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Attorneys for Defendant
Diamond Shamrock Chemicals Co.

IRONBOUND HEALTH RIGHTS :
ADVISORY COMMISSION, et al., :
Plaintiffs, :

v. :

DIAMOND SHAMROCK CHEMICALS CO., :
et al., :
Defendants. :

JOHN BRENNAN, et al., :
Plaintiffs, :

v. :

DIAMOND SHAMROCK CHEMICALS CO., :
et al., :
Defendants. :

: SUPERIOR COURT OF NEW JERSEY
: LAW DIVISION: ESSEX COUNTY
: DOCKET NO. L-10358-86 and
: L-045269-85

: Civil Action

: SUPPLEMENTAL ANSWERS
: TO INTERROGATORIES

TO: GORDON, GORDON & HALEY
80 Main Street
West Orange, New Jersey 07052
Attorneys for Plaintiffs

The following are the more specific answers of Defendant
Diamond Shamrock Chemicals Co. to Plaintiffs' Interrogatories
pursuant to the order of the Honorable Leo Yanoff:

Interrogatory No. 16

Yes.

Interrogatory No. 17

Diamond Alkali Company ("Diamond") employed procedures for the inspection of the equipment used at its 80 Lister Avenue, Newark, New Jersey production facility ("80 Lister Avenue") for the production and storage of 2,4,5-trichlorophenol ("TCP") and 2,4,5-trichlorophenoxyacetic acid ("2,4,5-T") from its acquisition of 80 Lister Avenue in 1951 to the termination of production by the end of 1969.

An annual maintenance shutdown was conducted during which the maintenance department inspected the storage tanks and reaction vessels, as well as other process equipment. The inspections conducted by the maintenance department at the annual maintenance shutdown were in addition to the continuous program of inspection and maintenance conducted by the maintenance department. In addition to the duties of the maintenance department, the foremen of the TCP and 2,4,5-T units were instructed to conduct periodic equipment inspections. All workers in the TCP and 2,4,5-T units were instructed to observe and report immediately any leaks to the foreman.

In addition to the inspections conducted by employees of Diamond, bimonthly inspections were conducted by the Aetna Casualty & Surety Company and annual inspections of the TCP and

2,4,5-T reaction vessels were conducted by the Lumbermens Mutual Casualty Company at the annual maintenance shutdown. The supervisor of the maintenance department from 1952 to 1969 was Homer Smith. Descriptions of the activities of the maintenance department during the annual maintenance shutdowns are contained in DS00000898 to DS0001299 and DS00023991 to DS00024199 which are Operating Comments from August 1963 to December 1968. Descriptions of the instructions to foremen to conduct inspections of equipment and to workers to conduct continuous inspections of equipment are contained in the operating instructions specified in response to Interrogatory No. 11.

Interrogatory No. 18

Homer Smith received a bachelor's degree in mechanical engineering from the Newark College of Engineering of Newark, New Jersey in 1943. His experience as an engineer prior to his employment by Diamond included work as an engineering officer on passenger and freighter ships and as assistant superintendent at a compressed gas manufacturing company located in Harrison, New Jersey.

The qualifications, training and experience of the foremen and production workers of Diamond involved in the inspection procedures described in response to Interrogatory No. 17 would have included that received through their employment by

Diamond and other industrial employers and through any vocational or technical training which they may have received. The qualifications, training and experience of the persons conducting inspections on behalf of Aetna Casualty & Surety Company and Lumbermens Mutual Casualty Company are not within the present knowledge of Diamond.

Interrogatory No. 19

Not applicable.

Interrogatory No. 46

As to whether Diamond contends that any health effect alleged by plaintiffs could have been caused by a substance located at 80 Lister Avenue other than 2,3,7,8-tetrachlorodibenzo p-dioxin ("TCDD"), Diamond responds as follows: Hexachlorobenzene, which was manufactured at 80 Lister Avenue during the 1950's, has been related to porphyria cutanea tarda.

Interrogatories No. 48 and 49

As to whether Diamond had any method by which it kept informed of developments in scientific and technical knowledge during the period it operated 80 Lister Avenue, Diamond responds as follows: During the period from 1951 to 1969, Diamond maintained a staff of scientific researchers assigned to a central

laboratory and to individual plants, including 80 Lister Avenue. These researchers kept informed of developments in scientific and technical knowledge by various methods of literature review, independent research and interaction with professional colleagues.

