

BENJAMIN HARRIS

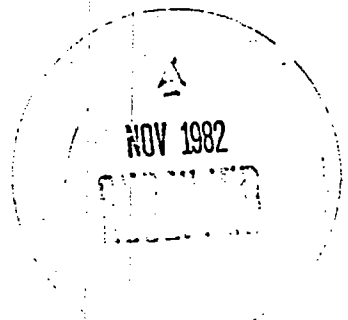
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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK
MDL No. 381

In re : Deposition of:
"AGENT ORANGE" : BENJAMIN HARRIS
Product Liability Litigation :

TRANSCRIPT of testimony as taken by and before
HELEN DOHOGNE, a Certified Shorthand Reporter and
Notary Public of the State of New Jersey, at the
offices of KELLY, DRYE & WARREN, ESQS., 101 Park
Avenue, New York, New York, on Wednesday, November
11, 1982, 9:45 in the forenoon.



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1 A P P E A R A N C E S:

2 YANNAcone & ASSOCIATES

3 BY: VICTOR RUSSO, ESQ.

4 For the Plaintiffs

5

6 MESSRS. RIVKIN, LEFF, SHERMAN & RADLER

7 BY: WILLIAM CAVANAUGH, ESQ.

8 For Dow Chemical

9

10 MESSRS. CADWALADER, WICKERSHAM & TAFT

11 BY: MICHAEL M. GORDON, ESQ.

12 For Diamond Shamrock

13

14 MESSRS. KELLEY, DRYE & WARREN

15 BY: CHARLES M. MATTINGLY, ESQ.

16 For Hercules, Inc.

17

18 MESSRS. TOWNLEY & UPDIKE

19 BY: JAMES E. TYRRELL, JR., ESQ.

20 For Monsanto Company

21

22 MESSRS. CLARK, GAGLIARDI & MILLER

23 BY: JOHN BURKE, ESQ.

24 For Thompson Hayward, North American Phillips

25

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1 A P P E A R A N C E S: (Continued)

2 MESSRS. BUDD, LARNER, KENT, GROSS,

3 PICILLO & ROSENBAUM

4 BY: EDWIN R. MATTHEWS, ESQ.

5 For Thompson Chemicals

6
7 MESSRS. ARTHUR, DRY & KALISH

8 BY: EUGENE P. FEIT, ESQ.

9 For Uniroyal, Inc.

10
11 MAJOR E. GLENN PARR

12 Department of Justice

13 For the United States of America

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I N D E X

1			
2	<u>WITNESS</u>	<u>DIRECT</u>	<u>CROSS</u>
3	BENJAMIN HARRIS		
4	Mr. Gordon	5	
5	Mr. Tyrell		114
6	Mr. Burke		122

E X H I B I T S

7			
8	<u>NUMBER</u>	<u>DESCRIPTION</u>	<u>IDENTIFICATION</u>
9	Harris-1	March 11, 1970 Memorandum to	54
10		director of Research	
11		Laboratories from Bernard	
12		McNamara, Bernard Jandorf	
13		and Samuel Sass with	
14		16 pages of attachments	
15			
16	Harris-2	June 5, 1970 Memorandum from	74
17		Bernard Jandorf to director	
18		of Research Laboratories and	
19		attached Memo Routing Slip from	
20		Dr. Jandorf to Dr. McNamara	
21		dated 6/10/70	
22			
23	Harris-3	June 8, 1970 Memorandum from	82
24		VP McNamara to Director of	
25		Research Laboratories	

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1 B E N J A M I N H A R R I S, 11323 Glenarm Road,
2 Glenarm, Maryland, sworn:

3 DIRECT EXAMINATION BY MR. GORDON:

4 Q. Good morning Dr. Harris, could you state
5 your full name and address for the reporter?

6 A. Dr. Benjamin Harris, 11323 Glenarm Road.

7 Q. Dr. Harris, are you represented at this
8 deposition by legal counsel?

9 A. Major Parr will be my counsel with respect to
10 my government operations.

11 Q. Dr. Harris, in the few minutes prior to
12 the deposition, I gave you a copy of the Special
13 Master's protective order dated October 14, 1982.
14 Did you review that order?

15 A. Yes.

16 Q. Do you understand the terms of that order?

17 A. Yes.

18 Q. Do you agree to be bound by the terms of
19 that order?

20 A. Yes.

21 Q. Thank you.

22 Because there are several people in
23 attendance at the deposition who have not signed the
24 undertaking annexed as Exhibit A to the order it is
25 necessary that each person who hasn't signed state

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1 on the record that he agrees to be bound by the
2 terms of the order. Since I have not yet signed I
3 agree to be bound.

4 MR. BURKE: I agree.

5 MR. TYRRELL: I agree.

6 MR. FEIT: I agree.

7 MR. MATTHEWS: I agree.

8 MR. MATTINGLY: I agree.

9 MR. CAVANAUGH: I agree.

10 MAJOR PARR: I agree.

11 MR. GORDON: All people in the room aside
12 from the court reporter have agreed to be bound by
13 the terms of the order. Thank you.

14 Q. Dr. Harris, please let me know if at any
15 time during the deposition you need to have a
16 question clarified or repeated or if at any time you
17 would like to expand upon an answer that you've
18 already given. Is that understood?

19 A. Yes.

20 Q. Did you meet with any government lawyer
21 in preparation for your examination today?

22 A. Yes.

23 Q. Who did you meet with?

24 A. I'm not sure who all were the lawyers but I met
25 with Major Parr. Any of those others lawyers?

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1 MAJOR PARR: Gretchen Witt and Paul
2 Cormaier.

3 Q. Was there anyone in attendance of that
4 meeting who was not a lawyer?

5 A. Me.

6 Q. When did that meeting take place?

7 A. Monday of this week.

8 Q. And how long did it last?

9 A. About an hour, hour and a quarter.

10 Q. Were you shown or did you receive any
11 documents from Major Parr or anyone else who was at
12 that meeting?

13 A. Yes.

14 Q. Did you bring those documents with you
15 today?

16 A. Yes.

17 Q. Did you review those documents?

18 A. Partially.

19 Q. When you say partially, to what extent
20 did you review them?

21 A. Great deal of technical detail I skipped over
22 although if questioned I could review it quickly.

23 Q. Did you look at every document in the
24 pile?

25 A. I looked at every one, yes.

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1 Q. Were the documents that you reviewed
2 accompanied by a cover letter?

3 A. Yes, they sent them to me.

4 Q. Do you have those documents with you here
5 today?

6 A. Yes.

7 Q. Could you produce the documents at this
8 time.

9 MAJOR PARR: Do you want them all marked
10 for identification?

11 MR. GORDON: I simply want the cover
12 letter so I can say for the record which documents
13 they are.

14 THE WITNESS: The cover letter is not
15 there. It's in my briefcase outside.

16 MR. GORDON: Off the record.

17 (Discussion off the record)

18 MR. GORDON: The record should reflect
19 that the documents which were shown to Dr. Harris
20 and which he brought to this deposition today were
21 accompanied by a cover letter from Michael M. Gordon
22 to Mr. Maskin dated October 29, 1982.

23 Did you review any other written
24 materials in preparation for your deposition today?

25 A. Yes.

1 Q. What written materials were those?

2 A. My own files.

3 Q. Which documents in your own files did you
4 review?

5 A. The largest number of them were articles from
6 the open literature which I filed over the years
7 pertaining either to Orange or to dioxin, in
8 addition to which there were a couple of handwritten
9 notes to me enclosing other documents of the same
10 sort.

11 Q. Were there any other materials in those
12 files that you reviewed?

13 A. No.

14 Q. Did you have any interoffice
15 correspondence or memos concerning Agent Orange?

16 A. The handwritten notes, yes, I answered that as
17 yes, the handwritten notes were interoffice.

18 Q. Anything else?

19 A. When I was technical director at Edgewood I
20 asked people to comment on methods of cleaning up things
21 like Orange from dioxin and they wrote a note back
22 to me enclosing these other papers.

23 Q. Where are your personal files located?

24 A. In my barn.

25 Q. Do you know whether any of the articles

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1 or the handwritten notes in your personal files are
2 dated prior to 1970?

3 A. I can't say at the moment. May very well be.

4 Q. Do you know whether any of those
5 materials were received by you prior to 1970?

6 A. It's hard to say. I think not but it's hard to
7 say.

8 MR. RUSSO: Could I have the last
9 question read back.

10 (The record is read)

11 A. None of the interoffice memos were because I
12 didn't become technical director at Edgewood until
13 1970 but the open literature articles I may have
14 torn out and filed at any time.

15 MR. GORDON: Mr. Parr --

16 MAJOR PARR: Let me note for the record
17 at this time that he brought all of those documents
18 to the meeting on Monday which was the first time
19 that we learned of their existence. The Justice
20 Department took them at that time and they're now in
21 the hands of the Army for review, cursory review to
22 see if there's any problem with privilege or
23 classified information after which they'll be
24 released to you. 14915

25 MR. GORDON: Fine. So the record is

Harris

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1 clear then, the documents are now in the possession
2 of the government and being reviewed and after
3 review will be produced.

4 MAJOR PARR: That's correct.

5 Q. As cited from your meeting with Major
6 Parr and Paul Cormaier and Gretchen Witt, have you
7 met or spoken with anyone else in connection with
8 your deposition?

9 A. No.

10 Q. Do you have a curriculum vitae or a job
11 resume?

12 A. Not with me.

13 Q. Do you have one in your files at home?

14 A. Yes.

15 Q. Could you send a copy of it to me.

16 A. Yes.

17 Q. Thank you.

18 MAJOR PARR: Let me qualify that. If you
19 would, let's let the witness send it to me and I'll
20 send it to you.

21 MR. GORDON: Fine.

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22 MAJOR PARR: Then I'll talk to the
23 witness about the details later.

24 Q. Dr. Harris, what is your date and place
25 of birth?

1 A. August the first, 1970, Savannah, Georgia.

2 Q. Would you briefly describe your
3 educational background beginning with high school?

4 A. High school at Sparus Point in Maryland,
5 academic course; college, Johns Hopkins University,
6 bachelors degree in gas engineering in 1938, PhD in
7 chemical engineering in 1941. You want any more?

8 Q. No. Following receipt of your PhD, did
9 you receive any further specialized training?

10 A. Yes. I attended as a resident student at the
11 armed forces of the -- let's see, Industrial College
12 of the armed forces, ICAF in 1964, 1965.

13 Q. What is the Industrial College of the
14 armed forces?

15 A. That's a senior service college for military
16 officers to which limited number of high level
17 government civilians also attend from all
18 departments of the government.

19 Q. What is the curriculum at ICAF?

20 A. Essentially, logistics management. That's it.

21 Q. Aside from ICAF, have you received any
22 other specialized training or vocational training?

23 A. Only short courses from time to time, refresher
24 courses.

25 Q. Have you been an author or a co-author of

1 any article that's been published?

2 A. Yes.

3 Q. How many articles?

4 A. In the open literature, approximately 30. In
5 the classified literature over a hundred.

6 Q. Can you briefly summarize the subject
7 matter of the articles that appeared in the open
8 literature?

9 A. I was the writer of a review article on the
10 field of adsorption for eleven years and wrote an
11 article each year on that, one of the journals.
12 Remainder of the articles were in areas of chemical
13 warfare agents, adsorption and, more recently,
14 review articles in the field of chemical warfare.

15 Q. What types of adsorption did you write
16 about?

17 A. Well, my doctors degree thesis was adsorption
18 of gases on solids and I continued as a professor
19 with graduate students working in that same field,
20 their theses and my own research was published.

21 Q. Did you perform any research on carbon
22 adsorption?

23 A. Unpublished, yes. I assisted the professor at
24 one time determining surface areas, finely divided
25 particulate materials with a technique he had

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1 invented using adsorption and I did a wide range of
2 substances, possibly even carbon, likely even carbon
3 but I'm not sure.

4 Q. Do you recall when that work was
5 performed?

6 A. 1938 to 1940.

7 Q. What types of chemical warfare agents did
8 you write now in the open literature?

9 A. Well, I'm a part holder of a patent on
10 stabilization of mustard and a number of the
11 classified literature were on mustard and analogous
12 compounds. Most recent articles I -- this year was
13 a review article in the field of chemical warfare
14 and an article on incapacitating agents, one in
15 press, which is policy of chemical warfare.

16 Q. Incidentally, do your various
17 publications in the open literature appear on your
18 curriculum vitae?

19 A. I have a number of curriculum vitae and in one
20 of them or more, yes.

21 Q. Would you send us all of the curriculum
22 vitae you have and different versions so that we're
23 sure we get all of the articles that you've
24 published?

25 A. I'll send you all the articles, yes.

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1 MAJOR PARR: The witness is very active
2 in organizations such as the Boy Scouts. I'm sure
3 you wouldn't be interested in the Boy Scouts, he has
4 separate curriculum vitae.

5 MR. GORDON: That's correct. I do not
6 need a curriculum vitae for the Boy Scouts.

7 MAJOR PARR: Just his professional.

8 Q. What was the subject of the various
9 articles that you wrote that appeared in the
10 classified literature?

11 A. They had to do with properties of, stabilization
12 of and modification of chemical warfare materials.

13 Q. When were the articles that appeared both
14 in the classified literature and the published
15 literature concerning chemical warfare agents
16 published?

17 A. The classified literature was during the time I
18 spent in the service in World War II between the
19 years of 1941 and 1946. The only articles published
20 in chemical warfare since that time in the open
21 literature were -- I mean -- would you repeat the
22 question. 14920

23 Q. Yes. The question was when various
24 articles that you authored concerning chemical
25 warfare agents were published either in the open

1 literature or in the classified literature?

2 A. You do want government?

3 Q. Yes.

4 A. The open literature articles were published
5 this year, January and March.

6 Q. Following the receipt of your PhD in 1941,
7 what did you do?

8 A. Very shortly I was ordered to active duty prior
9 to World War II, prior to Pearl Harbor, and
10 continued there until the end of 1945, retired --
11 going off active duty in April of 1946.

12 Q. What was your rank at the time you went
13 off active duty?

14 A. Major.

15 Q. Where were you stationed during your
16 service?

17 A. Entire service was spent at Edgewood Arsenal.

18 Q. In the Army during your service?

19 A. Yes. By in the service, implication is Army
20 service.

21 Q. What did you do at Edgewood during your
22 service, during your time in the service?

23 A. I was a group leader of the laboratory group
24 concerned with the subjects of -- indicated reports
25 were on the properties and modifications of chemical

1 warfare agents.

2 Q. What was the name of the lab group that
3 you were leader of?

4 A. Didn't really have a name but it was part of
5 the Physical Organic Branch of the Chemical Division
6 of the Technical Command.

