

CHLORINATED DIOXINS AND DIBENZOFURANS – FIRST RESULTS OF SYSTEMATIC MONITORING OF BASHKORTOSTAN REPUBLIC

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Introduction.

In the Bashkortostan Republic in Ufa and Sterlitamak at the "Chimprom" and "Kaustik" chemical plants pesticide 2,4,5-T and 2,4-D and the chlororganic substances were manufactured at various times during the past 40 years. In the process of the production and decomposition of these substances polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDF)¹ are formed. The productions of chlororganic substances are the major sources of contamination of atmosphere, water, soil and foods PCDDs and PCDFs. Last year at International Dioxin Symposium, Dioxin 93, several papers described dioxin contamination in Russia, including Bashkortostan and Ufa.² In 1993 the Supreme Soviet of Bashkortostan began realization of the program "Dioxin" – a environmental monitoring on the presence of dioxins and others supertoxicants. The program is to create a data base for:

- the assessment of the dioxin contamination of the environment,
- the assessment of the people health,
- the elaboration of the legislative enactments and drastic measures on reconstitute of the environment,
- the efficiency control of the contaminations.

Results of the monitoring

At the initial stage out of industrial installations there were selected those ones which could according to theory possess relevant emission potentials for PCDDs and PCDFs. This group included installations for chlororganic substances production, chemical plants for destillation of oil, dumps, waste of chemical and oil-refining industries. Measurements were carried out at more installations belonging to process categories where higher contributions of dioxin emissions were expected. The table below presents dioxin contents in water, soil and foods for Ufa, Sterlitamak and Salavat. The analyses were carried out in the analytical laboratory of ecotoxicology of "The Institute of Evolutional Morphology and Ecology of Animals"

(Moscow, Dr. N. Kluev) and in the laboratory of supertoxicants analyses of "The Institute of Problems of applied Ecology and Natural and Mineral Resources Utilization". (Ufa, Y. Yasman, F. Khizbullin). From this table it can be seen that in 1993 the dioxins were in all the environmental objects.

Objects	Dioxin contents (conc. TEQ)		
	Ufa	Sterlitamak	Salavat
Drinking water	0,1–1 ppq		0,001–0,003 ppq
River water	0,1–0,2 ppq		0,004–1 ppq
River silt	1–440 ppt	1–6 ppt	0,006–0,43 ppt
Sewage	0,01–0,7 ppt		1–2 ppq
Soil	1–20 ppt	1–3 ppt	0,6–0,8 ppq
Air	0,2–0,5 pg/m ³		
Breast milk of women	0,008–1,6 ppt		20 ppt
Beef			0,38 ppt
Pork		3–4 ppt	0,2–1,32 ppt
Chicken			0,14 ppt
Butter		2–3 ppt	1,8 ppt
Dumps	5–40 ppt	2–10 ppt	5–6 ppt

Data on dioxin concentration in environmental objects and food products, dioxin concentration in breast milk of women indicates the presence of dioxins in the environment in Bashkortostan. In most cases dioxin concentrations do not exceed permissible levels which exist in Russia. The dangerous concentrations of the TCDDs and TCDFs in the river water in Ufa about which the report in a number of publication¹ are connected with methodical errors.

References:

1. Fedorov L.A. Dioxins as a ecological danger: retrospective and perspective. Moscow, Nauka, 1993. 266 p.
2. Schecter A, Parke O, Lis A, Ball M. Chlorinated dioxin and dibenzofuran content in 2,4-D amine salt from Ufa, Russia. Proc. 13th Intern. symp. Vienna, 1993. P. 325.