Interrogatory No. 52

Diamond identifies the following informal complaint alleging harm arising out of the operation of 80 Lister Avenue: DS 00030760 to DS 00030762 which is a letter received by Diamond on September 7, 1977 from Kurt Shaffert, a former chemical engineer at 80 Lister Avenue inquiring as to a relationship between his daughter's birth defect and his employment. In addition, Diamond supplements its previous response to this interrogatory by identifying the following actions:

Conrail v. Diamond Shamrock Chemicals Co.;

Hildemann Industries v. Diamond Shamrock Chemicals Co.;

Marques v. Diamond Shamrock Chemicals Co.;and

Morrissey v. Diamond Shamrock Chemicals Co.

Interrogatory No. 54

Diamond did not submit information to the Department of Environmental Protection under N.J.S.A. 58:10-23.11d. Diamond notes that it ceased operation of 80 Lister Avenue eight years prior to the effective date of this statute.

Interrogatory No. 56

Diamond did not notify the New Jersey Department of Environmental Protection of any discharge during its operation of 80 Lister Avenue pursuant to N.J.A.C. 7:1E-2.1(b). Diamond notes that its operation of 80 Lister Avenue ceased in 1969 and that N.J.A.C. 7:1E-2.1(b) was not adopted until March 31, 1977.

Interrogatories No. 57 and 58

The records and information available to Diamond do not indicate that Diamond conducted or had conducted tests with respect to the specified materials other than evaluations of chloracne producing potential previously mentioned in response to these interrogatories.

Interrogatories No. 91 and 92

No present employee has personal knowledge of the subject of Interrogatory No. 91. Diamond maintained strict operating procedures and housekeeping measures with respect to the production of TCP and 2,4,5-T. These procedures and measures were designed to minimize the exposure of its employees to the chemicals contained within the process stream. These procedures and measures are described in response to Interrogatory No. 104.

The foremen of the TCP and 2,4,5-T units were directly

responsible for enforcing these procedures and measures. Plant managers had overall responsibility for safety at 80 Lister Avenue. Martin Heisele was safety officer of 80 Lister Avenue during his employment there.

Documents relating to the operating procedures and housekeeping measures with respect to the production of TCP and 2,4,5-T are identified in response to Interrogatory No. 11. See the response to Interrogatory No. 104 with respect to health and hazard control measures.

Interrogatory No. 93

The following Diamond employees filed New Jersey Department of Labor incident reports with respect to various dermatological conditions including chloracne experienced while employed at 80 Lister Avenue:

10/3/52 Sheldon Lamoreaux D 59859
10/3/52 Joseph Hosey D 59841
10/8/52 Anthony Stravino D 59853
10/9/52 James C. Granahan D 59846
4/29/53 Nicholas Centanni D 59831
5/13/53 Salvatore Falcone D 59852
5/26/53 Albert S. Dearing D59815
10/7/53 Joseph Boba D 59827
11/5/53 Russell Lamoreaux D 59858
11/20/53 Anthony LaRusso D59862
12/15/53 Albert S. Dearing D 59816
6/14/54 Anthony LaRusso D 59863
10/5/54 Dale Renner D 59888
1/6/55 Joseph (Illegible) D 59840
2/24/55 Dale Renner D 59889
6/33/60 John Golda D 59848
8/31/61 George P. Carroll