7 Q. Who did you report to?

8 A. Dr. Rudolph Massey.

9 Q. Which chemical warfare agents did you
10 work with during your period in the service?

11 A. Mostly the agents of the mustard group and
12 analogous compounds, a number of other compounds
13 that had been synthesized from time to time to see
14 if they were of any threat to the U.S., and we
15 measured the properties of them for the people who
16 had developed them.

17 Q. Did you work with any compounds that were
18 not being explored for chemical warfare purposes?

19 A. No.

20 Q. Did you ever do any work during your
21 period in the service with herbicides?

22 A. No.

23 Q. By the way, you mentioned that you were a
24 part holder of a patent on mustard gas. Are you a
25 holder of any other patents?

1 A. No.

2 Q. What did you do following your discharge
3 from the service in 1946?

4 A. Became assistant professor of chemical
5 engineering at Johns Hopkins University until 1953.

6 In 1952, I accepted full-time employment
7 at Edgewood Arsenal with the Research and
8 Engineering Command.

9 Q. When did you first return to Edgewood?

10 A. I was a consultant at Edgewood from 1949 to
11 1952 and went full-time in 1952.

12 Q. What was your title at the time you
13 returned in 1952?

14 A. My hesitation is because governmental titles
15 are extremely long and complex and during the
16 ensuing few years, I had eight or ten different
17 titles and I can't remember at all what any of them
18 were.

19 Q. Do you recall for how long a time period
20 you remained in the Engineering and Research Command?

21 A. Until its dissolution -- until its removal to
22 Washington in which case I was transferred to the
23 Chemical Warfare Laboratories also located at
24 Edgewood and part of the Research and Engineering
25 Command and it went through a number of name changes,

1 too, over the years.

2 Q. So I've heard.

3 A. I can't remember all of them.

4 Q. Do you recall the date when the
5 Engineering and Research Command was removed to
6 Washington?

7 A. It was in 1955, at least that's the time I --
8 yes, it's simultaneous with the time I was
9 transferred.

10 Q. When you were transferred to the Chemical
11 Warfare Laboratories, what part of the laboratories
12 were you transferred to?

13 A. I carried a queer title called assistant for
14 CARAMU, all caps. Short for the Casualty Rate of
15 Munitions. This was an oversight position looking
16 into how one could estimate the effectiveness of
17 chemical warfare. As such, my area of interest was
18 over the entire laboratory and I was, in effect, an
19 assistant to the scientific director.

20 Q. Who did you report to as assistant for
21 CARAMU?

22 A. At first to Commanding General Burns and
23 subsequent to that to the scientific director Dr.
24 Seymour Silver.

25 Q. Do you recall when you began reporting to

1 Dr. Silver?

2 A. In late 1955. To clarify that, the assistant
3 for CARAMU job had been set up just previous to the
4 change, so at that time I was assistant to the
5 commanding general of RECOM and then when it
6 dissolved, that position was transferred to the labs,
7 Research and Engineering Command.

8 Q. Did your title change from assistant to
9 scientific director when you began reporting to Dr.
10 Silver?

11 A. No, not really although my duties broadened and
12 increased with time to the point that whenever he
13 was away for an extended period, I would act as his
14 alternate. As time went on, in the '56, '57, '58
15 period.

16 Q. Do you recall for how long Dr. Silver
17 served as scientific director?

18 A. He had been the scientific director of the
19 Research and Engineering Command and became
20 laboratory -- there was actually quite a
21 reorganization at the time, not just a transfer, and
22 he remained scientific director, I think, until I
23 left Edgewood in 1966.

24 Q. As assistant for CARAMU, how did you go
25 about performing your functions and

1 responsibilities?

2 A. Well, it was a coordinating position, largely
3 by keeping track of what was going on that would be
4 pertinent to the subject. I had a small group of
5 people who were working developing mathematical and
6 systems analysis methodology and from time to time
7 suggested to the researchers in the lab avenues they
8 should explore that would provide data we needed.

9 Q. Who were the researchers in the labs that
10 you suggested work to?

11 A. It's a pretty wide spectrum of people with
12 somewhat more emphasis on people involved with
13 testing because that's where you get data involving
14 effectiveness.

15 Q. Who was in charge of the testing division
16 at Edgewood?

17 A. Louis Benjamin at the first and then later
18 Edward Miller.

19 Q. For how long did you serve as assistant
20 for CARAMU?

21 A. Until sometime in the middle of 1960 when I
22 became deputy director of development until 1963
23 when I became director of development support,
24 holding that position until 1965 in which case there
25 was a reorganization.

1 I ended up as chief of Systems Analysis
2 Division and not being all that happy I sought other
3 employment and left in late 1966.

4 MR. MATTHEWS: Could you repeat that last
5 answer.

6 (The record is read)

7 Q. As assistant for CARAMU, did you deal
8 with Dr. Bernard Jandorf?

9 A. Probably, yes.

10 Q. What was the subject of your dealings
11 with Dr. Jandorf?

12 A. Jandorf was a biochemist and as such he was
13 concerned with the mode of action of chemical
14 substances on animal body and we were concerned with
15 the final outcome of that which would be the
16 estimate of the toxicity of materials to human
17 beings.

18 Q. Is it fair to say that you were more
19 concerned with the practical side or applied side
20 and Dr. Jandorf was more concerned with the research
21 side?

22 A. Absolutely. No question about that.

23 Q. Did you ever deal with Dr. Fritz Hoffman
24 when you were assistant for CARAMU?

25 A. Well, I knew Fritz and we discussed technical

1 matters in passing. I had no direct involvement
2 with him, no.

3 Q. Did you ever discuss proposed chemical
4 agents with Dr. Hoffman?

5 A. No. The only time that I had anything much to
6 do with Hoffman was when I ran a calculation on some
7 engineering details of the process to make VX, and
8 he made a comment or two on it, but that's all.

9 Q. Did you deal with Dr. Bernard McNamara as
10 assistant for CARAMU?

11 A. Yes. In much the same sense that I mentioned
12 for Dr. Jandorf and more explicitly with McNamara
13 because his job was as chief of the toxicology work
14 and he chaired what we called the Human Estimates
15 Committee where he took the animal data and tried to
16 estimate the human data and I was a member of that
17 committee.

18 Q. How about Dr. Benjamin Witten, did you
19 work with Dr. Witten at all as assistant for CARAMU?

20 A. I'd say the same thing with Dr. Witten as I
21 said for Hoffman. I knew him, talked to him on
22 technical matters, no direct involvement in his work.

23 Q. As assistant for CARAMU, was there anyone
24 at Edgewood who reported to you?

25 A. I had a small group of people, both civilian

1 and military, who were, in effect, systems analysts.

2 Q. Do you recall the names of any of those
3 persons?

4 A. Yes. Morton Shavit, Joseph Lindwarm and three
5 or four GI's that I can't remember now.

6 Q. When you became deputy director of
7 Development in the middle of 1960, who did you
8 report to?

9 A. Dr. Silver, I guess, was my immediate
10 supervisor, he and the commander at the time and
11 there was a whole raft of commanders.

12 Q. What were the functions and
13 responsibilities of the Deputy Director of
14 Development?

15 A. Assistant Director assisted the Director of
16 Development.

17 Q. Who was the Director of Development at
18 that time?

19 A. Sol Hormatz.

20 Q. Did you report to Sol Hormatz in addition
21 to Dr. Silver and the various commanders?

22 A. I have to amend what I said before. When I was
23 deputy director I reported to Sol who reported to Sy.
24 When I was Director of Development support,
25 subsequently I reported to Silver.

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1 Q. During what time period did Sol Hormatz
2 serve at Director of Development?

3 A. Some time previous to my going with him, couple
4 years or more until 1963 when there was a
5 reorganization of it and I don't remember what Sol's
6 position was then.

7 Q. Is it Dr. Hormatz?

8 A. No.

9 Q. Was Mr. Hormatz succeeded by anyone as
10 Director of Development in about 1963?

11 A. I can't remember the details on that.

12 Q. By the way, is the reorganization that
13 occurred in 1963 that you have just referred to the
14 dissolution of the Chemical Corps?

15 A. The answer to that question is no. The
16 Chemical Corps was never dissolved. There was a
17 reorganization of the logistic structure of the Army
18 in which case the Chemical Corps as a technical
19 service was discontinued and remained only as an
20 officer corps, the Chemical Corps Officer Corps that
21 still exists.

22 Q. Was there a time when the functions of
23 the Chemical Research and Development Laboratories
24 at Edgewood were taken over by MUCOM from the U.S.
25 Army Chemical Corps?

1 A. Yes. I think that was at the same time.

2 Q. In 1963?

3 A. I think 1963. Now, this is very hazy. I want
4 to hasten to add that.

5 But I think 1963 was when the Chemical
6 Corps as a technical service and, of course, this
7 would be in the records somewhere, ceased to exist,
8 and the chemical operations became a part of the
9 Munitions Command.

10 Q. Dr. Harris, what were your functions and
11 responsibilities as as Deputy Director of
12 Development from middle -- the middle of 1960 until
13 1963?

14 A. Well, my job, of course, was to serve as a
15 deputy which meant that basically I did whatever the
16 chief wanted. I served in his absence as acting
17 director, and I -- my job, however, was largely that
18 of generating concepts for tests or for development
19 which then were farmed to the divisions. That would
20 be most of what I did on my own.

21 Q. Do you recall any of the concepts that
22 you generated as deputy director?

23 A. Yes. I generated a concept of use of VX as an
24 Aresol instead of as a gross liquid.

25 Q. What is VX?

1 A. VX is a chemical warfare agent which is
2 essentially a liquid. It's a nerve agent and I
3 could dream up its formula but I prefer to refer to
4 it otherwise.

5 Q. We'll save the reporter some work and
6 skip the formula.

7 Any other concepts that you can recall
8 that you worked on as deputy director?

9 A. None of that magnitude. There were minor --
10 mostly minor things.

11 Q. Dr. Harris, do you recall whether any of
12 the concepts or programs that you worked on as
13 Deputy Director of Development pertained to the
14 deployment or use of herbicides?

15 A. Yes, I do recall. They did not.

16 Q. During the time period that you were
17 Deputy Director of Development, are you aware of
18 whether work was being performed at Edgewood
19 concerning deployment of herbicides in Vietnam?
20 Would you like to have the question read back?

21 A. I think it's a nonsequitur, isn't it? When I
22 was Deputy Director of Development Vietnam didn't
23 exist.

24 Q. Depends on who you talk to.

25 I'll rephrase it without Vietnam after

1 it's been read.

2 (The record is read)

3 Q. Let me rephrase the question for you.
4 During the time period that you were Deputy Director
5 of Development, were you aware at any time of any
6 work concerning herbicides that was being performed
7 either at Edgewood or at Fort Detrick?

8 A. I was aware of the fact that we had an anti-crop
9 program at Fort Detrick. I knew they had a series
10 of compounds identified largely by their -- by code
11 symbols and -- but I wasn't aware of what they were
12 doing particularly, no.

13 Q. Do you know --

14 A. This was at Detrick. At Edgewood, I don't
15 recall anything with regard to herbicides at that
16 time.

17 Q. Do you recall the month in 1963 when you
18 became Director of Development support?

19 A. No.

20 Q. Do you recall whether it was in early
21 1963 or late 1963?

22 A. I haven't the foggiest recollection of exactly
23 when it was. The reason I remember 1963 is because
24 I've used it on curriculum vitae from time to time.

25 Q. During the period that you were Deputy

1 Director of Development and were you aware of the
2 anti-crop program at Fort Detrick, were you also
3 aware of who was working in that anti-crop program?

4 A. No.

5 Q. During the period that you served as
6 Deputy Director of Development, did you know Dr.
7 Charles Minarik?

8 A. I believe not. I knew Minarik later so it's
9 hard to say exactly when I met him but I don't think
10 I knew him at all then.

11 Q. Do you know when you first met or spoke
12 with Dr. Minarik?

13 A. Let me clarify this.

14 When I was in the Research and
15 Engineering Command headquarters, they had
16 cognizance over both Fort Detrick and Edgewood and
17 other organizations, too, and I did go to Fort
18 Detrick in connection with the job from time to time.
19 Who I met and exactly what transpired at that time,
20 I can't recall now because it became all mixed up
21 with my operations with them later in my mind.

22 Later on, when I went back to Edgewood
23 subsequent to 1970, I knew Minarik well because the
24 anti-crop people became part of Edgewood. They were
25 then technically somewhere under me in the research

1 division.

2 Q. During the period that you served as
3 deputy director of development, did you ever hear
4 the term Agent Purple?

5 A. Then no.

6 Q. When did you first hear the term Agent
7 Purple?

8 A. When I went to the Pentagon we were very much
9 more concerned with the herbicide program because
10 then Vietnam was in full swing and we got pulled
11 into answer or write briefs for the secretary
12 whenever the Washington Post would come out with an
13 article or whatever.

14 Q. When did you go to the Pentagon?

15 A. 1966 I went over kind of on loan and was
16 transferred officially, I think, about the first of
17 February 1967.

18 Q. Do you recall when you first heard of
19 Agent Purple when you were at the Pentagon?

20 A. Not particularly.

21 Q. How long did you remain at the Pentagon?

22 A. Until June of 1970.

23 Q. Do you recall when you first heard of
24 Agent Orange?

25 A. At the same time that I heard of Agent Purple,

1 but, again, I'm not sure. It was certainly --
2 certainly it was within months of going to the
3 Pentagon.

4 Q. Do you recall whether while you were
5 Deputy Director of Development at Edgewood you ever
6 heard of Agent Pink or Agent Green?

7 A. Never heard of them to this day.

8 Q. Have you ever heard of Agent Blue?

9 A. Blue, yes.

10 Q. When did you first hear of Agent Blue?

11 A. It was in the same time scale, in other words,
12 there was a list of agents that we had some
13 involvement with, the Army had some involvement with,
14 and we, of course, had oversight of the Army's
15 program.

16 Q. When you say "we", are you referring to --

17 A. The office in which I was employed at the time
18 had oversight of the Army's -- in fact, all of the
19 services of the Research and Development Program.

20 Q. Is this at the Pentagon that you're
21 referring to?

22 A. Yes.

23 Q. When you became Director of Development
24 support in 1963, who did you report to?

25 A. Dr. Silver.

1 Q. What were the functions and
2 responsibilities of the Director of Development
3 Support?

4 A. I had a number of divisions, information
5 division, engineering division, systems analysis
6 division and test division and the names are
7 essentially indicative of their functions.

8 Q. Generally speaking, what did those
9 divisions do?

10 A. Well, the test division did what testing went
11 on in either highly sophisticated equipment such as
12 weatherometers and shake, rattle and role on
13 material equipment and any open air testing that was
14 done at Edgewood. The information division ran the
15 library and the report review and that sort of thing,
16 the usual information matters. Systems analysis
17 division developed systems analysis for estimation
18 of effectiveness of warfare, effectiveness of threat
19 agents and so on, and the engineering division ran
20 the shops.

