

EPIDEMIOLOGICAL ASPECTS OF THE DIOXIN PROBLEM IN RUSSIA

Fedorov Lev A.
Institute of Geochemistry and Analytical Chemistry,
Russian Academy of Sciences, 117975 Russia, Moscow.

Dioxins and dioxin-like compounds were regularly produced born continuously in technologies functioning in Russian industry after the second World War. But the publications about these dangerous compounds, about the dioxin problem in general and even ones with simple mention about dioxins were absolutely absent in Russian scientific press before 1990 (not only after 1957, after 1968-1970 or even after 1980). The documented information of medical officials is not accessible for scientists yet and the official medical statistic data are not reliable. So it is very difficult to recollect the real epidemiological situation, concerning dioxin lesions of last 30-40 years. Some objective data of medical observation are still the only sign of dioxin appearance in industrial processes, but in those observations dioxin was not mentioned and, as the result, was not taken into account. Table summarizes some of those events (9 episodes), concerning solely partly documented human exposure between 1945 and 1980 to different compounds and contaminants during occupation or industrial accidents.

In the Table different types of industrial production and types of dioxin-like contaminants are presented (not only 2,3,7,8-TCDD). Mainly this data concern not only explosions, but mass routine occupational exposure - direct evidence of the archaism and human danger of many industrial chlorine technologies in Russia, which remain many years. Undoubtedly, those data can not be considered as the complete ones, because they include only the fragmentary and not so detailed publications of physicians about employees with chloracne.

The first serious report about exposure to then unknown compounds was published in 1946. Author, professor Sorinson N. S. (Nyzhniy Novgorod, the former Gorky), probably was not aware of the real cause of chloracne lesion of numerous employees on various technologies. He described the morbidity, observed in 1944-1945 and concerned the production of PCB and PCN in Dzerdzhinsk. The analogous lesions were observed on employees, occupied with substitution carbon anodes for electrolyzers (production of electrolytic chlorine). The author pointed out very clearly the common character of the diseases cause, although he, may be did not know this cause before the discovery of dioxin. In that report the detailed recommendations on

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Table.

Accidents on chemical plants, involving the manufacture of 2,4,5-T, 2,4,5-TCP, PCP, PCB and analogous chemicals.
Cause of exposure: (*) - explosion;
(**) - occupation.

Years	Manufacturer Town	Technological process	Cause of exposure	Persons exposed chloracne	total
1944-1945	"Orgsteklo", Dzerdzhinsk	PCB PCN	(**)	67	
1961	"Chimprom", Ufa	2,4,5-TCP	(*)	14	14
1962	- " -	2,4,5-TCP	(*)	1	1
1965-1967	- " -	2,4,5-T	(**)	137	203
1969	- " -	2,4,5-TCP	(**)	1	
1968-1970	Plant of chemical fertilizers, Chapaevsk	hexachloro- benzene	(**)	69	109
1968-1970	- " -	PCP	(**)	20	37
1977-1980	- " -	PCP	(**)	76	
1978-1979	"Orgsteklo", Dzerdzhinsk	PCB	(**)	24	

differentiation between chloracne and acne vulgaris and some recommendations on medical treatment of victims were made too.

In the middle of the 50-ths it was reported about chloracne lesions of workers, employed in the PCN the production at "Chimprom" plant in Usolje-Sibirian (Irkutsk province).

There was not any substantial modernization in the PCB production technology after the report of prof. Sorinson N. S. So one more report, published in the middle 70-ths, was devoted to employees, affected during PCB production at plant "Orgsteklo" (Dzerdzhinsk).

Some reports were published during 1962-1970 about chloracne and other mass diseases of employees at plant "Chimprom" (Ufa), concerned an attempt to organize the scale production gerbicide 2,4,5-T. One of those reports attracted the attention of international community and was used for creating the international list of dioxin accidents. At the same time it should be noted that actually the symptoms of chloracne were observed not on 128, but on 137 exposed victims.

During 1970-1975 some reports were published some reports about occupational lesions of skin, liver etc. of the employees on Plant of chemical fertilizers (Chapaevsk, Samara province, former Kuibyshev), produced PCP and also Cl₃- and Cl₆-benzenes. In the end 70-ths the characteristic lesions of the employees of plant "Orgsyntesis" (Dzerdzhinsk), taking part in propanyl production were noted.

The seriousness of situation is especially evident in the

case of powerful affection on health of employees, which arised in Chapaevsk. The mass lesions of employees, caused by archaism of all technological operations, started immediately after of putting the section into operation and continued many years. This lesions observed on employees on all stages of processing:

hexachlorocyclohehane → threchlorobenzene →
→ hexachlorobenzene → pentachlorophenol.

In Table included only the first observation's data, evidenced to extremely seriousness of situations. Unfortunately the effective modernization into processing on that plant was not introduced. As the result of 607 exposed employees, who were involved in the follow-up up to 1975, 267 employees had chloracne of different hardness and 171 employees was observed the first signs of chloracne. On many employees the numerous lesions of liver, the nervous system, blood etc. were also observed. It is impossible to divide all victims in a separated cohorts, affected on individual operations, because of the employees actually had not the stable work places.

On the whole, it was clear even in first years of producti-
ons in Chapaevsk (1967-1975 r.r.), that at the plant a very low technological level and very inhumane regarding for employees took place. So it was impossible in principle to provide the protection from dioxin affectation. At the end of 70-ths at that plant the new splash of victims appeared, which was caused by the change in the method of treatment of

hexchlorocyclohexane → threchlorobenzene

and some other reasons. The quantitative data and details about that outbreak are absent. The new cohort of victims (approximate-ly 100 ones with sign of chloracne) was not observed by physicians.

The townspeople were informed about the danger dioxin's human and environment exposure too late: Ufa - 1990, Chapaevsk - 1991. And that information was obtained not from medical, environmental or municipal officers, but only from newspapers. The townspeople of Dzerdgin'sk, Volgograd, Usolje, Zima and other towns, occupied in the chlorine industry, are not yet informed about real dioxin situation in their towns.

On the whole, the vast majority of employees, dioxin affected during production, treatment and using different chemicals, contaminated by dioxin and dioxin-like compounds, have not minimal information about your health problems. The victims, who are already aware about their own dioxin affecta-
tion, as employees of Ufa and Chapaevsk, have not got necessary help from officials. For instance, the dioxin exposed cohort from Ufa (entered in all information lists of dioxin accidents), addressed an appeal to Geneva with request for some help. The request was turned down courteously by WHO and rejected by medical ofisials of the former Soviet Union and Russia.

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Conclusions:

1. Chloracne is not included to Russian list of occupational diseases. The size of employees pension is doesn't taken into account the dioxin exposure.
2. Up to now there are no careful descriptions of the dioxin exposure events. All the events have not been documented at all and have not been evaluated epidemiologically.
3. There are no efforts to launch the review of all existing records relating to the accidents in order to clarify issues of exposure and personnel and to find all exposed persons, although to define exactly who was exposed and to what degree is practically impossible now.
4. There are no medical activities concerning exposed persons (simple follow-up; morbidity, mortality and cancer statistics; death certificates; the rehabilitation of the known affected employees etc.).