9/61 Dennis Brydon D 59820
9/28/61 William Macklin D 59865
2/28/62 Angelo DeGregorio D 59821
4/17/62 Illegible D 258012
5/25/62 name unknown D 258024
5/29/62 James J. Burke D 59842
5/29/62 Sheldon Lamoreaux D 59860
5/29/62 James J. Tanzola D 59834
5/29/62 Robert Shuttleworth D 59875
5/29/62 John Wright D 59884
5/29/62 name unknown D 258029
6/26/62 Patrick Ward D 59835
7/31/62 John Wolf D 59883
7/31/62 name unknown D 60230
7/31/62 name unknown D 60232
8/20/62 name unknown D 258015
8/20/62 name unknown D 258018
8/21/62 name unknown D 258018
8/30/62 Frank Babrowicz D 59826
11/5/62 John Wright D 59885
11/5/62 Nicholas Lucanegro D 59864
11/5/62 name unknown D 258011
11/5/62 name unknown D 258007
11/15/62 Michael Pavelchak D 59870
11/28/62 name unknown D 258006
11/28/62 name unknown D 60216
1/24/63 Griffin Baisley D 59939
7/8/63 name unknown D 60212
9/17/63 name unknown D 257992
10/24/63 name unknown D 60211
11/6/63 George Winchcabbich D 59882
11/6/63 William A. Goodloe D 59894
11/6/63 name unknown D 60207
11/8/63 Arthur Scureman D 59837
date unknown Walter Blair D 59838
3/13/64 John Patrick Lynch D 59866
4/15/64 Bernard Kahlau D 59854
1/15/65 Walter Lamoreaux D 59861
3/11/65 Robert Ross D 59871
1/5/67 James J. Tanzola D 59833
7/11/67 Michael Kalena D 59855
10/18/68 Charles Morrissey D 59867
10/24/68 James Ware D 59880

Interrogatory No. 96

At least as early as 1952, Diamond's employees were aware that the chloracne experienced at 80 Lister Avenue was associated with their employment. At least as early as 1954, Diamond's employees at 80 Lister Avenue were aware that the chloracne experienced at 80 Lister Avenue was specifically associated with the operation of the TCP unit. At least as early as 1955, Diamond's employees were aware that contact with materials processed within the TCP and 2,4,5-T unit should be avoided to reduce the risk of chloracne. At least as early as 1962, Diamond's employees were aware that some persons suspected that the chloracnegen was associated with liver anomalies.

Interrogatory No. 104

During its operation of 80 Lister Avenue, Diamond employed various methods to protect its employees operating the TCP and 2,4,5-T units. These methods related to the design of the process equipment, the construction of the facilities housing the process equipment, efforts to improve upon various chemical processes, the provision of protective materials, hygienic facilities and outside medical examinations and care, the establishment of operating, maintenance and inspection procedures and the participation in evaluations of 80 Lister Avenue and the health of the workers employed there conducted by government

experts, together with the concomitant scientific research and inquiry necessary to implement these methods.

When Diamond acquired 80 Lister Avenue, it made improvements to the facilities to improve housekeeping. These improvements were standard for chemical manufacturing facilities.

After the 1955 chloracne outbreak, Diamond conducted its own research and consulted with other manufacturers in an effort to determine the actual substance or substances which were causing the chloracne, how to protect production employees from the chloracnegen, how to control the formation of the chloracnegen and how to treat employees with chloracne. In addition, Diamond took immediate steps to improve housekeeping and operating and hygienic practices.

Diamond installed improved ventilation in the production facilities and renovated the floors to facilitate cleaning and to improve housekeeping. Employees were informed of the necessity to be scrupulously careful to avoid contact with material within the process stream. TCP workers were issued fresh uniforms daily and were afforded an opportunity for a daily shower at 80 Lister Avenue on company time. In the event of accidental contact with process material, employees were instructed to immediately wash the area of contact for an extended period of time. Employees were issued protective creams and gloves in an effort to protect them from the then unknown chloracnegen.

Employees were instructed to conduct a daily cleaning of the area containing the process equipment to avoid the accumulation of chloracnogens. Employees were instructed to report all leaks and spills regardless of how small and to clean them completely thereafter.

Diamond also protected its 80 Lister Avenue employees by the maintenance procedures described in response to Interrogatory No. 17

As part of its research of the chloracne situation, Diamond met with Dow Chemical Company ("Dow") on July 20, 1955. Dow informed Diamond that, in their experience, none of the raw materials, intermediates or finished products at 80 Lister Avenue could cause chloracne. Among other things, Dow recommended that temporary protection could be afforded by protective creams and that a hygiene program of daily showering and of daily work clothes changes should be adopted. As noted above, these practices were implemented by Diamond.

Dow informed Diamond that no internal organ damage occurred in any of their chloracne cases. Dow's medical director was not able to provide Diamond with a definitive treatment for chloracne, except to advise that expressing the pimples and comedones might avoid the formation of larger cysts.