21 Q. As Director of Development Support, did
22 you ever have any dealings with Dr. McNamara?

23 A. Well, I was probably still a member of the
24 Human Estimates Committee at any rate, the systems
25 analysis work would have been involved with

1 information coming from McNamara's shop.

2 Q. By the way, who were the other members of
3 the Human Estimates Committee in the early 1960's?

4 A. I think Witten, I think Jandorf at one time or
5 another were there. I think prior to that, Dr.
6 Summerson, William Summerson. I'm not sure --
7 Dr. Ludwig Sternberger at one time or another was a
8 member. I'm not real sure. There was continual
9 turnover there like everything else.

10 Q. Was Dr. Van Sim ever a member of the
11 Human Estimates Committee?

12 A. I don't recall that he was a member at the time
13 I was.

14 Q. How about Ed Owens?

15 A. That's a possibility but I don't recall.

16 Q. How about --

17 A. It existed before my tenure and after my tenure
18 and so --

19 Q. How about Milton Christiansen?

20 A. Same category as Owens. They were two of the
21 subordinate branch chiefs of McNamara's division and
22 might have spelled for him or actually been there
23 themselves from time to time, but I don't recall
24 specifically.

25 Q. When you became chief of the systems

1 analysis division in 1965, who did you then report
2 to?

3 A. Well, the civilian chief of that directorate
4 was Mr. Louis Garano now deceased and at one time or
5 another the chief of the division was Colonel Walter
6 Davies.

7 Q. Did Walter Davies succeed Mr. Garano?

8 A. No, no, he was the chief.

9 Q. The military chief?

10 A. Yes, military chief. Garano was a civilian
11 deputy chief. Generally speaking, the Chemical
12 Corps always operated with a dual team, civilian
13 military team. The military man gave the
14 operational flavor to things and the civilian was
15 more technical, more specifically technical and
16 provided continuity.

17 Q. What were the duties and responsibilities
18 of the chief of systems analysis, chief of the
19 systems analysis division?

20 A. Run the systems analysis work.

21 Q. What is embraced by systems analysis work?

22 A. Well, systems analysis is a technology -- a
23 technique for looking at operational problems,
24 applying technical information and mathematical
25 methodology to coming up with optimization

1 procedures between courses of action for decision
2 makers to choose and make the decisions.

3 Q. Does systems analysis involve engineering
4 work?

5 A. At times, mathematics, and utilizes data from
6 all sources, chemical, physical, biological.

7 Q. As chief of the systems analysis division,
8 did anyone report to you?

9 A. The whole division. There were 24 of them, I
10 think, at the time.

11 Q. Were there any branches within the
12 systems analysis division?

13 A. I think at that moment because of the smallness
14 of the group, there were no branches.

15 Q. Do you know Sigmund Eckhaus?

16 A. Yes.

17 Q. As chief of the systems analysis division,
18 did you ever work with Mr. Eckhaus?

19 A. No.

20 Q. Do you know Merl Ringenberg?

21 A. Yes.

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22 Q. As chief of the systems analysis division
23 did you ever work with Merl Ringenberg?

24 A. My duties did not involve these people. When
25 you say work with them, we all worked together, you

1 know, in the same laboratory, same organization,
2 knew them. They're both engineers as am I and so we
3 would have technical discussions from time to time
4 or they might even have asked me questions, although
5 specifically I think both Eckhaus and Ringenberg had
6 no specific questions for systems analysis division
7 at the time I was chief.

8 Q. During the time period that you served as
9 chief of the systems analysis division, do you
10 recall whether there was any discussion at Edgewood
11 of the possibility of establishing a government
12 plant to manufacture Agent Orange?

13 A. I do not recall that there was. That was
14 outside the purview of my interests at the time. I
15 know there was the Weldon Springs plant subsequently
16 and because when I got back as technical director,
17 we still had the thing and had to get -- were trying
18 to get rid of it.

19 Q. Had you heard of Weldon Springs prior to
20 returning to Edgewood?

21 A. No, I hadn't heard of Weldon Springs prior to
22 going back to Edgewood. That much is clear.

23 MR. RUSSO: Which was when, Doctor, when
24 did you go to back to Edgewood?

25 THE WITNESS: June of 1970.

1 Q. Now Dr. Harris, you stated that in 1966
2 you left Edgewood and went to the Pentagon?

3 A. Yes.

4 Q. Do you recall the month in 1966 when you
5 left?

6 A. I think it was November. As I say, I was on
7 loan for them for about three months. I believe I
8 was transferred approximately the first of February.
9 That would be in the CV, I'll see that it's in the
10 CV.

11 Q. And you were officially transferred to
12 the Pentagon in February of 1967?

13 A. Yes. I believe that's the case.

14 Q. During the time period between November
15 1966 and February 1967, what were your duties at the
16 Pentagon?

17 A. I was deputy assistant director, parenthesis
18 chemical technology end parenthesis. Our divisions
19 were -- or our areas of oversight were medicine,
20 materials and chemical warfare for all of the
21 services for the whole Department of Defense.

22 THE WITNESS: Before you get into the
23 Pentagon can we take a break?

24 MR. GORDON: Sure.

25 (Recess)

1 BY MR. GORDON:

2 Q. Dr. Harris, after February 1, 1967 when
3 you became officially transferred to the Pentagon,
4 did you continue to have the title of deputy
5 assistant director (chemical technology)?

6 A. That is when I had the title, yes.

7 Q. Did you have a title before February 1?

8 A. Well, I was acting in that position, but I was
9 still legally an employee of Edgewood Arsenal for
10 those three months.

11 Q. Who did you report to as deputy assistant
12 director chemical technology?

13 A. The assistant director, Mr. Ted Hayward.

14 Q. Who did Mr. Hayward report to?

15 A. Dr. Donald McArthur.

16 Q. Was Dr. McArthur the director of chemical
17 technology?

18 A. No, he was the deputy director of research and
19 engineering and his division was the research and
20 technology directorate, as I recall. The Director
21 of Research and Engineering is a very loose and
22 rapidly changing organization so that from time to
23 time people change, responsibilities change by --
24 sometimes by the month.

25 Q. Who did Dr. McArthur report to?

1 A. Dr. Foster, the Director of Research and
2 Engineering.

3 Q. And what was Dr. Foster's title again?

4 A. Director of Research and Engineering.

5 Q. Do you know who Dr. Foster reported to?

6 A. Secretary of Defense. When I first went there
7 it was a captain by the name of McNamara.

8 Q. I bet his first name wasn't Bernard.

9 A. No.

10 MR. RUSSO: He was a director of what,
11 technology, this last one, Dr. McArthur?

12 MR. GORDON: Director of Research and
13 Engineering.

14 THE WITNESS: McArthur was deputy
15 director and his area was research and technology.

16 MR. RUSSO: Thank you.

17 Q. And Dr. Foster was Director of Research
18 and Engineering?

19 A. Yes.

20 Q. How long did you remain as Deputy
21 Assistant Director of Chemical Technology?

22 A. Until June of 1970.

23 Q. Throughout that period, did you continue
24 to report to Dr. Hayward?

25 A. Right, Mr. Hayward.

1 Q. Mr. Hayward.

2 Who reported to you as Deputy Assistant
3 Director Chemical Technology?

4 A. No one.

5 Q. Who did you work with -- as Deputy
6 Assistant Director of Chemical Technology?

7 A. Well, there were only a few of us in the office.
8 There was a military medical man who first was
9 General Richard Taylor -- Colonel Richard Taylor,
10 later became the Surgeon General, is now deceased.
11 Later Colonel Robert Joy.

12 There was a materials, I can't remember
13 his last name, at first, and then we hired another
14 materials man who was a senior of the two, Mr. Jerry
15 Persh.

16 Q. Could you spell that again?

17 A. P-e-r-s-h, Persh, and he was the chemical
18 warfare type. There were only the three
19 subdivisions of the office.

20 Q. Do you know where Jerry Persh had worked
21 prior to going to --

22 A. No, I don't.

23 Q. -- to the --

24 A. I knew at the time but I don't now. He's still
25 at the Pentagon.

1 Q. By the way, what is the name of the
2 organizational unit that you were in as Deputy
3 Assistant Director of Chemical Technology?

4 A. Assistant Director, Chemical Technology.

5 Q. Was there a directorate of Chemical
6 Technology?

7 A. The -- I reiterate what I said before, DDR&E
8 was a very rapidly changing, chameleon and never
9 published an organizational chart for the reason
10 that as new political appointees or new hirees would
11 come in, there was reorganization around the skills
12 and background of that individual and so it was a
13 completely dynamic organization.

14 Q. So the --

15 A. So they didn't call them by directorates, et
16 cetera. It was called by the name of the -- of the
17 chief -- I mean the title of the chief.

18 Q. Is the overall entity within which you
19 were Deputy Assistant Director Chemical Technology
20 the Defense Directorate of Research and Engineering?

21 A. DDR&E, right.

22 Q. And the Director of Defense Directorate
23 of Research and Engineering was Dr. Foster?

24 A. Right. And the director.

25 Q. Do you know where Colonel Richard Taylor

1 had worked before coming to DDR&E?

2 A. Well, he was a military Medical Corps officer.
3 I am unfamiliar with the details of his career up to
4 that point. At the time we were more or less
5 personal friends.

6 Q. Do you know when doctor -- do you know
7 when Colonel Taylor was succeeded by Colonel Joy?

8 A. Taylor got promoted to Brigadiere General and
9 was sent to Vietnam as -- on the staff of MACV. It
10 seems to me that it was probably in early 1968 or
11 thereabouts. I had a heart problem in late --
12 middle 1968 and at that time Joy was there. That's
13 the only way I could pinpoint it right now.

14 Q. Do you recall where Colonel Joy had been
15 stationed prior to coming to DDR&E?

16 A. No. Nobody can keep up with these military
17 people's paragonations unless he has a checklist.

18 MAJOR PARR: They can't even keep up with
19 their own.

20 THE WITNESS: That just wasn't of any
21 interest to me so I don't believe I ever even asked
22 him.

23 Q. During your tenure in DDR&E, did you have
24 any dealings with personnel at Edgewood?

25 A. Only really informal ones.

1 If I needed technical information, I had
2 no objection to calling them on the phone and asking
3 them a technical question or indicating to them that
4 I was putting a formal request through channels and
5 they could get started on it, but my formal channel
6 was to ask the Army in the Pentagon.

7 Q. Was there any DDR&E representative or
8 liaison officer stationed at Edgewood?

9 A. No.

10 Q. Was there anyone at Edgewood who was
11 charged with the responsibility for reporting in
12 some manner to DDR&E?

13 A. No, no. Only through channels.

14 Q. Now, you testified earlier this morning
15 that you first heard of Agent Purple and Agent
16 Orange in connection with your duties at the
17 Pentagon.

18 A. Yes.

19 Q. Could you describe to the best of your
20 recollection the circumstances under which you first
21 heard of Agent Orange or Agent Purple.

22 A. I can't recall.

23 Q. Can you -- what is the first recollection
24 you have of work that you performed connected with
25 Agent Orange or Agent Purple?

1 MR. RUSSO: I don't think there's been
2 any testimony that there has, has there?

3 MR. GORDON: Yes, there has.

4 A. Well, I have to preface this by indicating that
5 Mr. Hayward had previously been employed at Fort
6 Detrick and so, generally speaking, was more the
7 biological expert in our office. My job with regard
8 to the office in the biological field was monitoring
9 their budget and that sort of thing, so in
10 connection with their budget, I read some of the
11 information that came through on what they were
12 doing.

13 Then subsequently, when the herbicide
14 controversy about its use in Vietnam was raised by
15 environmentalists, I -- from time to time -- wrote a
16 paper in response to something that would come out
17 in the press for information to the secretary or to
18 Johnny Foster as the case may be and so in that
19 context, I became aware of the various and sundry
20 herbicide agents, and that's why it's hazy now. It
21 would depend on when the first paper hit the press
22 or something.

23 Q. To the best of your recollection, when
24 was the first occasion on which you were assigned to
25 prepare a paper concerning concerns raised by

1 environmentalists as to the use of Agent Orange or
2 Agent Purple in Vietnam?

3 A. It was probably sometime within several months
4 of going there in February of 1967 but I don't
5 recall specifically.

6 Q. What were the concerns that were raised
7 by the environmentalists concerning the use of Agent
8 Orange or Agent Purple in Vietnam?

9 MR. RUSSO: Objection to this. Hearsay,
10 objection to the form. Doctor, I have no control.
11 I have to put this down on the record.

12 MAJOR PARR: Go ahead and answer the
13 question, Doctor.

14 A. Well, now tell me -- say again what the
15 question is.

16 MR. GORDON: Would the reporter read the
17 question back.

18 (The record is read)

19 A. Generally speaking, they were objecting to use
20 of herbicides because in some cases they would kill
21 the trees or kill the vegetation and not just
22 defoliate it. It was used basically, however, for
23 defoliation to reduce the ambush and open and clear
24 fields of fire, et cetera.

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25 Q. Do you recall whether there were any

1 concerns raised by environmentalists as to possible
2 health effects on animals or humans?

3 A. I don't recall any such.

4 Q. Do you recall any environmental -- strike
5 that.

6 Do you remember the names of any of the
7 environmentalists whether individuals or
8 organizations which were raising the concerns?

9 A. Well, one name prominent in business, of course,
10 was Matthew Meselson, Dr. Meselson of Harvard who
11 has been critical both of the chemical warfare and
12 the herbicide business over the years and he had
13 other associates. I only remember the first name of
14 one of them that he went to Vietnam with to look at
15 areas that had been defoliated.

16 Q. What was that persons's first name?

17 A. Fred somebody or other. It was a professor of
18 some small college.

19 Q. Do you recall whether Arthur Westings'
20 name came up in connection with any of the concerns
21 that were raised?

22 A. Westings -- you know, that might even be the
23 guy. Westings, I may have confused the name with
24 Fred.

25 Q. How were you informed of the concerns

1 that were being raised by the environmentalists
2 about the use of Orange and Purple in Vietnam?

3 A. I don't recall. Let me indicate this was an
4 extremely small percentage of my duties. My duties
5 basically were the chemical warfare business.

6 Q. Well, how did you receive your assignment
7 concerning the concerns that were being raised by
8 the environmentalists?

9 A. Ted would say, Ben, would you write a paper on
10 so and so, whatever it happened to be.

11 Q. And these papers that you wrote were
12 basically in rebuttal to the papers that had been
13 published by the environmentalists?

14 A. No, they would be to elucidate what the problem
15 was and what the facts were as the case may be.

16 Q. Who received these papers that you
17 prepared?

18 A. Well, I'd give them to Ted and they would go on
19 up the chain. Sometimes they would go to Johnny and
20 sometimes very likely would go to the secretary or
21 possibly it would go to the secretary, depending on
22 if he raised a question or not.

