

Order of the KGB of the USSR No. 78/DSK on the maximum levels of radioactive contamination and radiation doses of personnel participating in the liquidation of the consequences of the Chernobyl accident

November 6, 1987

For official use

On permissible levels of radioactive contamination and radiation doses of personnel participating in the liquidation of the consequences of the Chernobyl accident

Announcing for management the following documents, approved by the Chief State Sanitary Doctor of the USSR:

- Temporary Permissible Levels of Radioactive Contamination of Roads, Inhabited Areas, and External and Internal Surfaces of Buildings after Decontamination Work in Areas Contaminated as a Result of the Chernobyl Nuclear Power Plant Accident, dated October 24, 1986, No. 129-DSP/173–9;
- Temporary Permissible Levels of Radioactive Contamination of Various Objects in the Chernobyl Nuclear Power Plant Zone, dated July 9, 1987, No. 32/1747-DSP,

I order:

1. Clauses 1 and 2 of the USSR KGB Order dated September 30, 1986, No. 76/DSP, shall be re-stated in accordance with the appendix.
2. Paragraphs 3 and 4 of the preamble to Order of the KGB of the USSR dated September 30, 1986, No. 76/DSP shall be deemed invalid.

Deputy Chairman of the Committee

Colonel General G. Ageyev

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"Approved" Chief Sanitary Doctor of the USSR G.N. Khlyabich

TEMPORARY permissible levels of radioactive contamination of roads, residential areas, and exterior and interior surfaces of buildings after decontamination work in areas contaminated as a result of the Chernobyl nuclear power plant accident

Object	Permissible gamma dose rate (μSv/hr)	Removable contamination	
		Alpha particles/cm ² /min	Beta particles/cm ² /min
Road surfaces			
- outside inhabited areas	5.0	-	-
- inside inhabited areas	2.0	-	-
Outer surfaces of territory and buildings in inhabited areas	5.0	-	-
Internal surfaces of work buildings and surfaces of the equipment located in them	2.0	5	2,000
Internal surfaces of inhabited buildings	1.0	1	100

TEMPORARY permissible levels of radioactive contamination of different objects in the Chernobyl nuclear power plant zone

No	Object	Beta contamination (in particles/cm ² /min) or gamma dose rate from separate items or surfaces (in µSv/hr), relevant to beta contamination				
		Exclusion zone, Unit 3	Units 1 and 2 and their vicinity, clean zone BK-2, industrial zone of Pripyat	30-km zone (outside exclusion zone), Chernobyl, Skazochny, inhabited area of Pripyat, ABK-1	Shift workers' camps outside the 30-km zone	At the entries/exits of the 30-km zone and shift workers' camps
A	B	C	D	E	F	G
1	Skin, undergarments, towels, internal surfaces of personal protection equipment (PPE)	3 µSv/hr	200	100	100	-
2	Bed linen	-	-	100	100	-
3	Personal clothing, footwear and other personal possessions	-	-	-	100	100
4	Work clothing	10 µSv/hr	1,600	400	400	-
5	Work footwear	-	-	400	400	-
6	Outside surfaces of work footwear and PPE used inside buildings - permanent workplaces - temporary workplaces	20 µSv/hr	2,000	-	-	-
		40 µSv/hr	8,000	8,000	-	-
7	Surfaces of the buildings (and equipment) where personnel work full-time	20 µSv/hr*	2,000	2,000	400	-
8	Surfaces of the buildings (and equipment) where personnel work part-time	80 µSv/hr*	8,000	8,000	-	-
9	Internal surfaces of personnel living quarters	-	-	200	200	-
10	Household items (electrical equipment, etc.)**	-	-	400	200	-
11	Internal surfaces of dining rooms**	400	400	200	200	-

A	B	C	D	E	F	G
12	Road surfaces - in evacuated villages/towns - in inhabited villages/towns	- -	- 20 $\mu\text{Sv/hr}$	10 $\mu\text{Sv/hr}$ 5 $\mu\text{Sv/hr}$	- 2 $\mu\text{Sv/hr}$	- -
13	Territories of inhabited villages/towns and surfaces of the buildings	-	20 $\mu\text{Sv/hr}$	10 $\mu\text{Sv/hr}$	2 $\mu\text{Sv/hr}$	-
14	Internal surfaces of vehicles and cabins of work equipment	20 $\mu\text{Sv/hr}$	20 $\mu\text{Sv/hr}$	400	400	400
15	Outside surfaces of vehicles and cabins of work equipment	20 $\mu\text{Sv/hr}$	20 $\mu\text{Sv/hr}$	20 $\mu\text{Sv/hr}$	2 $\mu\text{Sv/hr}$	1 $\mu\text{Sv/hr}$
16	Surfaces of various work equipment	-	-	-	-	1 $\mu\text{Sv/hr}$

