

Information conveyed to foreigners by Soviet official representatives during their visit to the Chernobyl Exclusion Zone on December 29, 1987.

To address the consequences of the accident (hereinafter referred to as the "LPA") at the Chernobyl Nuclear Power Plant, the "Combine" Production Association was established.

Its tasks include:

- ensuring oversight of the safe operation of the nuclear power plant,
- decontamination of facilities and territories within the 30-kilometer zone,
- monitoring the radiation situation within the zone,
- ensuring the safety of all types of work,
- organizing food, accommodation, medical care, trade, transportation, communications, etc.

The "Combine" employs 6,000–7,000 permanent personnel and 2,000 seconded personnel, as well as military reservists over 30 years of age. Reservists are called up for periods of up to six months and report to the civil defence task force.

The 30-kilometer zone is not a geometric concept, and in some places its boundaries extend beyond a circle with a 30-kilometer radius. 135,000 people from 179 settlements were evacuated from the zone. 52 settlements were built for the evacuees.

The evacuation of residents from the city of Pripyat was completed 36 hours after the accident. 50,000 people were evacuated on 1,200 buses.

At the end of the evacuation, background radiation in the city was below 150 $\mu\text{Sv/hr}$, a level above which, according to international standards, evacuation becomes mandatory.

Radiation monitoring in the zone is carried out using the automated radiation monitoring system (ARMS). Personnel dosimetry is monitored using individual storage sensors, replaced every 15 days.

Until January 1, 1987, the maximum permissible annual radiation dose for men who had undergone a medical examination was set at 250 mSv. Since January 1, 1987, the international dose limit for NPP employees has been set at 50 mSv.

Decontamination of the zone was carried out in two stages: rough and fine. In Pripyat, the entire soil layer was removed during the first stage. Currently, a thinner layer is being removed a second time, and the treated surfaces are being covered with clean soil. During soil removal, in some cases, it is bound with an adhesive. To prevent contaminated soil from being carried by the wind, it is secured with polymer compounds and planted with special grass varieties.

Domestic and foreign-made robots were used to clean the turbine hall roof. Radio-controlled robots were ineffective at levels of several thousand roentgens per hour. Of all the cable-controlled robots, domestically produced ones performed more reliably.

In Chernobyl, gamma radiation levels are 1 $\mu\text{Sv/hr}$, placing Chernobyl in Category B radiation levels (for satellite towns of nuclear power plants, where the annual dose should not exceed 5 mSv per year).

Based on the experience gained during the clean-up, new decontamination methods are being developed. For example, a type of bacteria has been developed that can consume radioactive, water-insoluble substances, converting them into salts that are readily soluble in water and therefore easily washed away.

Military personnel are used for unskilled work, such as decontamination, soil transportation, and demolition of contaminated structures.

In the future, it is planned to return part of the 30-kilometer zone to economic activity, while the 10-kilometer zone will be used only as a testing ground for various types of research.

The Chernobyl accident did not affect the fate of the RBMK program or the construction of the Chernobyl, Kursk, Smolensk, and Ignalina NPPs. The USSR relied on the RBMK program due to a lack of industrial capacity for the manufacture of VVER reactor pressure vessels. Currently, such capacity exists, and preference will be given to VVER reactors. Construction readiness for Units 5 and 6 is 80–85%.

Their construction was mothballed until 1990, until decontamination work was completed.

The four units of the Chernobyl Nuclear Power Plant generated 2% of the country's electricity. The capacity of one unit was 7 billion kilowatt-hours. In 1987, new nuclear power units with a total capacity of 4 million kWh were scheduled to be commissioned in Ukraine. The annual plan for the Chernobyl Nuclear Power Plant in 1987 was 13 billion kilowatt-hours.

A number of measures have been taken to improve the safety of all operating RBMK reactors, including:

- reduction of the void coefficient of reactivity by replacing 80 fuel rods with absorber rods,
- increased protection response speed, including by inserting control rods 50–80 cm into the core,
- use of more enriched fuel (2.4%),
- improved control panel information (for example, a reactivity margin display was installed).

During the explosion of Unit 4, 3.5–4% of the fuel was released from the reactor.

Approximately 300,000 cubic meters of concrete and 10,000 tons of structural steel were used in the construction of the Sarcophagus. Construction began in June and was completed on November 31, 1986. More than 300 sensors are installed inside, recording changes in gamma radiation, temperature, neutron flux, heat flux, hydrogen concentration, and other parameters. The temperature inside the Sarcophagus is constantly decreasing. In February of this year, the maximum recorded temperature was 112°C, and in August of this year, it was approximately 95°C. Neutron flux is not detected.

In case of a reaction occurring in the disintegration of the fuel masses inside the Shelter, a potassium metaborate injection system is in place.

Currently, the activity of emissions from Unit 4 is significantly lower than from a normally operating reactor. The main isotope in these emissions is ruthenium. A forced ventilation system is installed in the "Sarcophagus," but it is currently disabled; ventilation is carried out naturally. The air flow rate is 32,000 m³/hour.

85% of the Chernobyl NPP personnel returned to the plant after the accident and continue to work.

Following the Chernobyl trial of those responsible for the accident, three criminal cases were separated into separate proceedings. One was against the designers who designed the reactor, the second against those responsible for evacuation and healthcare, and the third against Ministry of Energy employees responsible for reactor safety.

Following the Chernobyl accident, a radiobiology laboratory was established in a greenhouse facility. Its research objectives are:

- identifying plants that extract radionuclides from the soil to a greater or lesser extent than others,
- producing highly elite seeds,
- determining the effect of radiation on plant growth.

Over 200 plant varieties and species and over 60 flower varieties were studied. No stimulation of plant growth was detected. Data were obtained on plant varieties that accumulate strontium, caesium, niobium, and zirconium radionuclides to varying degrees. No attempts were made to breed new plant varieties or species during the research.

A large number of varieties zoned for Ukraine were tested to obtain practical results from the experiments. Several patterns were confirmed. It was established that the composition of nuclides and their concentration in certain areas of the 30-kilometer zone allows for the production of clean agricultural products.

Using plants for soil decontamination is not very promising, as they absorb less than 1% of radionuclides.

Due to the combination of soil and climatic conditions and the specific nature of the accident, new information was obtained about possible contamination scenarios that had not previously been anticipated. In the near zone, the availability of radionuclides to plants was found to be lower than in the far zone.

This information is reliable, unclassified, and obtained from open sources.

Chairman of the Commission of the Pre-Territorial Development and Control Committee
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