23 MR. TYRRELL: Just so that the record is
24 clear, may I suggest, when you refer to these
25 individuals you use their last names. It will be

1 harder for us to go back if you use such words as
2 Johnny and understand who you're referring to.

3 THE WITNESS: Foster.

4 MR. GORDON: Thank you.

5 MAJOR PARR: Before we go further, could
6 I talk to the witness off the record for just a
7 second.

8 (There is a discussion off the record)

9 Q. Dr. Harris, do you have copies of any of
10 the papers that you've prepared among your personal
11 files that you referred to at the beginning of your
12 deposition?

13 A. No.

14 Q. Do you know where any of those papers
15 that you prepared are now located?

16 A. Well, I'm not sure that they exist. I not sure
17 that there is more than, you know, a couple, and
18 they would be on the technical matters only, fact
19 sheet kind of thing, and I didn't have any
20 involvement with any policy in that area.

21 Q. To the best of your recollection, how
22 many papers did you, in fact, prepare concerning the
23 concerns raised by the environmentalists?

24 A. Very few.

25 Q. Is that about three or four?

1 A. Well, probably not that, couple.

2 Q. Two or three?

3 A. Two or three, yes.

4 Q. Do you have a specific recollection of
5 the title of any of those papers that you prepared?

6 A. No.

7 Q. What is your best recollection of the
8 date on which any of those papers were prepared?

9 A. I can't recall.

10 Q. Would it be in 1967?

11 A. That's what I can't recall. Whether it was in
12 1967 or in 1968 or what or 1969 as the case may be.

13 Q. Were you the only author of these papers
14 or were there co-authors?

15 A. I don't know how they might have ended up
16 finally. Whatever I turned in was only mine.

17 Q. Did you ever see any of these papers that
18 you turned in in a final form?

19 A. No.

20 Q. What was the format of -- were these
21 papers that you prepared, by that I mean were they
22 in terms of memorandum to Mr. Hayward or memorandum
23 to the Director of DDR&E?

24 A. Probably not, probably just titled fact sheet
25 or some such title as that.

1 Q. Were there any addressees on these fact
2 sheets that you prepared that you believe you
3 prepared?

4 A. I would think not. Now, certainly in the
5 course of my duties with the chemical warfare
6 business, from time to time, I prepared memorandum
7 for the Director of Research and Engineering, let's
8 say, on a decision paper for saying to the Army, yes,
9 you can do this testing or, no, you may not or
10 whatever it happens to be, but this had nothing to
11 do with herbicides in any case.

12 I don't recall ever having anything to do
13 with any -- and very little to do at all with the
14 herbicide questions.

15 Q. Do you recall whether the copies of these
16 do you recall whether copies of these fact sheets
17 that you prepared were kept in your working files at
18 the Pentagon?

19 A. They might very -- the chances are that they
20 would be.

21 Q. Do you know what happened to your
22 Pentagon files after you returned to Edgewood in
23 1970?

24 A. Yes, I left them there.

25 Q. Do you know where those files are now

1 located?

2 A. I haven't the foggiest.

3 MR. GORDON: Major Parr, at this time I
4 request that the government search available files
5 for any copies of fact sheets or similar documents
6 that were prepared by Dr. Harris during his tenure
7 at DDR&E which concern the use of herbicides in
8 Vietnam.

9 MAJOR PARR: I assume you're going to
10 following it up in writing?

11 MR. GORDON: Yes, we will.

12 BY MR. GORDON:

13 Q. Dr. Harris, aside from these fact sheets
14 that you prepared concerning concerns that had been
15 raised by the environmentalists, what other
16 involvement did you have with herbicides while you
17 were in DDR&E?

18 A. Well, the only one that I can clearly recall
19 was at one -- was one day Ted said to me --

20 MAJOR PARR: Last names please, Doctor.

21 A. Thank you. Mr. Hayward said to me, would you
22 go over to the National Cancer Institute on the
23 other side of Washington and pick up a report there,
24 and he gave me the name of the chap to contact, and
25 I don't recall that name, which report was the 14956

1 results of a Bionetics study on herbicides on
2 animals, and I did so and gave it to him. He was
3 interested in it. That's the only thing that I
4 recall very clearly that I did that had herbicide
5 labeled on it.

6 Q. Do you recall when Mr. Hayward requested
7 that you go to the National Cancer Institute and
8 pick up the Bionetics study?

9 A. No, no.

10 Q. What is your best recollection of when
11 you were requested by Mr. Hayward to do that?

12 A. Between 1967 and 1970. I don't recall
13 precisely when this was. As I said before, this is
14 a very minor part of my duties. In fact, here I was
15 only running an errand.

16 Q. Did you review the Bionetics study after
17 you had picked it up for Mr. Hayward?

18 A. I certainly read it at one time or another but
19 I don't remember what it said.

20 Q. Do you remember when you read it?

21 A. No.

22 Q. Do you remember --

23 A. That would pinpoint when I got it which I can't
24 do.

25 Q. Do you remember attending a meeting at

1 ACSFOR with representatives of Dow Chemical?

2 A. Yes, yes, I do recall that.

3 Q. Do you recall in relation to that meeting
4 when you were asked by Mr. Hayward to pick up the
5 results of the Bionetics study?

6 A. Well, that meeting, I think, was in early 1970.
7 This is -- I don't remember it of my own knowledge.
8 I believe I read it in here, and it probably wasn't
9 too very long before that.

10 Q. Would it help to refresh your
11 recollection if I marked for Identification a cone
12 of a memo of that meeting that was prepared by Dr.
13 Jandorf, Doctor McNamara and Mr. Is that so of
14 Edgewood?

15 A. Yes. It won't help me to remember when I
16 picked up that report, show, because I tried to
17 remember that.

18 Q. But it would help to -- but will it help
19 to firm up the date of that meeting in your
20 recollection?

21 A. It will firm that meeting date, yes.

22 MR. GORDON: Miss Reporter, would you
23 please mark as Harris Exhibit 1 a March 11, 1970
24 memorandum to director of Research Laboratories from
25 Bernard McNamara, Bernard Jandorf and Samuel Sass

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1 and 16 pages of attachments.

2 MAJOR PARR: You want to mark one that he
3 reviewed last night?

4 THE WITNESS: Yes.

5 MR. GORDON: Yes, that's fine.

6 (Exhibit Harris-1 is marked for
7 Identification)

8 Q. Dr. Harris, when you say it wasn't too
9 very long -- strike that.

10 First question. Dr. Harris, does the
11 document that has now been marked as Exhibit 1
12 refresh your recollection that the meeting with
13 representatives of Dow at ACSFORD occurred on
14 March 6, 1970?

15 A. Yes.

16 Q. Now, when you say that it wasn't too long
17 before that meeting that Mr. Hayward requested you
18 to pick up the copy of the Bionetics study from the
19 National Cancer Institute, about how long is not too
20 long?

21 A. I have no reason to make any assessment of when
22 it was, whether before or after. It seemed logical
23 when I made that comment a moment ago that it might
24 have been before but I don't recall that it was. It
25 certainly wasn't very long after because I left

1 DDR&E in June of 1970, and so I really honestly
2 cannot recall when I picked that report up.

3 Q. Let me try to refresh your recollection.
4 Do you recall having heard of the Bionetics study
5 before you attended the meeting at Dow -- the
6 meeting with Dow representatives?

7 A. No, I don't recall. I do not recall when I
8 heard it, before, after or during.

9 Q. Do you recall having read the Bionetics
10 report before your meeting --

11 A. I recall that I probably read it because it
12 would have been logical to have done so. I do not
13 remember the substance of the report and so I might
14 or might not have read it.

15 Q. By the way, do you know where Mr. Hayward
16 is now located?

17 A. He's retired and resides in Braddock Heights,
18 Maryland.

19 Q. Do you know when he retired?

20 A. I believe he retired in -- within two or three
21 years of my leaving the Pentagon, shortly after I
22 left the Pentagon.

23 Q. Did you have any discussions with Mr.
24 Hayward or anyone else concerning Agent Orange prior
25 to your attendance at the meeting with Dow

1 representatives aside from the work that you've
2 already described concerning the fact sheets?

3 A. I don't recall specific comments or discussions
4 with anybody on Agent Orange. My concern in the
5 fact sheets that I mentioned before, I was concerned
6 with the use of herbicides per se to defoliate and
7 the proleptics involving the justification of their
8 use to reduce ambushes and that sort of thing as a
9 tradeoff to the environmental damage, not having
10 anything to do with the specific compound. I don't
11 remember ever writing much of anything -- I might
12 have mentioned some herbicide name but it was not --
13 that was not the substance of what I was concerned
14 with.

15 Q. Well, Dr. Harris, my question was
16 directed more towards trying to find out whether you
17 had any discussions with Mr. Hayward or anyone else
18 at the Pentagon concerning the meeting with Dow
19 representatives in advance of that meeting.

20 A. Well I certainly don't remember. I wish I
21 could be of more help than that.

22 MAJOR PARR: With regard to the answer to
23 the previous question, would you like to withdraw
24 your request for production of those fact sheets now
25 since he testified that he didn't refer to Agent

1 Orange in particular or any herbicide in particular?

2 MR. GORDON: No, I think I'd like to see
3 the fact sheets to verify the testimony.

4 Q. Dr. Harris, do you know who scheduled the
5 meeting at ACSFORD in March 19 --

6 A. I assume they did. It was their meeting.

7 Q. By "they" you mean ASCFOR?

8 A. Yes.

9 Q. What does ASCFORD stand for?

10 A. Assistant chief of staff of Force Development.

11 Q. Who was the Assistant Chief of Staff of
12 Force Development in 1970?

13 A. I don't know. General Stone was the chief of
14 the subdivision of which had to do with the chemical
15 program and the herbicide program and so on, but who
16 was the assistant chief of staff himself, lieutenant
17 general somebody or other, I don't know.

18 Q. How did you find out that the March 1970
19 meeting had been scheduled?

20 A. Somebody in Army called me, somebody in ASCFORD
21 called me.

22 Q. Do you recall who called you in from
23 ASCFORD?

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24 A. No. The turnover there is as bad as it is
25 anywhere for the military and so from time to time --

1 I do remember only that Stone was there and I only
2 remember that because it's on this paper.

3 Q. Did that person in ASCFORD who called you
4 request that you attend the meeting --

5 A. I can make a presupposition but I don't
6 remember who called me.

7 Q. Do you recall whether Mr. Hayward perhaps
8 requested that you attend the meeting?

9 A. No, I don't recall who did.

10 Q. Do you recall having any discussions with
11 Mr. Hayward about the meeting after you learned of
12 the meeting?

13 A. Certainly I would have reported back to him
14 what went on.

15 Q. Do you have a specific recollection of
16 having attended that meeting?

17 A. Yes, that I do have.

18 Q. Following the meeting, did you prepare a
19 memorandum for Mr. Hayward or anyone else describing
20 the meeting?

21 A. It was not our habit to prepare a memorandum of
22 that sort, so I would guess that I did not. I don't
23 remember, though.

24 Q. Did you take any notes of the meeting?

25 A. I have to answer it the same way. I don't know

1 if I did. I might have. It would have been
2 possible certainly.

3 Q. Do you recall reporting on the meeting to
4 anyone at DDR&E?

5 A. You mean other than Hayward?

6 Q. Do you recall reporting to Mr. Hayward on
7 the meeting?

8 A. No. But I'm sure I would have.

9 Q. Do you recall reporting to anyone else --

10 A. No, that I probably did not.

11 MR. GORDON: Major Parr, at this time I
12 request that the government search Pentagon and
13 other available files for any documents relating to
14 the March 1970 meeting with representatives of Dow
15 at ACSFORD including any memoranda or notes or other
16 documents prepared by Dr. Harris concerning that
17 meeting.

18 MAJOR PARR: To be followed in writing?

19 MR. GORDON: Yes, I will follow this up
20 in the letter. As you know, Major Parr, it is my
21 position that we are not required by any outstanding
22 order to do that but as a matter of courtesy we have
23 been doing that in the past and I will do it in this
24 case also.

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25 MAJOR PARR: We are relying on your past

1 performance, a standard of conduct upon which we are
2 relying.

3 (Discussion off the record)

4 BY MR. GORDON:

5 Q. Dr. Harris, what happened at the March
6 1970 meeting?

7 A. I believe it was basically a briefing meeting
8 for General Stone where the Dow people presented
9 some information and all I know right now is what I
10 read here on a piece of paper.

11 Q. Referring you to the second page of
12 Exhibit 1 which lists the attendees at the meeting,
13 do you recall whether there was anyone in attendance
14 at that meeting who was not listed on that page?

15 A. I do not so recall.

16 Incidentally, Darrow doesn't have an N on it.

17 Q. Referring you to the upper left-hand
18 corner of Page 1 of Exhibit 1, there are the
19 initials SMUEA-RMT. Do you know what those initials
20 stand for?

21 A. Yes, that's Munitions Command Edgewood Arsenal,
22 Research Division. MT is probably the branch within
23 the research division.

24 Q. As of March 11, 1970 who was the director
25 of Research Laboratories?

1 A. Oh, yes, that would have been Silver. He was
2 still there when I went there.

3 Q. Was Dr. Silver the person you replaced
4 when you went to the Research Laboratories?

5 A. Oh, no, he was a subordinate of mine.

6 A. He was a Research Laboratory director, I was
7 the technical director of the entire place.

8 Q. I see.

9 Was Dr. Silver still director of Research
10 Laboratories when you became technical director at
11 Edgewood?

12 A. Yes, yes.

13 Q. You stated previously that General Stone
14 was in ACSFORD in a particular unit. What was the
15 name of the unit in which General Stone was located?

16 A. Well, the Army being what it is, I'm sure they
17 had a name but I don't know what it was.

18 Q. What was General Stone's unit in charge
19 of?

20 A. Certainly the chemical warfare and chemical
21 biological defense area of the Army's work and I
22 believe that would include the staff responsibility
23 at the Army headquarters level of all phases of that
24 work.

25 Q. During the period that you were at DDR&E,

1 did you have any dealings with General Stone?

2 A. Yes, sure.

3 Q. What was the subject of those dealings?

4 A. Well, as I say, they were concerned with the
5 total staff responsibility at Army level for the
6 chemical biological program and I was the DDR&E
7 representative responsible for those same programs,
8 so with regard to Army, my contacts, when I needed
9 information or whatever, were his office, and
10 analogous offices in other services.

11 Q. Do you recall the names of anyone you
12 dealt with in General Stone's office?

13 A. Yes, Colonel Bill Dismore now deceased, for one,
14 Mr. Noris Sills and I've got an engram right now,
15 there was another civilian there, super grade, Bill -
16 I can't remember his name for the moment. It will
17 come back. When you get my age you get these
18 engrams every once in awhile.

