

ORGANOCHLORINE PESTICIDES AND DIOXINS IN SOILS

Komogortseva L., Prosyannikov E.

Bryansk state agricultural academy
Kokino, Vigonichskii rayon 243365 Bryanskaya oblast, Russia

Introduction

The Bryansk region of Russia may be called of "Zone of ecological disaster". The problem of pollution by organochlorine pesticides and dioxins of agricultural soil is especially urgent in conditions of radioactive pollution. The base source of pollution by dioxins is using of much 2,4 D-pesticide.

Materials and Methods

Researches have carried out on stationary sites, located in the basic and various landscapes and ecosystems of Russia. Each site consists of two basic platforms, which according to the International program of complex monitoring, have the area on 25-30 square meters. They are located in direct affinity on the same element of relief and differ on a degree of agrarian influence: natural ecosystem, intensive agroecosystem. In soils of agroecosystems with agricultural mineral fertilizers or pesticides more pollutants act, more their metabolites collect.

Determination of residual amounts of pesticides was made by method of gas-liquid chromatography. (The laboratory of BSAA, Kokino).

Determination of PPC was made by method of chromatomass spectrometer of high resolution "AUTO SPECUTIMA" (Environmental Protection Center of Republic Bashkortostan, Z.K. Amirova, S. Kruglov).

Results and Discussion

Determination of residual amounts of pesticides in the top horizons soil has shown, that from all sym-triazines, organochlorine and organophosphine pesticides are present only a simazine, DDT, dieldrin, hexachlorane, chlorophos and products of disintegration organochlorine pesticides. We found constant presence sym-triazines and organochlorine pesticides in the top horizons soil of natural ecosystems. The widest spectrum of the rests of pesticides is in soil of natural ecosystem. The highest con-

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tents of dieldrin and DDT is there. The contents of simazine in soil of intensive agroecosystem is lower. (Table 1)

Table 1

THE CONTENTS OF PESTICIDES IN SOILS

Ecosystem, genetic horizon of soil and its depth, cm	Pesticide	
	Found	mg/kg of soil
The sward-podzolic formed on fluvio-glacial sand, spread moraine		
Natural		
A1 2 – 15	Simazine	0,001
	Dieldrin	0,530
	DDT	0,213
A2A1 15 – 23	HCH	Traces
Intensive		
Ap. 0 - 34	Simazine	0,001
The sward-podzolic soil on powerful fluvio-glacial sand		
Natural		
A1 2 – 15	Production of disintegration of organochlo- rine pesticides	Traces
A2A1 15 – 34	Sym-triazine	Traces
Intensive		
Ap. 0 - 30	Cholorophos	0,001
The grey wood loamy soil on the carbonate light loam		
Natural		
A1 1 – 16	Simazine	0,030
	DDT	0,040
Intensive		
Ap. 0 - 30	Simazine	0,001
	DDT	0,028
The grey wood soil with second horizon the light loam on without carbon- ate light loam		
Natural		
A1 1 – 27	DDT	0,020
Intensive		

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Ap	0 – 26	DDT	0,030
A1	26 - 47	DDT	0,025

The German scientific Veber Ę. (1991) specifies, that some pesticides after their entering are decomposed in toxical substances. They can turn or to decompose in chemical compounds, in the same degree or even more poisonous, than initial substances. The data about presence and behavior of pesticides in an environment depend from methods of the analytical control. If they cannot be established by analytical methods, it is impossible to conclude about their complete decomposition, in the scientific literature use the term " the connected rests " for them. In opinion to the Veber, stimulation the pesticides of occurrence of tumor is underestimated, that is ability of these chemical compounds, not being direct activators of a cancer, to cause it in a combination to other substances.

Table 2

A COMPORISON PCDD/Fs IN BRYANSK SOILS

№	Soils	The sum of equivalent pollution, ng/TEQ/g	
		ND=1/2 mdl	ND=0
1	A1	0,48	0,73
2	A2A1	0,47	0,52
3	Anax	0,86	0,26

Limits of detection – 30 %.

The soils of Bryansk region contain dioxin (Table 2). It is result of cultivation by organochlorin pesticides, especially 2,4 D. The pesticide – 2,4 D was disperse by airplane. The dioxin is admixture to 2,4 D-pesticides. Moreover dioxin may be formed as result of metabolism of 2,4 D-pesticides in natural conditions.

Acknowledgements

On data of committee of protection of health of Bryansk region (1998) is marked, that the tendencies of development of oncoepidemical process in

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a file of the population. Agricultural soils are the bases of agricultural production. The ecotoxicants from pollution soil act into plants, than into animals and into human's organism.

It is necessary to take total effect of different ecotoxicants (radionuclides, dioxins, pesticides) into health of the population.

References

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