DATA EVALUATION RECORD

(1) CHEMICAL: Trichlorfon

(2) TYPE OF FORMULATION: Unspecified

(3) CITATION: Bezuglyi, V.P., Odintsova, I.L., and Gorskaia, N.Z. 1973. Morphological composition of the blood in persons working with a complex of organochlorine and organophosphorus pesticides. Vrach. Delo 11:134-138

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(6) TOPIC: This study has information pertinent to discipline toxicology, topic human exposure. It relates to none of the Proposed Guidelines data requirements.

(7) CONCLUSION: Hematologic examinations were performed on 1,101 workers exposed to various organophosphorus and organochlorine pesticides, including trichlorfon. No pesticide exposure data were provided in the report. One could not form any conclusions on the hematologic toxicity of trichlorfon based upon this report, however, due to the mixed exposure and lack of exposure data. CORE CLASSIFICATION: Not applicable

(8) MATERIALS AND METHODS: This report dealt with the results of an investigation of the blood picture and general health of 1,101 people ("disinfectors", 515 persons who worked in the city and 586 who worked in the country). They handled pesticides occupationally for periods of less than 1 year to 15 years. The majority handled pesticides over a 5-15 year period. The group consisted of 70.3% (774) women and 29.7% (327) men. Their age ranged from 31 to 50.

The organophosphorus insecticides to which the workers were exposed most often were trichlormetaphos and chlorophos (trichlorfon). The organochlorine pesticides to which they were most frequently exposed were "hexachlorocyclohexa" and DDT. The amount of these pesticides to which these workers were exposed was not specified. It was stated, however, that sanitary-hygienic requirements were not always observed by the workers. The report did not specify how health effects data were gathered.

(9) REPORTED RESULTS: For 40.1% of the people working in the country and 70.1% of those working in the city, "poor endurance" including the following symptoms was reported: headache, nausea, dizziness, general weakness, sleeping problems, and nose bleeding. In 40.7% of the workers, vascular sensory polyneuritises or irritation of the "diencephile" area were observed. In 77.1% of the workers, cardiovascular system changes including myocardial dystrophy accompanied by coronary angiospasms were observed. In 28% of the disinfectors, gastroenteric diseases were observed. Chronic gastritis with secretory insufficiency was observed in 9.7% of the workers. In 40.7% of the workers, hepatic-biliary system changes were observed.

The following table describes some of the blood abnormalities observed in the two groups of workers.

Blood Abnormality	Percentage of Group With Abnormalities	
	City Group	Country Group
Decreased erythrocyte content	30.4	15.9
Decreased hemoglobin content	22.6	5.8
Increased erythrocyte content	4.4	0.47
Decreased bacillary-nuclear neutrophiles	66.0	53.1
Decreased segmental-nuclear neutrophiles	38.6	24.8
Decreased eosinophile content	76.3	65.7
Eosinophilia	10.9	7.8
Lymphopenia	20.3	19.6
Lymphocytosis	33.8	35.7
Decreased monocyte content	79.3	74.9
Monocytosis	5.6	3.7

Hypochromic anemia accompanied by a drop in hemoglobin content, color index, and erythrocyte content below 3.9 million/mm^3 was observed in 1/5 of these workers. A decreased leucocyte count (below 4,900) was observed in 23% of the workers.

The authors concluded that these results proved that organochlorine and organophosphorus pesticides cause unfavorable effects on the blood system. They suggested that regular medical checkups including blood tests as well

as improvements of working conditions should be provided for these workers.

(10) DISCUSSION: The main deficiency in this paper was that exposure levels of the various pesticides were not provided. More importantly, these workers were exposed to several pesticides, such that one could not assess the individual toxicity of any one of the involved exposures. Thus, although many hematologic effects were observed in these workers, it is impossible to assess the specific toxicity of trichlorfon due to lack of exposure data and mixed exposures.

(11) TECHNICAL REVIEW TIME: 6.0 hours