**Report on the radiation situation in the city of Slavutych for May 1988**

May 25, 1988
Secret

Reference note on the radiation situation in the city of Slavutych (May 1988)
*[figures/charts are absent from the document]*

**1. General characteristics**

Radionuclides cerium-144, cesium-134, 137, ruthenium-106, and strontium-90 have been detected in the city of Slavutych and adjacent territories. Due to construction and partial decontamination work (filling with clean soil), the city's territory is currently extremely unevenly contaminated. However, the nuclide composition is more stable — all samples record a higher percentage of cesium-137 and a lower content of cerium-144 compared to the Chernobyl Nuclear Power Plant zone.

Overall, the nuclide composition is characterized by the following data:

| Ce-144 | Cs-134 | Cs-137 | Ru-106 | Sr-90 |
|---|---|---|---|---|
| 15% | 16% | 52% | 12% | 4% |

Due to the relatively high percentage of the long-lived nuclide cesium-137, the expected reduction in gamma dose rate due to radioactive decay will be less significant than in the 30-km zone, approximately 16% over the course of a year (in the Chernobyl zone, it is 1.5 times).

Figure 1 shows the results of EDR measurements (at a height of 1 m) and beta-contamination of the soil surface layer at points of continuous routine monitoring.

These results show that the north-western part of the city (the "Baltic region") is the most contaminated, reaching 1.5 µSv/hr, and beta-contamination of 240 particles/cm²/min.
However, even here there are completely uncontaminated (or clear) areas with background DER values (0.2 µSv/hr). Contamination is distributed much more evenly along the highway around the urban area. Here, pollution ranges from 100 to 250 particles/cm²/min, and dose rate is 1.5-2.8 µSv/hr.

**2. Condition of individual objects**

The marked unevenness of contamination in the city of Slavutych requires detailed continuous surveys of the territory and individual objects.

2.1. Baltic Quarters. Figure 22 shows the results of a detailed survey of the "Baltic Quarters" at 50-meter intervals, delineating the most contaminated areas. According to the detailed survey, the maximum contamination level is 580 particles/cm²/min, and the dose rate is 1.5 µSv/hr.
Contaminated areas are typically areas with undisturbed soil and remnants of forest (up to 15% of the territory of the "Baltic" Quarter), where old forest litter has been preserved.

2.2. The Kalinka Nursery and Kindergarten (Fig. 3) is located in the Leningradsky Quarter. The entire garden is covered with sand (10–15 cm) and a top layer of peat soil (10–15 cm). The backfill is old, of good density, and has some grass growth. In open spaces (~70% of the territory), the beta-contamination level is 30–40 particles/cm²/min. 25–30% of the perimeter is occupied by old pine trees (bark 40–100 beta-particles/cm²/min); at the base of the trees, where the backfill is of poorer quality, it is 50–200 beta-particles/cm²/min, with the dose rate of 0.4-1.0 μSv/hr. Pieces of old turf (100–200 beta-particles/cm²/min) are found in places. At fire pits, the level is 400–1000 beta-particles/cm²/min. Ten fire pits have been removed from the garden.

2.3. Kindergarten No. 2, "Moskovsky Kvartal" (Fig. 4). The bedding is the same as in "Kalinka." There are few forests, and the radiation conditions are most favourable.

2.4. Kindergarten No. 3 (Vilnius Kvartal) (Fig. 5). The entire area has been bedded with peat soil. The bedding is fresh, loose, 10–15 cm deep, and easily moved. The old coniferous litter shows a contamination level of 200–300 beta-particles/cm²/min. Clumps of old soil and litter are often found on the bedding, creating numerous sources with a contamination level of 100–250 beta-particles/cm²/min.

2.5. Secondary School No. 1 (Fig. 6).
The area is virtually devoid of forest cover; the bedding is dense. Existing contamination is localized, typically consisting of pieces of old turf with contamination levels of 100–500 beta-particles/cm²/min, with the dose rate of 0.15-0.40 μSv/hr. The contamination of the majority of the area (~95%) is 10–30 beta-particles/cm²/min.

2.6. Residential buildings, premises, clothing.
Contamination of objects is characterized by the following data:
Riga Quarter:

- Building 6, Entrance 13 beta-particles/cm²/min, doormat 5 beta-particles/cm²/min,
- Building 8, Entrance 7 beta-particles/cm²/min,
- Apartment No. 31, 5 beta-particles/cm²/min.

Estonian Quarter:
Building 5, Entrance 5 beta-particles/cm²/min,

- Apartment 63, doormat 4 beta-particles/cm²/min,
- Apartment 62, doormat 4 beta-particles/cm²/min,
- Entrance No. 4, 9 beta-particles/cm²/min,
- Apartment 37, doormat 6 beta-particles/cm²/min,
- Apartment 39, doormat 6 beta-particles/cm²/min,
- Entrance 1, Doormat 13 beta-particles/cm²/min,
- Personal clothing 4 beta-particles/cm²/min,
- Felt boots 13 beta-particles/cm²/min.

3. Conclusions and Suggestions.
The results of both previously conducted dosimetric measurements and those conducted by the RB Department from May 20–23, 1988 (Figs. 1–6) confirm the previously reached conclusion that the main source of contamination in the city of Slavutych and adjacent areas

is the remaining forest litter (100–500 beta-particles/cm²/min) and old forest stands. These also create elevated gamma radiation levels with of up to 2 µSv/hr.
In areas where soil fill in 1987 was sufficiently deep (20–35 cm) and reached the required density, contamination levels are approximately 10–30 beta-particles/cm²/min, which is a relatively acceptable level.

Random measurements conducted in residential premises in the city of Slavutych and data from regular monitoring in 1987–1988 of the personnel quarters in the settlements of Lesnoy and Yakor indicate that virtually no contamination transfer was detected (out of 2,150 measurements taken in 1987 by the RB Department in the construction workers' quarters in Yakor and Lesnoy, contamination above 20 beta-particles/cm²/min was detected in 18 cases).

In the event of poor performance of site preparation work in the suburbs of Slavutych, we consider it necessary to remove sources with elevated contamination levels (litter, tree stumps) from the city limits or to backfill them during the summer of 1988.

In the forests adjacent to the city (spots to the west and east), establish forest park zones, implementing measures during their creation to remove forest litter in contaminated areas and selectively cut down forests in areas subject to development, complete forest clearing, and litter removal.

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