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Item ID Number 03861

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Author

Corporate Author

Report/Article Title Memorandum: From Walter W. Melvin, Jr.,
Commander, USAF, and Gale D. Taylor, Chief
Veterinary Ecol/Toxicol Division, USAF, regarding
dioxin contamination in St. Louis, Missouri area

Journal/Book Title

Year 1974

Month/Day September 11

Color ☐

Number of Images 2

Description Notes

11 September 1974

MEMO FOR THE RECORD

1. The following information was provided by Mr. William F. Barthel, Chief, Toxicology Branch, Center for Disease Control, 1600 Clifton Road, N.E., Atlanta GA 30333 by telecon on 11 Sep 1974 (AC 404/633-3311, Ext. 5233/5234). In 1971, Mr. Barthel was an employee of the Food and Drug Administration when that administration was the manager of the present Center for Disease Control. This facility in the past was known as the Communicable Disease Center when it was managed by the U. S. Public Health Service.

2. Mr. Barthel provided a brief historical review of the dioxin-related health problem that CDC is investigating in the St. Louis, MO, area. He emphasized that this is not a new incident. The actual occurrence was in July-August 1971 but the facts concerning the etiology are just now emerging. In 1971 CDC was called to investigate an obscure illness in a young girl living near St. Louis. She was from a farm with a typical horse husbandry physical plant consisting of barns, stalls, a covered arena with bleachers, track, etc. The family had been getting ready for a show and had contracted to have the arena sprayed with about 2000 gallons of oil to suppress dust. The material sprayed was thought to be used motor oil. Shortly after spraying, many birds (unspecified species) were found dead around the arena and several horses became ill with about fifty eventually dying. Blood samples taken from the girl and affected horses were negative for all usual toxic materials including pesticides (economic poisons). Interestingly, several horses that became ill and died were housed in stalls near the arena but allegedly had never been in direct contact with the arena or any soil that had been sprayed with the oil. At this point the investigation had reached a dead end.

3. After about two years the Environmental Protection Agency assumed control of the laboratories. The soil samples remained "on the shelf" and no further work was done. Many of the personnel transferred to the Research Triangle Park NC.

4. Subsequently the Department of Health, Education, and Welfare assumed control of CDC. The soil samples were still "on the shelf." Mr. Barthel again began to wonder why so many horses had died some two years previously and all toxicological tests had been negative. He instructed a chemist to re-examine the soil samples using microsublimation techniques. This method resulted in the production of white crystals which on analysis proved to be phenols, 2,4,5-T, dioxins (TCDD) and other hydrocarbons.

5. Using this isolated material, Dr. Renate Kimbrough performed conventional "rabbit ear" tests for dioxins and other compounds. In this test 0.2 ml of the material is applied on the inner surface of the rabbit's ear daily for 30 days. The animal is then necropsied. In this study; however, one rabbit died after one day and the other two after three days. Necropsy revealed very severe liver damage as well as locally severe destructive changes at the site of application. Dr. Kimbrough stated that the liver damage was the most severe that she had ever seen.

6. CDC then obtained standards of TCDD (I am unsure at this point whether Mr. Barthel said 2,3,7,8-TCDD or 3,4,7,8-TCDD). Peaks from the soil samples exactly matched peaks from the standard.

7. Mr. Barthel stated that the concentration in the soil samples was of the order of 50 ppm of 3,4,7,8-TCDD. This compound is an isomeric TCDD but has not been adequately studied. (I questioned Mr. Barthel carefully on this point and he insisted that it was the 3,4,7,8 isomer rather than the more full studied 2,3,7,8 isomer. It is interesting to note that this Laboratory has only recently received and has not yet placed in operation a gas chromatograph-mass spectrometer which will permit positive identification of the isomers).

8. Mr. Barthel further stated that two plants in the St. Louis area had produced 2,4,5-T. One of these plants allegedly discharged its waste products into the Mississippi River.

9. Mr. Barthel said that he feels reasonably sure that the contaminated material came from a plant that was manufacturing 2,4,5-T for the "Army." In addition to 2,4,5-T the one plant produced hexachlorophene which, according to Mr. Barthel must be carefully "cleaned-up" and the production of high concentrations of TCDD is possible. This plant has a storage tank containing bottom sludge (residue) and samples of this material have been obtained for analysis.

10. He did not say why he came to this conclusion but he did admit that there was a possibility that the material might have come from a tank car company which is in the business of handling industrial wastes. Also there is a tank at the suspect plant which still contains some of the original material. CDC is attempting to get samples to match against their soil samples.

ADD:

Dr. Melvin carefully questioned Mr. Barthel about the identification of the dioxin involved and Mr. Barthel insisted that they were looking at 3,4,7,8-TCDD (by Gale D. Taylor, USAF, VMC, Ph.D.)

END OF NOTES

Walter W. Melvin, Jr.
WALTER W. MELVIN, JR., Colonel, USAF, MC
Commander

Gale D. Taylor
GALE D. TAYLOR, Lt Colonel, USAF, VC
Chief, Veterinary Ecol/Toxicol Div