19 Q. Did you ever discuss the March 1970
20 meeting at ACSFORD with anyone from General Stone's
21 unit?

22 A. Well, it says here that Kanell, Osick and
23 Sanchez were there at that time. I knew them all
24 quite well and they would have been from time to
25 time my contacts. If I had a particular question, I

1 would call one of them or one of those two civilians
2 I mentioned and ask them the question, and they
3 would provide the information. Most of it would be
4 as DDR&E normally operates, informal.

5 Do you know where Colonel George Kanell
6 is now located?

7 A. Yes, George is now a brigadiere general retired.
8 He lives in Warrenton, Virginia, has a very lovely
9 wife, Margaret.

10 Q. Where is Colonel Osick now located?

11 A. I don't know where Osick is or Sanchez.

12 Q. You don't know where Major Sanchez is now
13 located either?

14 A. No, he's now a full Colonel. I think he's
15 still on active duty. I'm not sure about Jack Osick.
16 He probably is gone.

17 Q. Did you know Dr. Wayne Vander Ventor
18 prior to 1970 at Dow?

19 A. No, I didn't know him then, don't know him now.

20 Q. After your name on Page 2 of Exhibit 1,
21 there are the initials OSD. What do those initials
22 stand for?

23 A. Office of the Secretary of Defense.

24 Q. Did you have any dealings with any of the
Dow representatives prior to the March 1970 meeting

1 A. I don't believe so. Although in my own files
2 if there's a copy of it, that will negate what I'm
3 saying right now, because they did give me some of
4 the papers when I brought this other matter up that
5 I mentioned earlier, namely, my request for
6 information on the Fish and Wildlife Service
7 methodology for removing dioxin, charcoal absorption.

8 Q. I don't believe you had mentioned that
9 earlier today.

10 A. Didn't I?

11 Q. No.

12 MAJOR PARR: At least not on the record.

13 A. I didn't say it that way but there was an
14 article in Chemical Engineering News, very short
15 news article indicating fish and wildlife people had
16 developed a method of using charcoal for absorption
17 of dioxin from herbicides and I sent that to
18 somebody or other -- to the research laboratories
19 saying what do you think of this and they sent back
20 a whole bunch of junk.

21 Q. When did that article in Chemical and
22 Engineering News appear?

23 A. He took all my files away from the other day so
24 I don't know.

25 Q. Was that news clipping in your files?

1 A. It is -- yes, that's in the information you'll
2 be supplied.

3 Q. Did this article appear before or after
4 the 1970 meeting with Dow representatives?

5 A. After when I was a technical director at
6 Edgewood.

7 Q. Who did you send a memo to requesting
8 information concerning that charcoal -- concerning
9 dioxin?

10 A. To the research lab at Edgewood. And it was
11 answered by Dr. Poziomek, at least the buck slip
12 brought back to to me was signed by Pozimek.

13 Q. What was Dr. Poziomek's position?

14 A. That would depend on what the date of the dog
15 gone piece of paper is and I can't remember that.
16 Poziomek subsequently, about 1975, was deputy chief
17 of the research division. I've forgotten the exact
18 title, but that's essentially what it is, so he
19 would have bucked it back as a matter of course when
20 one of the -- one of his branches had provided it to
21 him.

22 Q. Do you recall what materials were
23 included with the slip from Dr. Poziomek?

24 A. Say it again.

25 Q. Do you recall what materials you received

1 back from the Research Laboratories concerning
2 dioxin with the transmittal slip from Dr. Poziomek?

3 A. Well, one of the documents -- one of the
4 documents was a copy of the patent Fish and Wildlife
5 people and I'm not sure. This one might have been
6 one but I'm not sure of that. That's what I
7 indicated earlier and there were one or two others.

8 Q. Do you recall what those one or two other
9 items were?

10 A. No, the only one that sticks in my mind is the
11 patent itself because that was the substance of my
12 question to them, what do you think of this, and he
13 sent me back a whole pad.

14 Q. Do you recall if any excerpts or part of
15 a trip report prepared by Fritz Hoffman was among
16 those materials?

17 A. I believe not. I reviewed those materials at
18 the same time I reviewed this stuff and -- the
19 sanitized version of Hoffman's stuff. Is that in
20 here?

21 Q. Yes, it is.

22 A. Okay.

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23 Q. Do you recall whether there was any
24 excerpt from a book by Ben Witten entitled the "Search
25 for Toxic Chemical Agents" among the materials you

1 received concerning dioxin from the Research
2 Laboratories?

3 A. Well, I don't recall. If it's -- if it was, it
4 will be in the stuff that you'll be supplied.

5 Q. Hopefully.

6 A. I hope I get them back, too. They're my only
7 files on this subject.

8 Q. So we're clear, you should be getting
9 those materials back and a copy of them should be
10 sent to us rather than originals.

11 MAJOR PARR: I presume there will be no
12 classified material; otherwise, he wouldn't have
13 them in his private files and I also expect that
14 there will be very little in the way of privileged
15 information if any. It's just a requirement that we
16 touch base with Army before we release it.

17 Q. Dr. Harris, may I also request, however,
18 on the record that after the original materials are
19 returned to you, that you retain those and not
20 destroy them pending the conclusion of this
21 litigation?

22 A. That's why I want them back, yes.

23 Q. Thank you.

24 Dr. Harris, when did you first hear of
25 dioxin as opposed to Agent Orange or 2,4,5-T?

1 A. To the best of my recollection, it was when I
2 picked up this report from the Bionetics people.
3 Subsequently, I learned that dioxin had come to the
4 attention of the Research Division at Edgewood from,
5 I guess, from the Hoffman Report or somewhere, but I
6 didn't know it then. I think the first time I heard
7 of dioxin was as a contaminant of Orange in the work
8 the Bionetics people had done.

9 Q. When did you first learn that dioxin had
10 previously come to the attention of Edgewood?

11 A. Well, right now, I think when I read it the
12 other day.

13 MR. BURKE: Could I have the question and
14 answer read back please.

15 (The record is read)

16 Q. Dr. Harris, based on information you
17 obtained at the March 6, 1970 meeting, did you enter
18 into discussions with anyone concerning dioxin or
19 Agent Orange or 2,4,5-T?

20 MR. RUSSO: I object to that. He's just
21 answered that in the prior answer. He said he first
22 heard about it when he picked -- when he read the
23 documents.

24 THE WITNESS: No, no, that was --

25 MR. GORDON: This was based on the

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1 meeting.

2 THE WITNESS: That was, of course, I
3 understood your question, it was when did I first
4 learn that Edgewood had gotten information.

5 Q. My original question had been when did
6 you first hear of dioxin.

7 A. Well, that was when I -- the Bionetics report --

8 Q. That's what you testified to.

9 A. Yes.

10 Q. And then is it your testimony that later
11 you subsequently learned that Edgewood had been
12 familiar with dioxin earlier?

13 A. Yes, later.

14 Q. That's what I understood your testimony
15 to have been.

16 A. Right.

17 Q. My question now is based on the
18 information that you received at the March 1970
19 meeting did you have any discussions with anyone
20 concerning dioxin or 2,4,5-T or Agent Orange?

21 A. I certainly did. There were discussions in
22 passing that dioxins are very toxic material, it's
23 teratogenic and so on and so on, and they would have
24 been discussed with a number of people from time to
25 time, certainly would have discussed it with Hayward,

1 certainly subsequently have talked to Sass about it.
2 He worked for me while I was at Edgewood and so on
3 and they had done analyses of a number of these
4 materials and established an analysis procedure and
5 that's all in this other stuff that's come to my
6 attention just recently.

7 Q. Who else did you speak with following the
8 March 1970 meeting besides Mr. Hayward and Mr. Sass?

9 A. I can only conjecture. I don't recall.

10 Q. Well, why don't you --

11 A. Might have talked to Jandorf, might have talked
12 to McNamara. We were concerned, of course, with
13 anything that might be used as an agent against the
14 U.S., and this is a very toxic substance, but we --
15 and I think as is in some of this other stuff
16 certainly would never be interested in it as a
17 chemical warfare agent.

18 Q. Do you know when you probably spoke to
19 Mr. Hayward about dioxin?

20 A. Probably within a day or two after bringing the
21 report back.

22 Q. Do you know when you first spoke to Mr.,
23 Sass about dioxin?

24 A. I think during this meeting and subsequent
25 thereto perhaps.

1 Q. Do you know Dr. John Boldesweiler?

2 A. Well, I met him once upon a time. I don't have
3 any association with him now.

4 Q. Do you recall when you met Dr.
5 Boldesweiler?

6 A. No, I think he was a member of the RDB or
7 something.

8 Q. What is the RDB?

9 A. Research and Development Board.

10 Q. Do you recall whether he was a member of
11 the President's Scientific Advisory Committee?

12 A. Yes, I think he was that, too, and one time or
13 another I briefed them. Whether he was at that
14 particular briefing, I couldn't say.

15 Q. Do you recall whether you had any
16 discussion -- strike that. Do you recall the
17 context in which you had your discussions with Dr.
18 Boldesweiler?

19 A. No, no. He's actually quite hazy. The name I
20 recall. He's quite hazy in my recollection, the man
21 himself.

22 Q. Do you recall ever having had any
23 conversations with him yourself with Dr.
24 Boldesweiler concerning dioxin?

25 A. No.

1 Q. Following the March 1970 meeting, did you
2 attend any other meetings concerning dioxin or
3 2,4,5-T or Agent Orange?

4 A. I don't recall any other meetings.

5 Q. Based on the March 1970 meeting, did you
6 take any actions concerning Agent Orange or dioxin,
7 2,4,5-T?

8 A. No.

9 (Recess)

10 BY MR. GORDON:

11 Q. Dr. Harris, just before the break, did
12 you state that at some point in time you had briefed
13 the President's Science Advisory Committee?

14 A. Yes, once briefed them on the chemical warfare
15 program.

16 Q. When did that briefing occur?

17 A. I don't recall. While at the DDR&E.

18 Q. Do you recall whether dioxin was
19 mentioned in connection with that briefing?

20 A. Oh, yes. I had nothing to do with dioxin.

21 Q. Do you recall whether herbicides were
22 discussed during that briefing?

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23 A. Nothing to do with herbicides. It was on the
24 chemical warfare research and development program
25 which at that time didn't include this at all.

1 MR. GORDON: Miss Reporter, would you
2 please mark as Harris Exhibit 2 a June 5, 1970 memo
3 from Bernard J. Jandorf to director of Research
4 Laboratories and an attached memo routing slip from
5 Dr. Jandorf to Dr. McNamara dated June 10, 1970.

6 (Exhibit Harris-2 is marked for Identification)

7 Q. Dr. Harris, have you ever seen Exhibit 2
8 before?

9 A. Yes, I did.

10 Q. Which was the first time that you saw
11 that exhibit?

12 A. To the best of my recollection, it was in
13 connection with this -- with last week.

14 Q. Does Exhibit 2 refresh your recollection
15 as to any discussions concerning dioxin that you had
16 following the March 1970 meeting?

17 A. Yes.

18 Q. Would you please describe for me the
19 discussions that are refreshed by this exhibit --
20 let me rephrase that.

21 What do you remember about discussions
22 concerning dioxin following the March 1970 meeting?

23 A. I don't remember a thing about it, but I read
24 this and it makes sense.

25 Q. Do you recall calling Dr. Jandorf while

1 you were still at DDR&E to discuss dioxin?

2 A. I don't recall a specific call.

3 As I indicated before, I was in the habit
4 of calling directly down to them on technical
5 matters, information, can you give me toxicity
6 figures or whatever, that kind of thing and the
7 protocol was that we would never -- DDR&E never
8 asked anybody in the labs to do anything. That
9 would go through channels to ask for information.

10 Q. Do you recall what was the purpose of
11 your telephone call to Dr. Jandorf?

12 A. Well, I don't recall it. That's the point. I
13 can infer what it was from reading this.

14 Q. Why don't you infer what the purpose of
15 the call was.

16 MR. RUSSO: You want him now to read from
17 the report? He says it doesn't refresh his
18 recollection.

19 MR. GORDON: I want him to infer the
20 purpose of the call?

21 MR. RUSSO: I ask him to read from the
22 report. The report speaks for itself, doesn't it?

23 MR. GORDON: What's written in the report
24 speaks for itself. Do you see the purpose of the
25 call.

1 MR. RUSSO: No. He told you he couldn't,
2 didn't have a recollection.

3 MR. GORDON: He said he could infer the
4 purpose of the report. I'm now asking Dr. Harris to
5 infer what the purpose of the call was from the
6 report.

7 MR. RUSSO: I object. Answer it over my
8 objection?

9 A. I probably asked him what the toxicity of
10 dioxin was.

11 Q. Do you know why you were interested in
12 the toxicity of dioxin at that time?

13 MR. RUSSO: Objection to the form. Go
14 ahead, Doctor.

15 A. Well, dioxin was a contaminant in the herbicide
16 and might or might not have been an active
17 ingredient in the teratogenic results that were in
18 issue as, for example, in the Bionetics report.

19 Q. In early June 1970 were you charged with
20 any responsibilities in connection with determining
21 the toxicity of dioxin in connection with Agent
22 Orange?

23 A. The way you phrase that question, the answer is
24 no. We were interested in toxicity of compounds
25 because our concern was the defense against them

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1 should someone use them and any compound that was
2 very toxic, and it turned out that dioxin was, would
3 be of concern from a defensive point of view. It
4 might be of concern from an offensive point of view
5 except that in our particular judgment this is not
6 the kind of compound we would -- the U.S. would use.

7 Q. While you were at DDR&E, was part of your
8 job to determine whether there were potential
9 chemical agents that might call for a defensive
10 response from the United States?

11 A. When you say determine, the answer is no, but
12 we certainly were interested in it in that we
13 allocated the budget and provided the policy to the
14 services for the Research and Development including
15 in development new chemical warfare potentialities.

16 Q. At the time of your telephone
17 conversation with Dr. Jandorf in early June 1970
18 were you interested in pursuing the investigation of
19 dioxin as a potential chemical agent that might be
20 used against the United States?

21 A. No.

22 Q. Why were you interested in dioxin at that
23 time?

24 A. I'm sorry, let me -- I think I answered your
25 question incorrectly.

1 Q. Would you like to have the question read
2 back.

3 (The record is read)

4 A. The answer should be possibly. We're always
5 concerned about those materials which might be used
6 against the United States.

7 Q. Do you recall about how long your
8 telephone conversation with Dr. Jandorf lasted?

9 A. No.

10 Q. Do you have any recollection of what Dr.
11 Jandorf said during the telephone conversation? .

12 MR. RUSSO: Objection as to what he said.
13 We've got hearsay now.

14 MR. GORDON: This is a discovery
15 deposition.

16 MR. RUSSO: This has all been ruled on.

17 MR. GORDON: Nothing has been ruled on.
18 This is a discovery deposition. When you make a
19 hearsay objection at the deposition, frankly, Don, I
20 don't know what you're talking.