Dow suggested that an impurity in the raw materials, intermediates, or finished products in the form of a chlorinated

diphenyl ether might be the cause of chloracne. Dow recommended a research methodology involving testing the ears of rabbits with samples from the plant to identify the unknown chloracnegen.

Following its meeting with Dow, Diamond examined its 2,4,5-T for the presence of chlorinated diphenyl ether. Under ultraviolet analysis, no evidence of chlorinated diphenyl ether was found. Diamond concluded that it could be present, but only in small undetectable amounts.

Diamond engaged Industrial Toxicology Laboratories and later the Industrial Hygiene Foundation of America, Inc. (the "Industrial Hygiene Foundation"), a part of the Mellon Institute, to conduct rabbit ear tests on samples taken from various parts of the plant and the TCP/2,4,5-T process stream in accordance with the suggested Dow methodology. These rabbit ear tests represented the best available method to test for the presence of the then unknown chloracnegen. By September of 1955, the early results of these studies indicated that a lower temperature in the TCP autoclave reduced, but did not eliminate, formation of the chloracnegen. Diamond implemented these findings by setting a maximum TCP autoclave temperature of 170 degrees C.

In November of 1955, Diamond adopted a method of storing 2,4,5-T on dollies to replace the prior method of using drums. This method was adopted to increase plant efficiency and to reduce the amount of 2,4,5-T lost during transfer to drums.

By May of 1956, the rabbit ear tests conducted by Diamond and the Industrial Hygiene Foundation led Diamond to suspect that the former dilution-filtration purification process resulted in a product with fewer chloracnogens than the existing steam stripping purification process. In August of 1956, a draft appropriation request to Diamond headquarters for the installation of dilution-filtration purification equipment was prepared.

Rabbit ear test results from June of 1956 contradict the initial results which had suggested the superiority of the dilution-filtration purification process. These test results indicate that both methods of purification resulted in a product with equal chloracnegenic properties. Test results from July of 1957 conducted on samples from the same batch of TCP purified by the two methods confirmed the findings of the June, 1956 test. Diamond concluded that a process of purification by a continuous low temperature steam stripper was the most promising method of chloracnegen control during the purification process.

By October of 1958, a pilot continuous steam stripper had been constructed. Efforts to operate this pilot plant were unsuccessful because of difficulty in preventing the solids in the product from settling to the bottom of the device or, under agitation, from clogging the device. Because maintaining the proper flow was essential to avoid contamination, the continuous steam stripper was eventually determined to be inferior to the existing steam stripping process.

In 1957, Diamond was informed by C. H. Boehringer Sohn ("Boehringer"), a German chemical company, of a method for the production of TCP which, Boehringer claimed, avoided the formation of the chloracnegen. Diamond attempted to test Boehringer's contentions at 80 Lister Avenue. In 1959, Diamond was informed by Boehringer that the reaction by which TCP was formed presented a danger of chloracnegen formation above 170 degrees C. and that steam distillation should not exceed 110 degrees C.

Following the 1960 explosion in the TCP process building, Diamond redesigned the TCP reaction process and installed improved process equipment and facilities and hygiene facilities. Locker and shower facilities were constructed so that employees leaving the production facilities were required to pass from a "dirty" locker room, where they would change out of the uniform which had been provided them at the commencement of their shift, and pass through a shower room on their way to the "clean" locker room where they would put on their street clothes. Production employees were instructed to change out of street clothes and into a freshly laundered uniform provided daily by Diamond prior to entering the production area. Employees were instructed to take 15 minutes of company time to thoroughly shower at the close of each shift. Supervisors were instructed to enforce these rules. Employees were informed that these hygienic practices were required to reduce the risk of chloracne.

The process reaction for the production of TCP was changed following the explosion. In the previous process, all the reactants were charged to the TCP autoclave before heating and the initiation of the reaction process. Diamond's scientists developed a process by which a caustic-methanol mixture was fed gradually into an autoclave already containing molten tetrachlorobenzene ("TCB"). Diamond's scientists hypothesized a series of reactions by which 2,3,7,8 tetrachlorodibenzo-p-dioxin ("TCDD") was created from dimethyl ether, a possible side product of TCP production. Diamond's scientists concluded that the smaller proportions of caustic to TCB presented by the new process would discourage the production of dimethyl ether and that the temperature of the reaction could be increased once the TCB was exhausted in the initial part of the reaction. This process was patented. One of the claims made for the invention was that it inhibited the formation of TCDD.

