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**Soils,
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food
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Proceedings
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Agroecological assessment of radiocaesium contamination of seeds and sunflowers on irrigated lands of the Zaporozhye region

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Keywords: soils, irrigation water, radiocaesium contamination, model, sunflower harvest

Introduction, scope and main objectives

Among the many problems that have arisen in connection with the Chernobyl accident, one of the most acute and large-scale is the possibility of agricultural activities in lands contaminated with radionuclides. The consequences of the incident at the Zaporizhzhya NPP can now cause six times more damage. Therefore, the organization of constant monitoring of soil and vegetation pollution is especially important to obtain edible crop products. The purpose of the presented research is to assess the contamination of soils, irrigation water, seeds and sunflower oil grown on farmland in the Zaporozhye region.

Methodology

The initial information was the results of agrochemical and agroecological survey of soil conditions in Ukraine. The research was carried out using a dynamic mathematical model of radionuclide activity formation in the system "water - soil - plant - product", ECOSIS - 87.

Results

Numerical calculations of the accumulation of radiocaesium activity in 1986 and 2021. in the total biomass and in seed biomass due to the transition of radiocaesium from soil and irrigation water are assigned to the work. Numerical calculations of radiocaesium contamination of sunflower products as a result of a possible accident at the Zaporizhzhya NPP have been performed. The activity of radiocaesium accumulation during seed processing into sunflower oil was studied. The most rational scheme of use of potash fertilizers in a complex with liming for decrease in activity of radiocaesium in a sunflower crop is established.

Discussion

According to the State Hygienic Standards, the specific activity of radiocaesium in 1986 and 2021. in seeds and sunflower oil was an order of magnitude lower than the TDR, which allowed the use of these products in food without restrictions.

Conclusion

Due to a possible accident at the Zaporizhzhya NPP, agricultural lands in the Zaporizhia region, Vasylivka, Mykhailivka, Kamyanka- Dniprovska will become unsuitable for growing food and fodder crops, as soil contamination density is expected to exceed 40 Ki / km², and in Mariupol and will be the implementation of a full set of protective measures to reduce the activity of radiocaesium in sunflower products to a temporarily acceptable level.

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