21 MR. RUSSO: Schreiber made a ruling as to
22 the Minarik. Didn't he put all the guidelines?

23 MR. GORDON: I have never heard of any
24 ruling by any Special Masters or any Judge that
25 there's a hearsay objection made at the --

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1 MR. RUSSO: It was made at the Minarik
2 deposition. He put the guidelines down and I'm sure
3 you're aware of them as well as I am.

4 MR. GORDON: I'm aware in that the
5 guidelines hearsay objection is not included among
6 them but I suggest you simply state your objection
7 for the record and we proceed.

8 MR. RUSSO: I'm objecting to it and I'm
9 going to request that the question be withdrawn.

10 MR. GORDON: Mr. Russo, you can make your
11 objection as to admissibility at trial which is the
12 usual procedure which is filed and I've never heard
13 of any other procedure. Every time I hear this
14 objection I really don't know what the plaintiffs'
15 attorneys are talking about.

16 MR. RUSSO: I made the objection. I
17 request that the question be withdrawn. I can't go
18 any further than that. It's hearsay.

19 MR. GORDON: The question will not be
20 withdrawn but I would like to have the reporter read
21 it to Dr. Harris.

22 MR. RUSSO: I have no control over the
23 witness. The objection stands.

24 (The record is read)

25 A. Well, I don't have any recollection. I only

1 have what's in front of me.

2 Q. Do you know whether following your
3 telephone conversation with Dr. Jandorf Dr. Jandorf
4 sent you any written materials concerning dioxin or
5 2,4,5-T?

6 A. Well, I don't recall it certainly. I believe
7 not but I don't recall it.

8 Q. Do you recall whether you prepared a
9 memorandum of your telephone conversation with Dr.
10 Jandorf?

11 A. No, I don't recall a memorandum.

12 Q. In the normal course of your duties at
13 DDR&E, was it your practice to prepare memoranda of
14 telephone conversations?

15 A. No, no, no, it was not normal practice.

16 Q. Did you on occasion prepare such
17 memoranda?

18 A. I cannot say I did not. I don't recall any.

19 MR. GORDON: At this time, Major Parr, I
20 request that the government perform a search of the
21 Pentagon and any other applicable files for any
22 memoranda that may have been prepared by Dr. Harris
23 concerning his telephone conversation with Dr.
24 Jandorf on June 4, 1970. In accordance with the
25 procedures I have used in the past, I will send a

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1 letter incorporating that request.

2 MAJOR PARR: Read that back, please.

3 (The record is read.)

4 MAJOR PARR: Thank you.

5 MR. GORDON: I guess I preempted your
6 response, Major Parr.

7 MAJOR PARR: Is a response required?

8 MR. GORDON: You didn't ask me to write a
9 letter.

10 MAJOR PARR: I appreciate your saving me
11 the time of asking you to do that.

12 Q. Dr. Harris, I refer you to paragraph 3 of
13 Exhibit 2. Do you recall the source of any
14 information that you received concerning the
15 trichloro analogue being 18 times more toxic in
16 guinea pigs?

17 MR. RUSSO: 18 or 15.

18 MR. BURKE: 15.

19 Q. 15 times.

20 A. I don't recall that at all. I don't at the
21 moment know where I would have gotten the
22 information unless -- well, I don't recall.

23 Q. Is it possible that you received that
24 information from Dr. John Boldesweiler?

25 A. Well, I didn't because I didn't -- I don't

1 recall ever having talked to Boldesweiler about any
2 of these matters or much of anything else.

3 MR. GORDON: Miss Reporter, would you
4 please mark as Harris Exhibit 3 a June 8, 1970
5 memorandum from VP McNamara to director of Research
6 Laboratories.

7 (Exhibit Harris-3 for Identification)

8 (There is a discussion off the record)

9 Q. Dr. Harris, have you reviewed Exhibit 3?

10 A. Yes.

11 Q. Does Exhibit 3 refresh your recollection
12 as to any information that you may have received
13 from Dr. Boldesweiler concerning the fact that the
14 trichloro analogue is 15 times more toxic in begin
15 knee pigs?

16 A. Doesn't refresh my memory at all nor is it
17 essential that it would come directly from him.

18 Q. Do you have any idea as to who the source
19 of your information concerning the trichloro
20 analogue may have been?

21 A. I can only conjecture. It might very well have
22 been Mr. Hayward. As I indicated earlier, he was
23 the -- more of the biologically oriented member of
24 our team than I and this had been a biologically --
25 biological laboratory developments earlier on, the

1 whole anti-crop program.

2 Q. Dr. Harris, do you know whether Mr.
3 Hayward had any dealings with Dr. Boldesweiler?

4 A. Well, in the sense that he was a member of high
5 level advisory groups, I'm sure Hayward would have
6 known him and been acquainted with him but I can't
7 speak for Mr. Hayward.

8 Q. Do you know whether Mr. Hayward ever had
9 any dealings with the President's Science Advisory
10 Committee?

11 A. Well, he certainly was there at the same
12 meeting that I briefed him and I'm -- I'm pretty
13 sure that he was at others.

14 Q. Do you recall the subject of any of the
15 meetings that Mr. Hayward had with the President's
16 Science Advisory Committee?

17 A. No.

18 Q. Dr. Harris, I refer you to paragraph five
19 of Exhibit 2 which states that "I informed Dr.
20 Harris that we have been acquainted with the high
21 toxicity of " -- I'm sorry, strike that whole
22 question.

23 Dr. Harris, I refer you to paragraph four
24 of Exhibit 2 which states that "Dr. Harris inquired
25 whether we should undertake work with this series

1 (threat evaluation) because of high lethality and
2 because of a great deal of information concerning it
3 has recently been published in the open literature,
4 (CND News New York)." Do you recall whether you
5 made that inquiry on your own or whether someone had
6 suggested that you make such an inquiry to Dr.
7 Jandorf?

8 A. I probably made that on my own.

9 Q. Do you recall reading in any articles in
10 the New Yorker concerning Agent Orange or 2,4,5-T or
11 dioxin?

12 A. No. I'm not sure that he's saying there that I
13 gave him that -- those references. He may have
14 appended them himself. I don't remember reading
15 them in the New Yorker, no.

16 Q. Dr. Harris, I also refer you to the last
17 sentence of Exhibit 3 which states that "Dr.
18 Boldesweiler suggested that we look into this not
19 only from a standpoint of an offensive CW Agent, but
20 since it has been highly publicized in the
21 newspapers, a foreign country may use it against us
22 consequently, this could be studied from a defensive
23 standpoint.

24 MR. RUSSO: Let me object to your reading
25 it. You haven't connected this witness to this

1 document so I'm going to object to it.

2 Q. Do you recall whether the suggestion
3 concerning investigation of dioxin from a defensive
4 standpoint may have come from Dr. Boldesweiler?

5 A. I don't recall that. Certainly that would have
6 been my own concern, you know, policy wise. Our
7 office was responsible for the program to assess the
8 threat against the U.S. and so that's -- as soon as
9 I would have seen these figures in paragraph two of
10 the high toxicity, I would have said do you think we
11 ought to look at that from the standpoint of
12 somebody using it against us.

13 MR. BURKE: Paragraph two of Exhibit 2,
14 is that right?

15 THE WITNESS: Exhibit 2, yes.

16 Q. Dr. Harris, on Exhibit 3 there's a
17 reference to Colonel Uhrig.

18 Do you know who Colonel Uhrig was?

19 A. I don't recall any Colonel Uhrig.

20 Q. As of June 4, 1970, were you still in
21 DDR&E?

22 A. Yes.

23 Q. Do you recall the date that you came back
24 to Edgewood?

25 A. Well, I want to say the 29th, but I don't

1 really have any strong recollection of exactly the
2 date. I've got records. I can put that on the
3 curriculum vitae if you'd like.

4 Q. If you would, that would be appreciated.

5 A. I intended to. I made a note to put the actual
6 dates of some of these things that you have
7 questioned.

8 Q. Fine, thank you. That's greatly
9 appreciated.

10 Dr. Harris, I refer you to paragraph five
11 of Exhibit 2.

12 A. Right.

13 Q. I believe you testified earlier this
14 morning that you had learned at some point after the
15 March 1970 meeting with Dow representatives that
16 Edgewood had been familiar with the toxicity of
17 dioxin prior to that meeting. Does Exhibit 2
18 refresh your recollection as to --

19 A. Yes.

20 Q. -- how you became aware of that
21 information?

22 A. Well, that certainly says that he -- that
23 Jandorf told me and I think that probably was the
24 first time I heard of that.

25 Q. Do you have any recollection of what --

1 of the details of what Dr. Jandorf told you about
2 Edgewood's earlier knowledge of the high toxicity of
3 dioxin?

4 A. Would you read that back please.

5 (The record is read)

6 A. Well, again, I don't have any recollection of
7 it, but I can infer what the conversation was all
8 about from this paragraph.

9 MR. RUSSO: I'll object to any inferences
10 from the paragraph. It's his recollection that you
11 want.

12 Q. Dr. Harris, do you recall whether Dr.
13 Jandorf referred to Dr. Hoffman during the telephone
14 conversation?

15 A. I don't recall the telephone conversation per
16 se. It was one of hundreds that I made on technical
17 matters.

18 Q. Dr. Harris, in paragraph four of Exhibit
19 2 there is a reference to threat evaluation.

20 A. Yes, that's to evaluate how much of a threat
21 that might be to the safety of the U.S. and whether
22 we should take a specific action to prepare against
23 such a threat.

24 Q. According to Exhibit 2, after Dr. Jandorf
25 advised you that dioxin was too high a safety hazard

1 for Edgewood personnel, you, quote, appeared
2 satisfied with this answer, close quote.

3 A. To Dr. Jandorf.

4 Q. Do you recall having been satisfied with
5 any answer that Dr. Jandorf gave you concerning
6 testing or not testing dioxin at Edgewood?

7 A. Well, I don't recall it. My own opinion would
8 be that's not a good reason. Other compounds that
9 are more toxic than that we have handled safely.
10 The effects of the agent -- of the compound, agent
11 is the wrong term, effects of the compound were not
12 those of a chemical -- of a good chemical warfare
13 agent, too long a delay between the time you used it
14 in an attack, for example, and whatever happened, in
15 months to years. That's not a chemical warfare
16 agent.

17 MR. GORDON: Could I have that answer
18 read back.

19 (The record is read)

20 Q. Dr. Harris, just so I'm clear, is it your
21 testimony that dioxin does not make a good chemical
22 warfare agent because of a delay of onset of the
23 effects of dioxin?

24 MR. BURKE: Object to the form.

25 A. My recollection -- my understanding now is that

1 it caused some kind of liver damage which takes
2 awhile to develop and in a chemical warfare agent
3 you're looking for something that acts essentially
4 immediately and we have many other things that do
5 and so no one would choose something of this sort.

6 Q. Do you recall when you acquired your
7 understanding about any alleged delayed effects of
8 dioxin?

9 A. Well, at the time -- at the time, very clearly,
10 the teratology was the only matter of concern to us
11 and that's of no value whatsoever in choice of a
12 chemical warfare agent. As a matter of fact, it
13 would be a reason not to do it since one looks at
14 all aspects of an agent, and its effects.

15 And then subsequently at some time or
16 other I've learned about the liver damage and was
17 refreshed in my memory of that here only, but when
18 it -- specifically when it happened, I don't
19 remember now.

20 It also creates chloracne or something of
21 the skin and that's of no value for chemical warfare.

22 Q. When did you first hear of chloracne?

23 A. I think chloracne came along as one of the
24 effects of people handling the material, early on,
25 around the time of the Bionetics report but I don't

1 remember that either very well.

2 Q. Do you recall ever having heard of
3 chloracne in connection with the manufacture of CS
4 at Edgewood in the early 1960's?

5 A. Certainly skin irritation I know about, but I
6 don't remember whether the term chloracne was used
7 or not.

8 Q. What did you know about skin irritation
9 at Edgewood in the middle 1960's?

10 A. Irritant compounds which CS is one, generally
11 hit moist skin surfaces or moist surfaces and that's
12 why they are effective, they affect your mucous
13 membranes and it would affect sweating people, for
14 example, moist areas such as under your arm pits and
15 the groin and so on.

16 Q. Do you recall any skin irritation
17 problems among workers manufacturing CS at Edgewood
18 in the early 1960's?

19 A. No, I don't recall that.

20 MAJOR PARR: May I interject something
21 here on the record, when you talk about studying the
22 feasibility of certain agents as chemical warfare
23 agents, are you concerned with our using it or our
24 enemies using it and, thus, require us to develop
25 defenses for it.

1 MR. GORDON: I'm concerned with both and
2 I believe that Dr. Harris has stated his view that
3 insofar as dioxin was concerned at the time of his
4 telephone conversation with Dr. Jandorf, his concern
5 was on defensive aspects of dioxin.

6 MAJOR PARR: Say it for the record
7 whether or not he has stated the facts as you
8 believe them to be, Dr. Harris. You nodded your
9 head.

10 THE WITNESS: Well, I'm not sure I
11 understand your question. That's kind of -- say it
12 again.

13 MAJOR PARR: Well, I'm wondering about
14 the record perhaps since this is a public document
15 reflecting that perhaps we were studying dioxin
16 although you have said in the past as Mr. Gordon
17 said we were studying dioxin for possible offensive
18 uses. I wanted to clear that up on the record, if
19 you can.

20 MR. GORDON: I think I can help you out,
21 Dr. Harris.

22 Q. Major Parr is legitimately concerned that
23 your testimony, although I believe it is clear, that
24 it maybe construed as reflecting offensive chemical
25 warfare activities by the United States in 1970

1 although I don't know what was in effect at that
2 time. I assume there is some sensitivity among
3 certain government offices about such work having
4 been conducted or having it viewed as having been
5 conducted in 1970.

6 He wants simply to have it clear on the
7 record that your testimony about dioxin in June 1970
8 and concerning its use as a potential chemical
9 warfare agent was in the defensive context of the
10 government knowing about dioxin in case it was used
11 against the United States by another country.

12 A. I think it's fair to say that our concern for
13 new toxic materials is always defensive. Should one
14 come up with a compound which met our criteria and,
15 therefore, was safer or would do the job better than
16 those agents in our stock pile, we might go further
17 and investigate it as a possible offensive agent.

18 MAJOR PARR: I think that clears it up
19 enough, thank you.

20 MR. GORDON: I don't think that clears it
21 up at all but if you're content, I'll leave it.

22 THE WITNESS: If your statement was that -

23 MR. GORDON: Off the record.

24 (There is a discussion off the record)

25 Q. Aside from your trip to the National

1 Cancer Institute to pick up a copy of the Bionetics
2 study, did you have any contacts with any government
3 agencies concerning dioxin or 2,4,5-T or Agent
4 Orange at any time?

