

SOIL CONTAMINATION BY ORGANOCHLORINE PESTICIDES AND HEALTH AFTER-EFFECTS

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Background and Aims: The problem of contaminated areas and stocks of inappropriate-for-use pesticides, including obsolete organochlorine pesticides is of top-priority for the Republic of Armenia. The problem is aggravated by obsolete organochlorine pesticides burial located in the vicinity of Yerevan, the capital of Armenia, in the zone of active landslide processes. The damage and a possible “breakthrough” of the contents (“innage”) of the burial and the subsequent penetration of residues of buried obsolete pesticides into the environment might result in environmental pollution.

Another problem is pollution from sites of former pesticides shops and storehouses.

Methods: Generally accepted gas-chromatography method of analysis was applied to determine residues of organochlorine pesticides in samples of soil taken from evidently polluted sites in different regions of Armenia. Soil samples were analyzed for DDT and its metabolites, Hexachlorocyclohexane, Lindane, Hexachlorobenzene, Heptachlor.

Results: In soil samples taken near former pesticide storehouses Heptachlor content varied from 1.889 to 3.677mcg/kg, DDT ranged 0.266-40.310mcg/kg. The highest amounts of DDT were determined in samples from Armavir (40.10mcg/kg) and Etchmiadzin (8.32mcg/kg). DDE content in analyzed samples made 0.067-10.039 mcg/kg, DDD: 0.0022-1.039mcg/kg, Hexachlorocyclohexane residues were at 0.002-12.682mcg/kg, Lindane – 0.076-7.086mcg/kg, Hexachlorobenzene – 0.063-13.992mcg/kg.

In samples from the territory of former pesticide shops Heptachlor was in the range of 1.611-2.758mcg/kg, DDT- 0.694-55.496mcg/kg, DDE- 0.038mcg/kg, DDD-1.067 mcg/kg, Hexachlorocyclohexane – 0.006-3.502mcg/kg, Lindane – 0.64-1.512mcg/kg, Hexachlorobenzene – 0.46-1.842mcg/kg.

Soil from the territory of the shops was less polluted than the soil near the storehouses.

Conclusions: Solution of the problem relevant to remediation of contaminated areas is of prime significance and urgency for Armenia, taking into account the important role of soil in the entire chain “environment – human health” as the main vehicle and probable carrier of pollutants. The problem is more than serious due to the fact that its solution requires a continuous period of time.

