomyr Oblast, and 1.9% for the Kiev Oblast. Morbidity rates among the population living in strict control zones are more significant, with an average annual growth rate of 5.7%. If these trends continue, it is expected that by 1995, the cancer incidence rate in these areas will reach 412.1 per 100,000 people.

A high prevalence of circulatory diseases, including hypertension and coronary heart disease, was identified.

Research results show that the most common clinical manifestations include heart pain (50% of those examined), 11% of patients showed some signs of coronary heart disease, and 28% had arterial hypertension. Among other common manifestations, hepatobiliary disorders and spinal osteochondrosis are also common.

The presence of vascular dysfunction in various organs suggests that vascular damage plays a major role in most, if not all, forms of radiation-induced organ damage.

Constant emotional stress has a significant negative impact on the health of the population. Research has shown that in the Ovruch district, the number of people feeling healthy has decreased by a factor of five.

Only about half of respondents were completely or partially satisfied with the level of medical care provided, with no significant improvement observed compared to the pre-accident period.

According to the results of annual medical examinations of the population included in the All-Union Distributed Registry, 61.9% of individuals in Ukraine were considered healthy in 1987, 55% in 1988, and 48.6% in 1989. The number of those considered healthy decreased by 27%

over three years, including 18% among "liquidators," 33% among evacuees, and 47% among those living in contaminated areas.

This decline in health indicators occurred among both adults and children. While doctors in the post-accident period could have attributed this to improved disease detection rates due to increased medical screening coverage, recent data indicate that a number of negative shifts have occurred in the health of the population exposed to radiation. A more detailed quantitative and qualitative assessment of these shifts for all districts is currently impossible, primarily due to the lack of comprehensive disease records in previous years and the limited capacity of healthcare institutions today.

According to the Centre's scientists, to address the medical consequences of the accident, it is essential, first and foremost, to establish a unified system of prevention, timely diagnosis, examination, effective treatment, and rehabilitation for individuals exposed to radiation. Issues of clear collaboration between regional and specialised medical institutions to preserve the health of the population, ensuring continuity at all stages of care, and high-quality treatment and preventive measures require immediate attention.

Particular attention should be paid to the provision of medications, including the widespread free distribution of prescription medications, as well as equipping medical facilities with modern diagnostic equipment. In the controlled areas, there remains an acute shortage of medical personnel, and their radiological literacy remains low in most cases.

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