After Diamond had developed this process, it was informed by Boehringer that this was essentially the same method they had used successfully over many years. However, Boehringer noted that the exothermic reactions in their autoclaves generally did not exceed 150-153 degrees C. While no maximum autoclave temperature was prescribed by Boehringer, it stated that the TCP should not be permitted to exceed 115 degrees C. during steam stripping. In September of 1966, Boehringer objected to Diamond's

German patent application with respect to the new TCP process on the grounds that the invention was based on information supplied by Boehringer in 1960.

The new TCP building incorporated improved equipment and facilities. The TCP autoclaves were installed within one foot thick reinforced concrete explosion cells open at the top and on one side. The autoclave was equipped with audible and visual alarms to warn of excessive pressure, as well as other alarms and safety devices. The new process building was constructed with one wall louvered top and bottom for continuous natural ventilation. Ventilation was supplemented by three roof fans. The floor was installed with a drainage system to collect any spills of material. The process equipment was enclosed.

From 1952, Diamond's employees were treated for various dermatological conditions including chloracne by a number of physicians, including Dr. Jacob Bleiberg ("Bleiberg"). By 1956, Diamond had consulted with Bleiberg, a dermatologist, with respect to proper hygienic practices and with respect to protective measures. When a Diamond employee exhibited symptoms of chloracne, Bleiberg or Dr. Roger H. Brodtkin, also a dermatologist, would examine the employee and prescribe or conduct the treatment deemed necessary by that physician.

In 1962 Diamond again sought assistance from outside sources to identify the source of the chloracnegen within the

some liver anomaly. In March of 1963, Birmingham conducted a inspection of 80 Lister Avenue and, with Bleiberg, Brodtkin, and Drs. Irving L. Applebaum ("Applebaum") and Marcus M. Key ("Key"), conducted physical examinations of 17 Diamond employees with chloracne. In his report, Birmingham commended Diamond's hygiene program and Diamond's pending renovation of the 2,4,5-T process building. Birmingham recommended, in addition to the completion of the renovation, that a urinalysis of all production employees be conducted and that the employees with severe chloracne be hospitalized to investigate the possibility of liver damage and, in particular, of porphyria cutanea tarda.

Diamond authorized Bleiberg and Applebaum to conduct hospital testing of two employees. Following the evaluation of biopsy results from the two employees hospitalized, Bleiberg informed Diamond that further liver biopsies would be unnecessary and that the urinalysis of employees for porphyrins would be adequate. Diamond conducted the urinalysis of all production employees recommended by Birmingham and Bleiberg. Diamond authorized Bleiberg, Brodtkin and Applebaum to publish their findings in an academic journal. This report appeared in the June, 1964 edition of Archives of Dermatology.

In July of 1963, Birmingham reinspected 80 Lister Avenue with a representative of the New Jersey Department of Health. They informed Diamond that they were very favorably

impressed with the sanitation and the facilities of 80 Lister Avenue and with Diamond's renovation of the 2,4,5-T process building. Birmingham informed Diamond that the renovation would go a long way in remedying the chloracne problem. These renovations included the installation of a new roof and the renovation of walls, a new floor, new reactors, and a new ventilation system with a new caustic scrubber. By December of 1963, the renovation of the 2,4,5-T process building was complete.

In August of 1964, a member of the Research Division of the Aetna Engineering Department conducted further air sampling at 80 Lister Avenue. These samples revealed the presence of chlorides in the air. However, Aetna was unable to reach any conclusion as to the source of the chlorides. Further testing of the samples collected by Aetna indicated they contained no organics.

Dow invited Diamond and other herbicide manufacturers to attend a meeting on March 24, 1965 in Midland, Michigan to discuss impurities in TCP and related materials. At the meeting, Dow announced that their research had disclosed that the principal but not sole cause of chloracne was TCDD. Dow announced that thorough clinical tests and physical examinations of individuals with chloracne had disclosed no impairment of any body function, including the liver. No abnormal porphyrin levels were detected. Dow's physician responsible for the treatment of patients with

chloracne stated that he had been treating the symptoms by comedone removal and by the administration of vitamins.

