ORGANOCHLORINE RESIDUES IN FOOD FROM THE FORMER SOVIET UNION AND FROM GERMANY

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Objective: Many previous publications, including our own, have described dioxin and dibenzofuran congeners in food from various countries; these include Germany, the former Soviet Union, Canada, England, Vietnam and the USA. Other organochlorines, many present at higher levels than the dioxins and also toxic, have not been considered as extensively. This paper presents new data of thirteen food sample analyses from the former Soviet Union and compares them with data from Germany.

Methods: Analysis of PCB's and organochlorine pesticides was performed as previously described.[1]

Results: The results are presented in Table I for 13 analyses from food collected by one of us (AS) at restaurants, stores or markets in Moscow or in Siberian Russia (Irkutsk or Novosibirsk). These levels are contrasted with mean levels from uncooked German samples of meat (pork or beef), meat products such as sausages, poultry, and milk (fat) from cows which are presented on a lipid normalized basis, on Table II. These two datasets are not strictly analogous in that cooked or processed specimens were sometimes collected in Russia, in order to have a basis to estimate levels in food as consumed, whereas in North Rhine Westphalia, Germany, food is systematically collected and analyzed prior to cooking. Nevertheless, the data permit comparisons in an approximate fashion.

Conclusions: The presence of these toxic xenobiotics in food from Germany and Russia is worthy of consideration, perhaps as much or more than is the case for dioxins, because of the higher levels found at this time. The three locations in Russia differ since Moscow is in European Russia which has been industrialized longer than Irkutsk and Novosibirsk, which are in Siberia.

This paper does not consider possible health consequences from these chemicals, but presents a progress report of analytic findings to date, from Russia (of the former Soviet Union), a large country that has not been studied extensively.[2]

REFERENCES:

1 Schecter AJ, Fürst P, Fürst C, Groebel W, Constable JD, Kolesnikov S, Beim A, Boldonov A, Trubitsun E, Vlasov B, Cau Hoang Dinh, Dai Le Cau, Quyng Hoang Tri. Levels of chlorinated dioxins, dibenzofurans, and other chlorinated xenobiotics in food from the Soviet Union and the south of Vietnam. *Chemosphere* 1990;20:7/9:799-806.

2 Schecter AJ, Fürst C, Grachev M, Beim A, Koptug V. Levels of dioxins, dibenzofurans and selected other chlorinated organic compounds in food from Russia. *Chemosphere* 1992;25:2009-2015.

TABLE II: ORGANOCHLORINES IN GERMAN FOOD (ppm, lipid)

Residue	Meat Pork/Beef		Meat Products		Milkfat		Poultry	
	Low	High	Low	High	Low	High	Low	High
HCB	<0.002	0.01	0.007	0.025	<0.002	0.016	0.003	0.013
Alpha-HCH	<0.002	0.005	<0.002	0.012	0.002	0.007	<0.002	0.011
Beta-HCH	ND	ND	<0.002	0.01	ND	ND	<0.002	0.018
Gamma-HCH	<0.002	0.156	<0.002	0.02	0.003	0.014	<0.002	0.03
Dieldrin	<0.002	0.005	<0.002	0.014	<0.002	0.010	0.003	0.04
pp-DDE	0.003	0.015	0.015	0.095	0.001	0.025	0.012	0.04
pp-DDT	<0.004	0.018	0.018	0.109	ND	ND	0.008	0.013
PCB #138	<0.002	0.014	NA	NA	<0.002	0.018	0.008	0.016
PCB #153	<0.002	0.016	NA	NA	<0.002	0.017	0.008	0.020
PCB #180	<0.002	0.006	NA	NA	<0.002	0.006	0.004	0.007

ND= Not detected, NA = Not analyzed
Analyses performed by State Laboratory of North Rhine Westphalia, for Food, Pharmaceutical & Environmental Chemistry

TABLE I: ORGANOCHLORINE RESIDUES IN FOOD FROM RUSSIA (ppm, lipid)

Residue	Novosibirsk					Irktusk		Moscow					
	Pork Fat	Cheese	Cooked Chicken	Smoked Fish	Cooked Fish	Lamb Fat	Pork Fat	Turkey Fat	Roast Chicken	Hamburger Cooked	Beef	Lamb	Beef Cooked
Hexachlorobenzene	0.01	0.026	0.004	0.015	0.002	0.005	0.009	0.003	0.001	0.009	0.002	0.02	0.005
Alpha-HCH	0.006	0.101	0.014	0.073	0.009	0.005	0.067	0.005	0.002	0.297	0.006	0.064	0.032
Beta-HCH	<.002	0.043	0.008	0.026	<.002	0.015	0.036	0.003	0.001	0.175	<.002	0.053	0.015
Gamma-HCH	<.002	0.006	0.01	0.016	0.023	0.002	0.001	<.002	0.002	0.005	0.004	0.007	0.006
Delta-HCH	<.008	<.008	<.008	<.008	<.002	<.008	<.008	<.008	<.004	<.008	<.008	<0.008	<.008
HCH-Isomere of Lindan	0.006	0.144	0.022	0.099	0.009	0.02	0.103	0.008	0.003	0.472	0.006	0.117	0.047
Oxychlordane	<.002	0.006	<.002	0.01	<.002	<.001	<.002	<.002	<.001	<.002	<.002	0.01	<.002
Heptachloroepoxide,cis	<.002	<.001	0.002	0.002	0.009	<.002	<.002	<.001	0.002	0.002	<.001	<0.002	0.002
Nonachlor,trans	<.002	0.001	<.002	0.006	<.002	<.002	0.002	<.002	<.001	<.002	<.002	<0.002	<.002
Dieldrin	0.001	<.002	<.002	0.002	<.002	<.002	<.001	0.002	0.001	0.005	0.002	<0.002	0.005
o.p. DDE	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<0.002	<.002
p.p. DDE	0.003	0.005	0.004	0.176	<.002	0.006	0.02	0.015	0.009	0.009	0.003	0.007	0.019
p.p. DDD	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<0.002	<.002
o.p. DDT	<.002	<.002	<.002	0.026	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<0.002	<.002
p.p. DDT	0.003	0.004	0.007	0.017	0.005	0.001	0.027	0.002	0.004	0.003	0.002	0.004	0.012
Gesamt- DDT	0.006	0.009	0.011	0.219	0.005	0.007	0.047	0.017	0.013	0.012	0.005	0.011	0.031
PCB # 28	<.002	<.002	<.002	0.01	<.002	<.002	<.002	<.002	<.002	<.002	<.002	<0.002	<.002
PCB # 153	0.002	0.003	<.001	0.02	<.001	0.003	0.003	0.002	0.002	0.002	0.004	0.003	0.004
PCB #138	0.003	0.002	0.001	0.024	<.001	0.001	0.004	0.004	0.001	0.003	0.004	0.001	0.004
PCB #180	0.001	<.001	<.001	0.007	<.001	<.001	<.001	0.002	<.001	0.001	0.002	0.001	0.001
PCB as Clophen A60	0.015	0.013		0.128		0.011	0.018	0.022	0.009	0.015	0.026	0.013	0.022