

UNIVERSITY OF CINCINNATI
DEPARTMENT OF PREVENTIVE MEDICINE AND INDUSTRIAL HEALTH

THE KETTERING LABORATORY
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CINCINNATI 19, OHIO

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September 7, 1956

Mr. Elmer P. Wheeler
Industrial Hygienist
Monsanto Chemical Co.
1700 S. Second Street
St. Louis 4, Missouri

Dear Mr. Wheeler:

We have generated a saturated atmosphere of Pydraul F-150 by means of the equipment in the enclosed photograph.

Air from a Gast Rotary Blast and Suction pump (A) at the rate of 10 liters per minute as measured by a rotameter (B) passed through either one or two bubblers (C and D) each containing 500 ml of Pydraul F-150. (The bubblers were 9.75" high (O.D.) and 2.9" in diameter O.D., the air entered the bubbler through a fritted glass thimble, 7/8" x 3 3/4.) The air-borne Pydraul F-150 was passed through an impinger bottle (E) and then through a Millipore filter (F) before entering a glass tube (G) on which was surmounted a thermometer. (The room temperature was maintained at either 72° or 80°F by means of an air-conditioning unit.) Nine liters of the sample were discharged into the room through an upright tube above H. Air at the rate of one liter per minute was drawn from a sampling port (H) and passed through a furnace (J) (maintained at 850°-900°C and equipped with a platinum strip). The furnace was humidified by means of a wet wick at I. The thermally decomposed Aroclor was collected in two midjet bubblers (K) in series. (The bubblers each contained 10 ml of 0.1 N NaOH and were equipped with fritted glass thimbles.) A drying tower (L) preceded a capillary flowmeter (M) and the sampling pump (N).

The thermally decomposed chloride was determined turbidimetrically as given in my memo of July 7, 1956, except ^{we} were able to eliminate the step for the removal of phosphate, since the phosphate did not interfere because it was soluble in nitric acid.

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The results obtained were as follows in one study (No. 1) which included 24 samples (48 analyses) each of which was collected for 15 minutes.

<u>Number of Bubblers for Generation of Vapor</u>	<u>Temperature (°F)</u>	<u>Average of six samples; micrograms of Aroclor 1242/ liter</u>
1	72	4.8
2	72	6.1
1	80	5.2
2	80	6.5

These samples are undoubtedly high, since it was found after their analyses that a small crack was present in the Millipore filter.

The results of a second study on a similar number of samples (15 minutes for collection) were as follows:

<u>Number of Bubblers for Generation of Vapor</u>	<u>Temperature (°F)</u>	<u>Average of six samples; micrograms of Aroclor 1242/ liter</u>
1	72	3.5
2	72	1.9
1	80	2.5
2	80	2.7
Ave. of }		2.65
Ave.		

A few samples in a third experiment were collected for a period of one hour, these results were as follows:

<u>Number of Bubblers for Generation of Vapor</u>	<u>Temperature (°F)</u>	<u>Number of Samples</u>	<u>Average Micrograms of Aroclor 1242/ liter</u>
1	72	2	0.95
2	72	2	2.25
1	80	1	1.1
2	80	1	1.9
Ave. of Ave.			1.55

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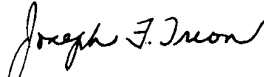
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At 745 mm and 25°C one microgram of Aroclor 1242 vapor is equivalent to 0.0969 ppm by volume (1 mg/l = 96.9 ppm). Therefore $2.65 \gamma/l = 0.256$ ppm and $1.55 \gamma/l = 0.150$ ppm. Although there are fewer samples in this latter determination, I am inclined to believe it is probably the best value.

Because of the number of samples and the deviation in them it is doubted that the difference between 1 and 2 bubblers on the one hand and between 72° and 80°F on the other hand can be statistically differentiated without many more samples.

We shall proceed with the determination of the threshold odor concentration and effectiveness for removal of Pydraul F-150 by passage through MEA very shortly.

Sincerely yours,


Joseph F. Treon

JFT:fk

cc: Mr. Elmer Wheeler
(Washington, D.C.)

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