Dow provided the participants of the meeting with an analytical method of detecting TCDD using gas-liquid chromatography. Dow refused to discuss manufacturing techniques.

By the end of April of 1965, Diamond had confirmed Dow's chromatograph curves for the evaluation of the TCDD content in 2,4,5-T. In May of 1965, Diamond began development work on a method for filtering TCDD from TCP. By July of 1965, Diamond had successfully filtered TCDD from a diluted TCP solution in the laboratory. Analysis of TCP process streams for the presence of TCDD was conducted.

By March of 1966, laboratory studies of dilution levels necessary to remove TCDD by filtration had been completed. Dilution to 10% TCP concentration was necessary for removal of TCDD to a level of less than 1 ppm in the filtrate.

In May of 1966, an initial plant test of the filtration TCP purification system was unsuccessful. In July of 1966, a second plant test was successful, but a third test was less successful. Although substantially all detectable TCDD was removed, the filter plugged after a short time. Diamond conducted further developmental work on the problem on implementing the system on a operational basis.

In October of 1966, further tests of the filtration purification system were unsuccessful due to plugging. By November of 1966, while continuing work on the filtration purification system, Diamond began research on the use of activated carbon to remove TCDD from TCP by adsorption. By December of 1966, laboratory tests of activated carbon achieved removal of TCDD from TCP to a level of less than 1 ppm.

By January of 1967, Diamond concluded that the use of a filter system for TCP purification presented two principal obstacles: the tendency of the filters to plug with an unknown material and the tendency of the filters to lose effectiveness over time, resulting in an increase in downstream TCDD concentration. Diamond continued testing of purification by filtration through the use of a series of filters. Continued testing of activated carbon yielded promising results.

In February of 1967, tests were conducted to determine the necessary residence time of the TCP within the powdered carbon to maximize TCDD removal and to determine the proper TCP/carbon ratio. By the end of February, Diamond determined that a residence time of 30 seconds was necessary to accomplish all possible adsorption. In March of 1967, continued work on the filter purification system failed to achieve any solutions. Diamond concluded that its previous test results with carbon powder did not yield valid information on the adsorbency of carbon

because of the propensity of carbon in a powdered form to act as a filter. Diamond determined that testing of granular carbon was necessary.

By April of 1967 a glass cartridge filter body had been built to conduct further tests of filter purification. In May of 1967, tests of filter purification continued to be unsatisfactory. In April and May of 1967, tests were conducted on the regeneration of a pilot 2 inch diameter carbon tower with steam to remove plugging. In light of the problems with the filtration system, Diamond began investigating the feasibility of purification by solvent extraction.

By June of 1967, Diamond had concluded that TCP purification by solvent extraction was not promising. Tests conducted on an experimental carbon adsorption tower were successful. Essentially all detectable TCDD was removed from TCP by the tower after regeneration with HCl. The proper dilution of TCP had been calculated and the technique for the regeneration of the tower had been refined. In July of 1967, the specifications of the design and operation of the permanent tower were created and development work on purification by filtration is discontinued.

In August of 1967, a 12 inch diameter pilot carbon adsorption TCP purification tower was constructed. On September 8, 1967 it was placed in operation. In July of 1968, installation

of the permanent carbon adsorption TCP purification tower was completed.

In September of 1966, construction began on a new 2,4-dichlorophenol ("2,4-D") production facility and for the conversion of the then existing 2,4-D unit to 2,4,5-T production. The existing 2,4-D equipment had been installed in 1965 and had been designed to be totally enclosed to prevent exposure of employees to fumes. The 2,4,5-T conversion was completed in August of 1967. All old 2,4,5-T equipment was demolished.

From February to May of 1968, Diamond conducted a comprehensive urinalysis of Diamond production employees. In June, Bleiberg concluded that all urine samples were within normal limits and that no test showed any significant degree of porphyrin excretion. In August of 1968, Bleiberg informed Diamond that its employees were doing exceptionally well. He attributed this to the TCP purification system.

