

Dr. John F. Finklea, Director
National Institute for Occupational Safety & Health
5600 Fishers Lane
Rockville, Maryland 20852

Dear Dr. Finklea:

This letter is in response to your request for information regarding Diamond Shamrock Corporation's experience with 2,3,7,8-tetrachlorodibenzo-p-dioxin. As you know, this chemical was an undesired contaminant of certain agricultural products manufactured by Diamond Shamrock Corporation.

During 1951, Diamond Shamrock began producing agricultural chemicals at an acquired plant in Newark, New Jersey. Manufacture of 2,4,5 trichlorophenol and related products continued until 1969 when Diamond Shamrock sold the Newark facility. The purchaser of this installation, Chemicaland Corporation, continued the manufacture of 2,4 - D after acquisition.

During the period of 1964 through shut-down in 1969, there was an average of 75 employees at this plant. From approximately 1955 through 1969 a total of 353 individuals worked at the Newark plant. At the time of the survey of this plant by the U.S. Public Health Service et al there were 78 employees on site. Of this number 27 were directly exposed (i.e. working in maintenance of TCP production). Based upon total employees, approximately 120 people were exposed to TCDD during the last fourteen years of production at the Newark Plant. At the time of the study, in 1969, the following age groups were found:

	<u>Male</u>	<u>Female</u>	<u>Total</u>
20-25	7	1	8
26-30	11		11
31-35	9		9
36-40	8	3	11
41-45	9		9
46-50	10	1	11
51-55	9		9
56-60	7		7
61-65	1		1
			<u>76</u> (excluding two part time employees)

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The following chart indicates duration of employment at the Newark Plant for those individuals working in the TCP and maintenance areas. We are not able to ascertain the length of employment in the specific job, merely gross tenure with the company.

<u>Length of Employment</u>	<u>Number of Employees</u>
Less than 2 years	7
2 - 5 years	4
5 - 10 years	2
10 - 15 years	4
More than 15 years*	<u>10</u>
	27

This chart represents those workers with potential significant exposure. Elapsed time from shutdown of the facility to date (i.e. eight years) would indicate that most overt physical manifestations should have appeared. This is born out by the fact that the number of individuals undergoing treatment for chloracne has diminished from eighty five in 1966 to six in 1977.

During the early 1960's research groups began to isolate the various causative agents of chloracne and related manifestations. Dow Chemical Company isolated, and identified 2,3,7,8-tetrachlorodibenzo-p-dioxin as the causative agent of chloracne in TCP production. At this time, the first analysis of Diamond Shamrock's product was carried out indicating the following:

<u>Sample</u>	<u>Dioxin concentration, ppm</u>
TCP Solution, 40%	25 - 40
TCP Solution, 40% (distilled and filtered)	0
Recovered Trichloroanisole	73
Recovered Methanol	0
"T" Acid (7 lots)	Less than 10 to 40

* Most employees in this group acquired with purchase of plant.

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After in depth investigation, Diamond Shamrock installed a carbon adsorption column to remove p-dioxin from the TCP. Before this equipment was operational, samples of TPC were found with p-dioxin levels (on a 100% TCP basis) as high as 140 ppm. After the equipment was operational, p-dioxin remained under 3.2 ppm. Significant exposure was, therefore, greatly curtailed by 1967.

We have no data on specific levels of personnel exposure to p-dioxin at the Newark Plant.

The herbicides produced at Diamond Shamrock's Newark facility were sold under private label and in bulk. To the best of my knowledge, we never received any information pertaining to adverse effects to customers or their employees from exposure to our products.

Following are the amounts of trichlorophenol produced annually at the Newark Plant: (in pounds)

1951 not available	1961	1,206,222
1952 342,132	1962	1,301,754
1953 305,868	1963	1,472,813
1954 244,704	1964	1,343,877
1955 526,488	1965	685,427
1956 508,032	1966	678,674
1957 747,612	1967	1,456,692
1958 762,492	1968	2,864,487
1959 912,840	1969	not available
1960 564,972		

The physician treating Diamond Shamrock employees showing adverse reactions to p-dioxin exposure was Dr. Bliberg, now deceased. Currently treatment is being continued by Dr. Roger Bradkin, Center for Dermatology, in West Orange, New Jersey. Diamond Shamrock Corporation, in an effort to assist

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you in ascertaining the potential hazards relating to dioxin exposure, expressly gives you license and authority to receive and use any and all medical records now in the possession of Dr. Bradkin pertaining to occupational exposure to p-dioxin of Diamond Shamrock Corporation employees, or former employees, provided you obtain from each such employee prior express written agreement to such inspection.

The Division of Pesticide Chemistry and Toxicology, F.D.A., Public Health Service, under the special direction of Dr. Alan P. Poland, in 1969 conducted a health survey of 73 of Diamond's workers in Newark and I enclose the reprint of the findings as published in the Archives of Environmental Health Vol. 22, March 1971.

In early 1975, the former plant manager of the Newark plant was contacted by Mr. Frank Marshall, Department of Health for the State of New Jersey (P.O.B. 1540, Trenton, N.J. 08625). Mr. Marshall indicated that he desired to institute a supplemental study of those Diamond Shamrock employees in the 1969 U.S. P.H.S. Survey. The initial phase of this study is intended to gather current health data on all locatable subjects of the prior study. I assume this procedure has been commenced, although Diamond Shamrock has not since been contacted by the New Jersey officials.

If we may be of additional assistance, please let me know.

Sincerely,

DIAMOND SHAMROCK CORPORATION

R. W. McBurney, M.D.
Vice President and
Corporate Medical Director

4/22/77

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