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MONSANTO CHEMICAL COMPANY

Plastics Division
Springfield, Massachusetts

Arochlor In Air

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12-31-52




LOSS PREVENTION DEPARTMENT

MONS 061753

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## Arochlor In Air

This report will serve as a summary of a survey made on December 9 and 10, 1952, to collect air samples for Arochlor #1248, and to determine concentrations by laboratory analysis. This work was requested by Everett Graham, Safety Supervisor.

### Summary

Concentrations found by laboratory analysis show a range from 9.2 to 49.9 milligrams of Arochlor per 10 cubic meters of air. Our laboratory does not have available any reference to the toxicity of an Arochlor of 48% chlorine content. The only reference to Arochlor toxicity that we are able to locate is reported by Cecil Drinker et al and described in the Journal of "Industrial Hygiene and Toxicology"--Volume 20--Page 97--February, 1938. In his discussion Drinker states that--"Chlorinated Diphenyl appears to be the most injurious compound of all those tested." In his work Drinker used Chlorinated Diphenyl of 65% chlorine content.

### Discussion

The laboratory method of analysis is an indirect one, taken from a paper by Hikins et al --"The Journal of Industrial Hygiene and Toxicology"--Volume 19--Page 474. On known samples this method gives a recovery of chlorine within 10%.

### Description of Test Locations and Conditions

Sample #1--Building 11 E, basement, was chosen by Messrs. Parker, Hahn and Green as representing an average condition that would be encountered after application of the coating containing Arochlor #1248. The ceiling had been painted along with a short section of steam pipe on November 25th and finished on December 4, 1952. The room temperature was approximately 70 degrees F. The approximate dimensions of the area are 60 x 75 x 10 feet.

No manufacturing operations were in progress at the time of sampling. Natural ventilation was normal to natural building air currents in a semi-storage area.

Sample #2 — This sample was collected in the same area as sample #1, but in a corner of the room where there was a definite odor. The concentration found here anticipates the probable highest concentration, under the conditions of sampling, that users of the area might encounter.

Sample #3 — This sample was likewise collected in the same area as in the preceding samples. The selection place of sampling, 10" below the ceiling between heated pipes, was chosen to determine the approximate concentration that painters might encounter in applying the coating. The temperature here was approximately 38 degrees C.

Sample #3 — This sample was collected in the Research Building, Room 307, which is an equipment room. The ceiling alone had been painted a first coat two weeks prior to the sampling, and a second coat one week prior. The room temperature was 86 degrees F. The approximate room dimensions are 30 x 15 x 12 feet.

The room had been closed off, and the exhaust fan turned off along with the radiator heat one hour prior to sampling. The concentration found here, as described for samples #1 and #2, probably represents the average exposure that might be expected for the users of the areas after application of the coating.

Sample #4 — This sample was collected in the Research Building, and the location chosen (a closed laboratory hood of approximate dimension 3 x 5 x 5 feet) to simulate the highest possible concentration likely to be encountered. An example of this might be in the painting of service shafting for carrying electrical conduit, steam pipes etc. There was no ventilation removing air from the hood other than that derived from air flow drawn by the air sampling device. The walls of the hood were painted 24 hours prior to sampling. Three freshly painted plates were placed on a hot plate during the sampling period. These were painted 2 hours prior to sampling. The air temperature in the hood was 28 degrees c. The hot plate temperature was 80 to 90 degrees C.

Remark — During the collection of samples it was found necessary to add reagent to each of the samples at approximately five to ten minute intervals. Midget Impinger flasks were used, fitted with fritted bubblers. Each bubbler was calibrated for air flow using a wet flow meter. Rates are as follows:

A. For first sample collected

| (Liberty Mutual) | (Monsanto) |
|---|---|
| Flask #1 = .322 cu. ft./min. | Flask #2 = .178 cu. ft./min. |

B. For all remaining samples

| (Liberty Mutual) | (Monsanto) |
|---|---|
| Flask #1 = .310 cu. ft./min. | Flask #2 = .120 cu. ft./min. |

The reference above to Monsanto's samples refers to those collected parallel to Liberty Mutual samples and sent to Elmer Wheeler in St. Louis, at his request by Mr. Hahn.

12/31/52
SCB:gal

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DATA

Aroclor in Air

| Sample # | Length | Location of Sample | Concentration (mg. Chlorine) | Concentration (mg. Aroclor per 10 cu. m.) |
|---|---|---|---|---|
| 1 | 90 min. | Test location selected-basement of Bldg. 11 B. Breathing zone sample in normal area--essentially no odor. | .366 | 9.2 |
| 2 | 80 min. | As described in sample #1 except sample was collected "in area of definite odor." | .534 | 15.7 |
| 3 | 80 min. | Test location selected in Research Bldg., Room 307. Distinctly unpleasant odor. | .398 | 11.8 |
| 4 | 53 min. | Test location selected in closed laboratory hood in Room 309 of Research Bldg. Very bad odor in hood. | 1.113 | 49.9 |
| 5 | 60 min. | Same area as #2, but 10" below ceiling; also, between heated pipes. Odor definitely strong and objectionable. | .746 | 29.5 |

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