5 A. You mean government agencies other than the
6 Department of Defense? Obviously I talked to
7 Edgewood about it.

8 Q: Yes. Other than the Department of
9 Defense.

10 A. No.

11 Q. Did you ever have any contacts with the
12 Public Health Service at any time concerning dioxin
13 or 2,4,5-T?

14 A. To the best of my recollection, the answer is
15 no. We had a liaison officer between Edgewood and
16 CDC, Center for Disease Control in Atlanta. Chat
17 about lots of things. To the best of my
18 recollection, dioxin was not one of those.

19 Q. What was the name of that liaison officer,
20 sir?

21 A. Boris Osheroff and he carried a rank of captain.

22 Q. During what time period was Dr. Osheroff
23 at Edgewood?

24 A. Well, he was there certainly in my earlier
25 tenure as technical director at Edgewood which was

1 the decade from 1970 forward and he was in -- then
2 replaced by Lou -- I've got another engram, I can't
3 remember his last name, who I believe is still the
4 liaison.

5 MR. RUSSO: What do you believe it is,
6 Doctor?

7 THE WITNESS: I believe he's still the
8 liaison man. I've forgotten his last name.

9 Q. Do you recall ever having any
10 communications with the Food and Drug Administration
11 concerning dioxin or 2,4,5-T?

12 A. Of FDA, no, I don't remember having any
13 conversations with them.

14 Q. Do you recall having discussions with
15 anyone at DDR&E concerning information that you
16 received from Edgewood that Edgewood had been
17 familiar with dioxin in the 1950's and 1960's?

18 A. Well, I have to again say I don't recall any.
19 It would be likely that I told Hayward.

20 Q. What was your title upon your return to
21 Edgewood in June 1970?

22 A. Technical director, Edgewood Arsenal.

23 Q. Who did you report to as technical
24 director?

25 A. My immediate superior was the commander of the

1 post, Colonel Paul Cerar for one month and then
2 Colonel George Kanell took over for one year and
3 then there was a succession of them.

4 Q. Who reported to you during the period
5 that you were technical director?

6 A. All of the directors of the technical
7 directorates.

8 Q. Who were the directors of the technical
9 directorates? Who reported to you?

10 A. Dr. Silver of the research laboratory, Colonel
11 Blare of the medical laboratory, Colonel Henderson
12 of the protective division or directorate. I've
13 forgotten who was the colonel that was head of the
14 munitions directorate -- weapons directorate I guess
15 it was called then. Probably was Colonel Bass later
16 Major General Bass and I can't recall if there were
17 other directorates or not. Whatever directorates
18 had any technical work going on. Not the safety,
19 security and that sort of thing.

20 Q. How long did you serve as technical
21 director at Edgewood?

22 A. Until there was another reorganization in which
23 case it became the Chemical Systems Laboratory and I
24 think that was March of 1977 and the title was
25 changed to deputy director and the commander was

1 designated as the commander/director.

2 Q. How long did you remain as deputy
3 director of the Chemical Systems Laboratory?

4 A. Until my retirement.

5 Q. Laboratory?

6 A. Well, until my retirement, 30 August 1980 after
7 which I was rehired as annuitant -- rehired as
8 annuitant for one year until the 31st of August,
9 1980 -- 1981, yes. I've been out that long, yes, I
10 guess so. And I still discharge the same duties.
11 Whether I had the title or not, I was rehired
12 annuitant.

13 Q. Your final retirement date from Edgewood
14 is August 31, 1981?

15 A. That's right.

16 Q. Are you currently employed?

17 A. I'm currently president of my own corporation.

18 Q. What is the name of that corporation?

19 A. Engineering research corporation of Glenarm,
20 Maryland, Incorporated.

21 Q. What does the Engineering Research
22 Corporation do?

23 A. Consulting engineer.

24 Q. During your tenure as technical director
25 at Edgewood, did you have any discussions with

1 anyone concerning dioxin?

2 A. Probably.

3 Q. Who do you believe you had discussions
4 about dioxin with?

5 A. The chances are that I would have discussed the
6 technical matters with people like Jandorf or
7 McNamara.

8 Q. What sort of technical matters do you
9 believe you discussed with Dr. McNamara and Dr.
10 Jandorf?

11 A. Such information as is -- well, such
12 information as the toxicity levels.

13 Q. Do you have any --

14 A. Mode of action and things of that sort.

15 Q. Do you have a specific recollection of
16 having had such discussions?

17 A. No, I don't have any specific recollection.

18 Q. What is the basis for your belief that
19 you did have such discussions with --

20 A. Well, because it was --

21 Q. Drs. Jandorf and Dr. McNamara?

22 A. It was something with which Edgewood was
23 concerned inasmuch as Mr. Sass was developing
24 analytical procedures and he was acting in this same
25 time frame in June of 1970 between Edgewood and

1 people in the Pentagon.

2 Q. When did Mr. Sass begin developing
3 analytical procedures for dioxin?

4 A. Well, prior to the time he went to this meeting,
5 I guess, or about the time he went to this meeting.
6 I'm personally unaware of when the action started.

7 Q. Did you speak with Mr. Sass at the March
8 1970 meeting?

9 A. Oh, yes. I'm sure I did.

10 Q. At that meeting, did Mr. Sass mention to
11 you that he was working on analytical procedures for
12 dioxin?

13 A. Well, you're asking me to make a specific
14 recollection of the words, you know, what he said
15 and I don't remember that.

16 Q. Well, did he indicate to you in any way
17 that he knew about dioxin and was working on that
18 area?

19 MR. RUSSO: Is this in 1970 you're
20 talking about?

21 MR. GORDON: Yes.

22 A. I don't know. I know that -- I know over the
23 years he had run analyses on some of the compounds
24 and a figure of one part per million or something
25 was indicated as a spec level but when that was put

1 in or if it was put in, I don't know.

2 Q. Do you recall when he ran those analyses?

3 A. No.

4 Q. Do you recall whether it was before or
5 after you became technical director of Edgewood?

6 A. No.

7 Q. Is there any information available that
8 would help you to determine whether Mr. Sass was
9 working on analytical techniques for dioxin before
10 or after that March 1970 meeting?

11 A. I have run across it in my -- at least I don't
12 remember seeing it.

13 Q. After you became technical director --
14 strike that.

15 During the period that you were technical
16 director at Edgewood, was Mr. Sass working on the
17 analytical techniques for dioxin?

18 A. I think so, I think so.

19 Q. What was the purpose of that work?

20 MR. RUSSO: What time frame are we in?
21 1970 again?

22 THE WITNESS: We're in the seventies.

23 Q. Yes.

24 A. Now, exactly when he did it and exactly what
25 the purpose was at the moment, I can't say. I have

1 no knowledge.

2 Q. Was the purpose of his work connected
3 with Agent Orange?

4 A. I would assume so.

5 Q. What is the basis for that assumption?

6 A. We were not interested in it for any other
7 reason as a chemical warfare agent, for example, or
8 a threat agent.

9 Q. Do you know who worked with Mr. Sass on
10 analytical techniques for --

11 A. No, I don't. He was chief of the analytical
12 branch of the Chemical Division of the Research
13 Laboratory and as such had a whole staff.

14 Q. Did you receive or see any papers
15 prepared concerning Mr. Sass's work on analytical
16 techniques for dioxin?

17 A. Well, whatever I was party to is in that
18 package of stuff that I gave up on Monday and I
19 don't remember precisely what the -- I don't
20 remember that that was in it, let me say it that way.

21 MR. GORDON: Major Parr, at this time I
22 request that the government's files be searched for
23 any records relating to work that was performed by
24 Mr. Sass at any time or by anyone working under Mr.
25 Sass concerning analytical techniques for dioxin. I

1 will put that request in my letter compiling the
2 requests that are being made at this deposition.

3 MR. RUSSO: I request to break now.

4 MR. GORDON: I was going to suggest that
5 we break for lunch at this time.

6 MR. BURKE: I'd like to just put
7 something on the record before I forget and I'm sure
8 I will forget, Glen, with respect to the personal
9 pages that Dr. Harris has produced to the government,
10 in the event that the government determines that
11 some of those papers are either classified or
12 privileged, when the other documents are forwarded
13 to us, will there be an indication that certain
14 documents have been removed from the doctor's
15 personnel files for whatever reason the government
16 determines?

17 MAJOR PARR: Yes. I'll make that
18 indication known to you.

19 MR. BURKE: Thank you.

20 MR. GORDON: Off the record.

21 (There is a discussion off the record)

22 (Recess)

23 AFTERNOON SESSION

24 Q. Dr. Harris, aside from the work performed
25 by Mr. Sass concerning analytic techniques for

1 dioxin, are you aware of any other work concerning
2 dioxin that was undertaken at Edgewood during your
3 tenure as technical director in the 1970s?

4 A. I don't recall any now that I was aware of.

5 Q. Are you aware of any work that was
6 undertaken at Edgewood in the 1970's concerning
7 Agent Orange or 2,4,5-T?

8 A. I don't know when they did the toxicology work.
9 I read it here but I don't remember but I wasn't
10 aware particularly at the time, no.

11 Q. Were you aware at all that toxicology
12 work was being performed on dioxin or Agent Orange?

13 A. I don't recall it now.

14 Q. In the 1970s?

15 A. We had a hundred million dollar program and
16 nobody keeps up with every little thing.

17 Q. Are you aware whether any work concerning
18 the disposal of Agent Orange was being conducted at
19 Edgewood in the 1970's?

20 A. Well, I guess I heard that the Air Force was
21 interested in disposing of some, I don't recall the
22 detail of it.

23 Q. Do you recall whether Edgewood was
24 involved in that work?

25 A. No.

1 Q. You don't recall or you don't --

2 A. I don't recall.

3 Q. While you were at Edgewood prior to 1966,
4 in 1966 and prior to 1966, did you serve as a member
5 of any management planning or policy committee?

6 A. I guess if I were to be completely rigorous
7 about it, the answer would be yes. I was one of the
8 directors, for example, in the period 1963 to 1965,
9 and there was -- the directors got together with the
10 commander once in awhile for one reason or another
11 of that sort. It wasn't -- at least I wouldn't
12 characterize it as management per se. It was mostly
13 about -- well, talking about budget matters more
14 than anything else, I guess.

15 Q. Was there a name for those meetings?

16 A. Beg your pardon?

17 Q. Was there a name for those meetings?

18 A. Well, that's why I'm hesitant. It was really
19 not a very formal thing, meeting on a formal basis
20 or anything, no. It wasn't a specific meeting.

21 Q. Do you recall how often those meetings
22 occurred?

23 A. Infrequently. I only remember one, when we got,
24 together one of the directorates had been given a
25 mandate to increase their program because studies

1 had been made indicating the U. S. was lagging in
2 the defensive area and so we would beef up the
3 defensive area and they weren't able to beef it up
4 as fast as they should have, and so we had a meeting
5 as to strategy of how we could do that.

6 Q. Aside from the human estimates of which
7 you've testified you were a member of, were there
8 any other committee that you've served on at
9 Edgewood in the 1960's or 1950's?

10 A. I don't remember any other committees.

11 Q. What was the U.S. Army Chemical Corps
12 Intelligence Agency?

13 A. U.S. Army Chemical Corps Intelligence Agency, I
14 don't place it.

15 Q. Do you recall an organization referred to
16 as the CCIA?

17 A. No. There's a Foreign Technology Center in
18 Charlotte, Virginia. They had people looking into
19 chemical matters.

20 Q. Do you recall what the name of the
21 predecessor was for the Foreign Science Technology
22 Center?

23 A. No, no. I only ever visited that once when
24 there was a meeting of technical directors located
25 there. We had meetings of technical directors all

1 around different laboratories or institutes and it
2 was their turn to host it.

3 Q. During your employment at Edgewood and in
4 the Pentagon, did you ever deal with Dr. Nathan
5 Gordon?

6 A. I know Nate Gordon. I met with him a number of
7 times.

8 Q. When did you meet with Dr. Gordon?

9 A. Well, he -- at one time it seems to me it was
10 earlier on, he was kind of a liaison capacity, he
11 would show up at Edgewood once in awhile, maybe
12 quarterly or something, and then in the course of my
13 duties, I had occasion to visit the office to which
14 he was attached and/or give opinions on matters, all
15 classified.

16 Q. During what time period did Dr. Gordon
17 serve in a liaison capacity at Edgewood?

18 A. Well, I just have a recollection it was early
19 on, when I -- you know, around the time I first went
20 to Edgewood. It might have been before, but I'm not
21 aware of that.

22 Q. What was the organization to which Dr.
23 Gordon was attached?

24 A. CIA.

25 Q. Dr. Gordon was with the CIA?

1 A. Yes.

2 Q. In connection with your duties at
3 Edgewood, did you deal with anyone else in the CIA?

4 A. Yes.

5 Q. Who were those other persons?

6 A. There was a Colonel Batlon.

7 Q. Is that Alexander Batlon?

8 A. Alex, yes and the most recent one, again, I've
9 got an engram on him, Joe. I don't remember -- got
10 in the habit at DDR&E to always handle by first
11 names and last names I can't remember.

12 Q. What was the subject of your dealings
13 with Nathan Gordon and Colonel Batlon?

14 A. Well, I'm not sure of the classification.
15 Generally speaking, I guess I can say that they were
16 concerned being an intelligence group with threats
17 against the U.S. as we were.

18 MR. RUSSO: I didn't get that. Would you
19 read that back.

20 (The record is read)

21 Q. Did you ever have any discussions with
22 anyone from the CIA concerning potential chemical
23 agents.

24 MAJOR PARR: Off the record.

25 (Discussion off the record)

1 A. I don't recall any. I was hesitating dredging
2 through my memory to remember the specifics of
3 anything.

4 Q. How often did Colonel Batlon visit
5 Edgewood?

6 A. Well, it was periodically. My recollection now
7 is it was somewhat more frequently during his tenure
8 than when Gordon was there. I suspect -- I have an
9 opinion that he being a chemical officer wanted to
10 touch base and keep more generally informed in the
11 background of his specialty in addition to his job
12 at -- with his organization.

13 Q. During what time period did Colonel
14 Batlon serve as a liaison for the CIA with Edgewood?

15 A. I don't have any point of reference to remember
16 these times. I'm not trying to befuddle you. I
17 just can't remember these things. They weren't that
18 interesting to me at the time to keep track of the
19 chronology.

20 Q. Was there any representative of the CIA
21 who was actually stationed at Edgewood during the
22 1960's?

23 A. Well, I don't have any knowledge of it.

24 Q. Was there a liaison office for the CIA at
25 Edgewood?

1 A. I don't believe we had one by that name
2 certainly.

3 Q. Do you know Art Feister?

4 A. Art?

5 Q. Feister.

6 A. Feister.

7 Q. Feister?

8 A. Yes.

9 Q. Who was Art Feister?

10 A. He was the intelligence officer at Edgewood
11 during my -- he wasn't at the first, it was kind of
12 a deputy and then he succeeded to the job just about
13 the time I left because the chief of the group
14 retired or something.