In October of 1968, Diamond conducted a sampling of areas from different sections of 80 Lister Avenue. The samples were tested for TCDD. No TCDD contamination of these areas were found.

Late in 1968, Diamond was contacted by U.S. Public Health Service ("USPHS") personnel requesting permission to conduct a comprehensive public health study of 80 Lister Avenue personnel. Diamond fully cooperated with government officials in

working out the details of this study by, among other things, preparing employee/participant consent forms and organizing and scheduling examinations. Diamond also recommended the inclusion of additional areas of medical inquiry. Prior to conducting the study, Dr. Alan P. Poland ("Poland"), the USPHS official conducting the study, met with employees at 80 Lister Avenue and their union officials to explain the study and to answer their questions. Diamond personnel, as well as Bleiberg, made similar efforts.

The USPHS study was conducted during the first week of February, 1969 by no less than seven physicians who examined both current and former 80 Lister Avenue employees. In addition to a comprehensive physical examination, the study also involved blood, urine, dermatological, neurological and psychological tests.

Diamond authorized Poland to publish the results of the study in an academic journal. The study revealed, inter alia, that moderate to severe chloracne was present in only 18% of the examinees and that no clinical porphyria could be documented. As to hepatic function, the report noted that all serum total bilirubin and albumin concentrations were normal. Neurological examinations revealed that the prevalence of objective neurological abnormalities among the study population was quite small. The USPHS study reported that in no subject was lower extremity weakness detected on neurologic examination. As to

issues of systemic toxicity, the USPHS study reported that although the subjects were examined for signs and symptoms of systemic toxicity, their occurrence was infrequent and unrelated to the presence or severity of chloracne.

Interrogatory No. 117

Diamond identifies the following correspondence between itself and Drs. Bleiberg and Brodkin:

<u>Doc. No.</u>	<u>Author</u>	<u>Addressee</u>	<u>Date</u>
6866	Steward	Bleiberg	12/3/69
6869	Bleiberg		2/20/69
12557	Kennedy	Bleiberg	7/22/70
12558-			
12559	Bleiberg	Kennedy	8/4/70
17394	McBurney	Bleiberg	8/14/63
17395-			
17396	Bleiberg	McBurney	7/25/63
17402-			
17403	Bleiberg	Guidi	3/14/63
19415-			
19416	Bleiberg	McBurney	7/24/63
19442	Bleiberg	McBurney	11/12/68
19448	Bleiberg	McBurney	10/31/68
19481	McBurney	Bleiberg	8/14/63
19506-			
19508	Bleiberg	Guidi	5/20/63
19525-			
19526	Brodkin	Guidi	3/29/63
19544-			
19545	Bleiberg	Burton	10/20/56
24338	Bleiberg	Memo	6/6/68
24397	Bleiberg	Memo	7/18/63
24399	Clark	Bleiberg	7/11/63
24429-			
24431	Bleiberg	Guidi	5/20/63
24439-			
24440	Guidi	Bleiberg	4/22/63
24451-			

24452	Brodkin	Guidi	3/29/63
24464	Bleiberg	Guidi	3/12/63
24466-			
24467	Bleiberg	Guidi	3/14/63
24479	Brodkin	Steward	12/19/75
24483	Steward	Carol	12/16/75
24487	Steward	Brodkin	11/26/75
24614		Bleiberg	2/20/69
30660-			
30601	Bleiberg	Guidi	3/14/63

The following correspondence is unnumbered:

<u>Author</u>	<u>Addressee</u>	<u>Date</u>
Bleiberg and Brodkin	Kennedy	11/1/66
Bleiberg and Brodkin	Kennedy	11/7/67
Bleiberg and Brodkin	Kennedy	3/3/64
Bleiberg	Diamond	11/8/61
Bleiberg and Brodkin	Kennedy	9/14/66
Bleiberg and Brodkin	Diamond	9/27/66
Bleiberg and Brodkin	Diamond	7/20/65
Bleiberg	Diamond	8/7/56
Bleiberg	Diamond	4/30/57
Bleiberg	Diamond	9/10/58
Bleiberg	Diamond	5/5/59
Bleiberg	Diamond	5/25/59
Bleiberg	Diamond	1/8/58