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DEPARTMENT OF THE AIR FORCE  
USAF SCHOOL OF AEROSPACE MEDICINE (AFSC)  
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21 Dec 79

Dr. Don Lamb  
Mobay Chemical Corporation  
P.O. Box 4912, Hawthorn Road  
Kansas City, MO 64120

Dear Dr Lamb

Please find attached our abstract of a proposed presentation to the 1980 Symposium on Avian and Mammalian Wildlife Toxicology, to be held in Louisville KY, March 1980. We would be pleased to submit a manuscript for publication in an ASTM Symposium Proceedings. For matters of correspondence please use the following address:

Dr. Alvin L. Young  
Epidemiology Division (SAM/EK)  
USAF School of Aerospace Medicine  
Brooks AFB TX 78235  
Phone: 512- 536-2127

Thank you for your consideration of our presentation for the 1980 Symposium.

Sincerely

*Al Young*

ALVIN L. YOUNG, Major, USAF, Ph.D.  
Consultant, Environmental Sciences

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Abstract

LONG-TERM FIELD STUDIES OF A RODENT POPULATION CONTINUOUSLY EXPOSED TO TCDD

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Sum. No. 2411

Field investigations were conducted during 1973-1978 on populations of the beach mouse, Peromyscus polionotus, from a unique 3.0 km<sup>2</sup> military test area (Test Area C-52A, Eglin AFB FL) that was sprayed with 73,000 kg 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) herbicide during the period 1962-1970. No residues of 2,4,5-T were detected at 10 parts per billion in any soil sample collected during 1971-1972. Residues of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) were still present in 1978. During 1974-1978, 54 soil samples were collected to a depth of 15 cm on the test area. TCDD levels ranged from <10 to 1,500 parts per trillion (ppt). The median concentration was 30 ppt while the mean was 164 ppt. Liver tissue from 36 individual beachmice inhabiting the test site contained 300 to 2,900 ppt TCDD. A close relationship between soil and liver levels of TCDD was observed, i.e., high liver levels of TCDD were consistent with high soil levels of TCDD. Whole body analysis of fetuses from test area females indicated apparent placental transport of TCDD. Histopathological examinations were performed on 255 adult or fetal beachmice from the test area and a control area. Examinations were performed on the heart, lungs, trachea, salivary glands, thymus, liver, kidneys, stomach, pancreas, adrenals, large and small intestine, spleen, genital organs, bone, bone marrow, skin and brain. Initially, the tissues were examined

bioconcentration factors, <sup>mean</sup> liver concentrations divided by mean soil concentrations, ranged from 6.1 to 18.4.

on a blind study basis. All microscopic changes were recorded including those interpreted as minor or insignificant. The tissues were then re-examined on a control versus test basis, which demonstrated that the test and control mice could not be distinguished histopathologically. The mean number of fetuses per observed pregnancy was 3.1 and 3.4 for the test area and a control area, respectively. A single female beachmouse is capable of producing litters every 26 days. At this frequency, the animals collected in 1978 may have been at least 50 generations removed from the population studied in 1973. A two-factor (treatment and year) disproportional analysis of covariance of organ weights revealed that liver weights for pregnant females were significantly heavier ( $P < .01$ ) between the control and test area beachmice, and these differences were consistent over the five years of observation. These studies suggest that long-term, low level exposure to TCDD under field conditions has had minimal effect upon the health and reproduction of the beach mouse.