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ENVIRONMENTAL POLLUTION OF SOME FOOTHILL REGIONS OF ARMENIA WITH ORGANOCHLORINE PESTICIDES AND ISSUES OF MORBIDITY

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Abstract

Introduction: *In three foothill regions of Armenia – marzes (provinces) of Lori, Kotayk and Tavush, comprehensive research was conducted to study the total levels of organochlorine pesticides (γ-hexachlorocyclohexane, 4,4-dichlorodiphenyltrichloroethane, 4,4-dichlorodiphenyldichloroethylene, 4,4-dichlorodiphenyldichloroethane) in environmental objects and human biological media (2013-2018).*

An assessment was conducted to evaluate the environmental status and possible adverse health effects of organochlorine pesticides on the population in regions with diverse agricultural activities. The levels of organochlorine pesticides were studied in surface waters, soil, coastal silt, as well as in plant agricultural products in dynamics (spring, summer, fall). The content of organochlorine pesticides in breast milk samples of mothers from studied regions was also determined.

Material and methods: *The determination of organochlorine pesticides was carried out by gas-liquid chromatography with an electron capture detector on a Perkin-Elmer F-17 gas chromatograph (Great Britain).*

Results: *A comparative analysis of the studied regions showed that the levels of organochlorine pesticides in environmental objects did not differ significantly. In all regions, the same pattern was observed – concentrations of organochlorine pesticides increased in the summer-fall period in the following environmental order: surface water - soil - coastal silt.*

In Kotayk marz, compared to Lori and Tavush, residues of dichlorodiphenyltrichloroethane were determined with high frequency in almost all environmental objects studied, mainly in soil samples – up to 60%. The average total content of organochlorine pesticides in agricultural products, as well as in breast milk samples, was significantly higher, p=0.03-0.001 and p=0.0003-0.00003, respectively. Additionally, the highest number of samples showing the simultaneous presence of all studied organochlorine pesticides (3-4 compounds) was noted in Kotayk, accounting for 24%. This indicates the levels of load and a kind of "contamination" of the human organism with these compounds.

Conclusion: *The study results are an important contribution to the available information on organochlorine pesticides. They highlight the importance of conducting regular monitoring of the environment and biomedia to assess the pollution levels with organochlorine compounds. This is crucial for understanding trends in the dynamics of target indicators in certain regions of Armenia.*

Keywords: *organochlorine pesticides, environment, breast milk, morbidity*

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