Notes:

1. All values given in the table without unit specification are given in beta particles/cm² per minute
2. Measurement of contamination by the dose rate of gamma radiation is to be carried out at a distance of 3–5 cm from the surface of the object minus the gamma background.
3. The dose rate of gamma radiation when determining the level of radioactive contamination of the territory is to be measured at a distance 0.7–1.0 m from the surface.
4. Contamination of skin, underwear and bed linen with alpha-emitting radionuclides in the 30 km zone and shift camps should not exceed 1 alpha particle/cm² per minute' and for outerwear, shoes, internal surfaces of residential premises and external surfaces of household items, excluding tableware, contaminated with alpha-emitting radionuclides should not exceed 5 alpha particles/cm² per minute.

* These standards are introduced after the completion of decontamination of the premises of power unit No. 3. The total dose rate is measured gamma radiation in the workplace from contamination of indoor surfaces and other sources. In case of exceeding the given standards, the main sources should be identified and measures are to be taken to eliminate them. In rooms where the means and methods of reducing radiation to the permissible levels have been exhausted and levels exceed those in the Table above, a special regime of the operation of rooms and equipment must be introduced. The decision in each specific case is made by the administration of the Chernobyl Nuclear Power Plant, US-605, NIKIET in agreement with the State Sanitary Inspection Authority.

** Radioactive contamination of tableware is not allowed.

These standards were reviewed at a meeting of the NKRZ on June 29, 1987 and recommended for approval.

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Appendix

to the USSR KGB Order

of November 6, 1987

No. 78/DSP

New version of paragraphs 1 and 2 of the USSR KGB Order of September 30, 1986

No. 76/DSP:

1. With regard to KGB employees participating in the liquidation of the consequences of the Chernobyl Nuclear Power Plant accident, be guided by the Radiation Safety Standards approved by the USSR Ministry of Health

on June 7, 1976

No. 141 and by the USSR KGB Order of December 6, 1984

No. 142/DSP.

Establish temporary different standards for permissible doses of external radiation:

- For personnel working in areas with radiation levels less than 50 $\mu\text{Sv/hr}$ – 50 mSv;
- For personnel working in areas with radiation levels of 50 $\mu\text{Sv/hr}$ or more, as well as for personnel of operational groups – 100 mSv.

In exceptional cases, when planning particularly important work and in the absence of medical contra-indications for a limited number of personnel participating in this work, external radiation doses of up to 250 mSv may be permitted; personnel may commence this work only with the permission of the Chief of the Military Medical Directorate of the USSR KGB.

Exposure of personnel to doses of 100 and 250 mSv shall be permitted only for those, who have not previously been exposed to radiation or who have received a radiation dose of no more than 50 mSv within a year.

Personnel who have received the maximum permissible radiation dose of 250 mSv shall not be subjected to planned increased exposure. For personnel in this category, the maximum possible annual dose shall be set at no more than 50 mSv. Their permission to work with sources of ionizing radiation shall be granted only upon the conclusion of a military medical commission, taking into account the requirements of paragraph "a" of Article 35 of Appendix No.1 to Order No. 285 of the Minister of Defence of the USSR dated December 8, 1983, announced by Order No. 142/DSP of the KGB of the USSR dated December 6, 1984.

Personnel who have received radiation doses exceeding 250 mSv are to be removed from work with sources of ionizing radiation and sent for medical examination.

Monitoring of external radiation exposure for personnel working in areas with radiation levels exceeding 10 $\mu\text{Sv/hr}$ is to be organized using individual dosimeters. When working or being present in areas with radiation levels up to 10 $\mu\text{Sv/hr}$, the use of a calculation method for determining external radiation doses is also permitted.

2. Allow personnel to consume water and food products with levels of radioactive substances that differ from the declared Temporary Permissible Levels of Radioactive Substances in Food, Drinking Water, and Medicinal Herbs (total beta activity), provided that the total intake of radioactive substances with water and food does not exceed 11,100 Bq/day and 407,000 Bq/year.