15 Q. Do you recall who he replaced?

16 A. I remember the guy, I remember the man, I can
17 visualize him but don't remember his name. He was
18 not very competent. I tend not to remember
19 incompetency.

20 Q. Are you referring to Mr. Feister or his
21 predecessor?

22 A. Predecessor. No, Feister is very sharp.

23 Q. What did the intelligence officer at
24 Edgewood do?

25 A. Well, he put requests through the system when

1 scientists might want to know do we know anything
2 about what somebody has done about this, and so he
3 would put those requests in through the intelligence
4 channels. He was a channel to the intelligence
5 community, the official channel.

6 Q. Was the intelligence officer under the
7 jurisdiction of the CIA?

8 A. Oh, no, no, no. This is the Army's operation.

9 Q. Who did the intelligence officer report
10 to?

11 A. Well, he reported to, I guess, before Feister,
12 in other words, before the reorganization, he
13 reported to the commander of Edgewood. After the
14 reorganization, he reported to the headquarters. He
15 was an element of the headquarters at a RADCOM.
16 Army Armaments, Research and Development Command.

17 Q. During the 1960's, was there more than
18 one intelligence officer at Edgewood at any one time?

19 A. During when?

20 Q. During the 1960's.

21 A. I have no specific knowledge of the
22 intelligence structure at Edgewood in the sixties
23 that they didn't report to me at that time.

24 Q. When was Art Feister serving as an
25 intelligence officer at Edgewood?

1 A. In the seventies while I was there and my only
2 recollection of him in dealings with him seemed to
3 cluster towards the latter part of that period, the
4 1975 to 1981, 1982 period.

5 As I said, he was not the office chief at
6 first and I think he became the office chief only
7 about two or three years ago.

8 Q. Do you know who L. Allen Mounter is?

9 A. Allen Mounter?

10 Q. Yes.

11 A. I'm unfamiliar with that name.

12 Q. Do you know Dr. David Cauthorne?

13 A. Cauthorne I knew, yes, Cauthorne was there, too,
14 earlier on. He's now an Episcopal priest,
15 interestingly enough, after he retired, yes, I've
16 forgotten about Cauthorne.

17 Q. What was Dr. Cauthorne's position at
18 Edgewood?

19 A. Mr. Cauthorne. Seems to me he was the
20 intelligence office chief and maybe the only one in
21 the office prior to the chap I can't remember.

22 Q. Was he intelligence officer chief at
23 Edgewood in the 1960's?

24 A. Well, he was when I went there in 1970.

25 Q. Do you know who Mr. Cauthorne's

1 predecessor was as intelligence officer chief?

2 A. No, I don't.

3 Q. What was the European Research Office of
4 the U.S. Army Research and Development Liaison Group

5 A. European Research Office? Well, they -- I
6 guess their -- they at one time or another, maybe
7 the whole time, they were an adjunct of the ARMy
8 Research Office which was partly down around Duke
9 University, isn't there now, and partly up on
10 Columbia Pike in the Washington area in Virginia,
11 and they were located at the Edison House in London
12 and I visited them there once on one of my trips to
13 London -- to Europe.

14 Q. Do you know whether the European Research
15 Office had any offices in Hamburg, Germany?

16 A. I wasn't familiar with their -- with their
17 specific structure, so the answer to that question
18 specifically is no. I know that they -- that they
19 got around to the various countries. At any given
20 time if they maintained an office in one or another,
21 I don't know.

22 Q. Do you know whether they had an office in
23 Frankfurt, Germany?

24 A. That's the same answer. I mean I don't know --
25 I don't know. I wouldn't be surprised, but, no.

1 Q. Did you ever have any dealings with a
2 Colonel free man of the European Research Office?

3 A. Do you have a first name for him?

4 Q. No, I don't.

5 A. Well, that doesn't strike any chord -- any
6 responsive chord.

7 Q. It might have been E.E. Freeman -- A.E.
8 Freeman.

9 A. No.

10 Q. Did you ever have any dealings with
11 Lieutenant Colonel Metcalf?

12 A. I think Metcalf visited me in my office once,
13 once or maybe twice.

14 Q. Do you recall when that was?

15 A. No -- well, within the last four years it seems
16 to me now but I can't pinpoint -- well, not in the
17 last year certainly, not in the last two years, so
18 maybe three or four years ago.

19 Q. Did you ever have any dealings with a Dr.
20 Wyman of the European Research Office?

21 A. Yes. Do you have his first name?

22 Q. No.

23 A. Yes, he was at ARO. He was a chief of the
24 chemical biological group at ARC in the research
25 triangle in North Carolina and then when the

1 incumbent of the office over there came back, he
2 rotated to the position. George Wyman in the Edison
3 house, ERO.

4 Q. During what time period did Dr. Wyman
5 serve as head of the chemical biological group of
6 the ARMy Research Office?

7 A. I think he went over to ERO two or three years
8 ago and for the period of several years before that,
9 if you can count back, it would have been in the
10 '77, '78, '79 era and how much before that I don't
11 recall now.

12 Q. What was the Army Research Office?

13 A. Army Research Office is -- is at the moment a
14 subdivision of the Development and Readiness Command.
15 They discharge about 50 percent of the basic
16 research for the Army most of which they do by
17 grants and contracts with academic institutions.
18 The other 50 percent is done in the several
19 laboratories of the Army itself.

20 Q. Do you recall when the Army Research
21 Office came into being?

22 A. No, no. It's been awhile back, quite awhile
23 back.

24 Q. Dr. Harris, have you ever had any
25 dealings with Hazelton Laboratories?

1 A. I have never had any dealings with them.

2 Q. Do you know of anyone at Edgewood who has
3 had any dealings?

4 A. Edgewood had a contract with them at one time
5 to do toxicological research.

6 Q. Do you recall what the term of that
7 contract was?

8 A. No.

9 Q. Do you know what kind of toxicological
10 work Hazelton performed for Edgewood under that
11 contract?

12 A. No, I don't, I don't.

13 MR. GORDON: Dr. Harris, I have no further
14 questions at this time and I adjourn your deposition
15 pending the production of any further documents from
16 your personal files or elsewhere that may bear on
17 your testimony. Thank you very much for your time.

18 CROSS-EXAMINATION BY MR. TYRRELL:

19 Q. Dr. Harris, my name is James Tyrrell.

20 I'm counsel to Monsanto in this litigation. I have
21 relatively few questions to ask you this afternoon.

22 I wonder initially if you could tell us what was the
23 Human Estimate Committee that you served on at
24 Edgewood.

25 A. Well, that was a committee made up of people of

1 differing backgrounds who would review the data from
2 the literature or from our own studies on animals
3 and try to make an assessment as to what dose might
4 be for a human being as a means of assessing the
5 threat, for example.

6 Q. When was the Human Estimates Committee
7 started at Edgewood?

8 A. Well, I'm sure it was in the 1960's or before.
9 It may even have been there for a longer time. I
10 served on it, of course, in the sixties, maybe as
11 early as the late fifties because when I was
12 assistant for CARAMU I was on it.

13 Q. Did the Human Estimates Committee have a
14 staff that did work just for that committee?

15 A. No, no.

16 Q. Did the Human Estimates Committee review
17 all toxicology data based on animal studies that
18 were done at Edgewood?

19 A. Well, only in those areas for which it was
20 desirable to make a human estimate. Lots of
21 toxicological work is done and you find a compound
22 isn't toxic at all or very little toxicity and it's
23 discarded.

24 Q. Have you finished your answer?

25 A. Yes.

1 Q. Were there some established procedures by
2 which the Human Estimates Committee extrapolated
3 from animal toxicology data to effect on humans?

4 A. Everybody wishes there were. There is no such
5 and that's why one has to do it by people of varying
6 disciplines and backgrounds to try to make estimates.
7 If it were possible to correlate even from one
8 animal species to another, that would be something
9 the toxicologists would be deleriously happy about.

10 As you can see from the information in
11 this Exhibit 2, paragraph two, dioxin is species
12 specific as evidenced by differences -- very great
13 differences between rats and guinea pigs and that
14 species specificity exists for some compounds and is
15 less so for others. Some nerve agents, for example,
16 a number of species have approximately the same dose
17 and, therefore, you say, well, the greatest
18 likelihood is that man might have that same dose.
19 Other nerve agents have very different values for
20 different species and one has to then try to make an
21 assessment, what the trends are as you go from
22 animal least like man to animals more like man and
23 it gets very hairy.

24 Q. How often would the Human Estimates
25 Committee meet?

1 A. It would be more like by monthly issue.

2 Q. Was there a secretary of the committee?

3 A. Yes, I believe it would be -- it was one of the
4 members was also the secretary.

5 Q. How many individuals were on the
6 committee?

7 A. There was something in the neighborhood of
8 seven or so, as I remember now off the top of my
9 head, and I mentioned about that and many names
10 earlier that were on at one time or another. Not
11 necessarily all at the same time.

12 Q. Did they all come from one or another
13 agency at Edgewood?

14 A. Yes.

15 Q. Was there any participation by Fort
16 Detrick in that committee?

17 A. I don't believe there was at any time. I was
18 trying to remember with respect to botulinum toxic
19 but I believe the estimate for botulinum was made at
20 Fort Detrick and we just accepted it, but other than
21 that, no, they would have no input to the rest of it.

22 Q. Were minutes kept of the meetings of the
23 Human Estimates Committee?

24 A. It's my recollection that there were but I
25 would find it hard to put my finger on it. Probably

1 all classified, I may add.

2 Q. Dr. Harris, changing subjects on you, I
3 believe you said that you studied for a period of
4 time at the Industrial College of the Armed Forces?

5 A. Yes.

6 Q. What did the curriculum at that college
7 include?

8 A. Well, it -- as I indicated, it was a course in
9 logistics management. We studied gross aspects of
10 the various kinds of industries in the United States,
11 electrical power industry, the steel industry, the
12 chemical industry and so on from the standpoint of
13 where its strengths and weaknesses were, how they
14 were managed and what their resources would be, for
15 example, in time of emergency.

16 Q. Were any courses that were given at the
17 Industrial College of the Armed Forces related
18 directly to chemical warfare agents?

19 A. No.

20 Q. Was there any school within the armed
21 forces that taught concerning chemical warfare?

22 A. Yes.

23 Q. What was that?

24 A. Well, there's the Chemical Corps School has
25 gone through various and sundry reorganizations, at

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1 one time belonged with the Ordinance and Corps
2 School of Aberdeen is now the Chemical School or
3 some such title at Anniston, Alabama at Fort
4 McClellan.

5 Q. Did you ever attend that school?

6 A. No.

7 Q. Was that open to civilian employees in
8 the military?

9 A. Well, it wouldn't matter. I'm a reserve
10 officer. I could have gone then, but I don't recall
11 that it is. There was also a flag officer's level
12 course for senior government officials at Dugway
13 Proving Ground for awhile, I guess in the late
14 fifties, and I did attend that course as kind of as
15 a -- I took it but I also was a resident expert
16 resource person.

17 Q. On chemical warfare agents?

18 A. On chemical warfare period, chemical and
19 biological warfare.

20 Q. At what point in time did you attend that
21 school at Dugway?

22 A. I can pinpoint it in the fifties right now.
23 Only it may -- I don't know. I attended sundry
24 courses of that sort. As I said before, short
25 courses. This was only a one week course. And I

1 confuse them, run together in my mind as to which
2 one I attended when but it was probably in the
3 fifties. I think we set up the school to educate
4 the Army -- well, to educate the senior level
5 military people of all the services in the threat of
6 chemical warfare and some of us attended the first
7 few sessions as a resource person for the faculty
8 and the student body.

9 Q. Did you discuss particular chemical
10 compounds at that school?

11 A. Generally speaking, they discussed only those
12 compounds that were in the -- somebody's
13 armamentarium.

14 Q. Was dioxin ever discussed at that school
15 to the best of your recollection?

16 A. I certainly wasn't -- it certainly wasn't when
17 I was there and I would be very surprised if it was
18 ever even mentioned.

19 Q. Doctor, I believe you testified at the
20 opening this morning that you wrote various articles,
21 some for the open press and some that were kept
22 confidential in the military; is that correct?

23 A. Right.

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24 Q. And you turned over, if I'm correct,
25 copies of your articles to the lawyers that you met

1 with up from the government in Washington Monday?

2 A. No, no, no. Oh, wait a minute now -- no, no, I
3 turned over my files of dioxin and Orange. Those
4 articles I had excised or gotten one way or another
5 on those two subjects, not on chemical warfare or
6 not those of my own publications either.

7 Q. Do you maintain a copy of your own
8 publications on chemical warfare subjects?

9 A. Well, the only articles that I have published
10 directly on chemical warfare in the open literature
11 were the last two, yes, I have them.

12 Q. Do you maintain copies of the articles
13 that do not -- that you wrote that were published
14 other than in the open literature?

15 A. They were classified.

16 Q. Does that mean you did not retain a copy
17 of it?

18 A. That's exactly right. That's against the law.

19 Q. Do you know if they are maintained in the
20 library somewhere?

21 A. Oh, yes. Well, they certainly were filed in
22 the library at Edgewood. To what degree over the
23 years they may have been reviewed and destroyed, I
24 can't say. These were mostly in the period 1940-1941
25 to 1946 when I was in the service and my group

1 turned out about 115 reports of which I was an
2 author or co-author of 80 odd.

3 Q. Do you recall if any of your reports
4 dealt with any of the chlorinated aromatic
5 hydrocarbons?

6 A. Chlorinated aromatic hydrocarbons. That's a
7 fantastically big field but the answer is no pretty
8 much. They were largely on the mustard series of
9 compounds and later on the early work on the nerve
10 agents which we got from Germany just about the end
11 of my tenure in the laboratory. When I came back I
12 came in -- when I came back with the government in
13 the fifties I went into management.

14 MR. TYRRELL: Thank you, Doctor. I don't
15 have any further questions subject to the same
16 conditions expressed by Mr. Gordon.

17 MAJOR PARR: Let's take a break.

18 (Recess)

19 (There is a discussion off the record)

20 CROSS-EXAMINATION BY MR. BURKE:

21 Q. Since you don't remember anybody's name,
22 let me reintroduce myself. My name is Jack Burke.
23 I represent T.H. Agriculture and Nutrition, Inc., in
24 this case. I'm going to be asking you some
25 questions basically along the same lines as have

1 been pursued already. I may be repetitive just to
2 create a proper flow so I'm telling you this now so
3 you don't have to pay attention to Mr. Russo when he
4 objects because the question has been asked and
5 answered already.

6 You told us earlier, did you not, sir,
7 that at some point in the late sixties perhaps
8 beginning in 1967 that articles were appearing in
9 the press with respect to potential environmental
10 damage resulting from the use of Agent Orange; is
11 that correct?

12 A. Approximate.

13 Q. