September 7, 1956

AIR-MAIL

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

Dear Elmer:

I am enclosing two letters for your consideration in relation to the concentration of Aroclor 1242 in air that is saturated with Pydraul F-150. The one letter contains results obtained in three phases of this study whereas the other contains only the results obtained in the latter 2 phases. We believe the results obtained in each successive phase are more nearly exact. We believe that there may have been a slight crack in the Millipore filter paper while samples were being obtained during the first phase, thus giving results a little high. This was not the case in the second or third studies. The few samples obtained during the third study are believed better (and to be fairly accurate) than those determined during the second since they were sampled for one hour rather than 15 minutes resulting in a quantity of chloride that was on the center of the analytical curve.

We doubt that with the sensitivity of the method and the number of samples taken that a significant distinction can be made between (1)one and two bubblers of Pydraul F-150 for generating the atmosphere and (2)that an increase in concentration would be obtained by bubbling the air through a third bubbler containing Pydraul F-150. Such statistical distinction could be obtained if sufficient samples were collected. The number of samples required could be statistically ascertained, however, this would be a rather large number of samples. For example, it would require between 50 and 100 samples to ascertain a statistical difference of one microgram per liter on data with deviations like that obtained in the first phase. (Each sample requires two analyses, ie, one for each of the two absorption towers collecting the thermally decomposed Aroclor 1242.) Since our deviation has

DSW 018543

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decreased in the second and third phases this figure would probably be reduced a little for data such as we have obtained most recently.

Sincerely yours,

Joseph F. Treon

JFT:fk

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

P.S. I have sent a photo with the original letter to St. Louis; also I have enclosed a photo with the copy of the letter to Washington. Since I am very low on these pictures will you keep one and return the other.

STLCOPCB4005088

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 Cast 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 midget 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 interefere because it was soluble in nitric acid.

DSW 018545

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Mr. Elmer P. Wheeler
September 7, 1956

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

Number of Bubblers for Generation of Vapor	Temperature (°F)	Average of six samples; micrograms of Aroclor 1242/ liter
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:

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

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

Number of Bubblers for Generation of Vapor	Temperature (°F)	Number of Samples	Average Micrograms of Aroclor 1242/ liter
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

Treun fees [illegible] ← Data best. Data falls on Better part of Curve

DSW 018546

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 γ/l = 0.256 ppm and 1.55 γ/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 MLA very shortly.

Sincerely yours,

Joseph F. Treon

JFT:fk

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

DSW 018547

STLCOPCB4005091

UNIVERSITY OF CINCINNATI
DEPARTMENT OF PREVENTIVE MEDICINE AND INDUSTRIAL HEALTH

THE KETTERING LABORATORY
COLLEGE OF MEDICINE—EDEN AVENUE
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CABLE ADDRESS: KETLAB, CINCINNATI
TELEPHONE: CAPITOL 1414

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 midget 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 interefere because it was soluble in nitric acid.

DSW 018548

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

Number of Bubblers for Generation of Vapor	Temperature (°F)	Average of six samples; micrograms of Aroclor 1242/ liter
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.

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

Number of Bubblers for Generation of Vapor	Temperature (°F)	Number of Samples	Average Micrograms of Aroclor 1242/ liter
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

DSW 018549

STLCOPCB4005093

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 γ/l = 0.256 ppm and 1.55 γ/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

Joseph F. Treon

JFT:fk

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

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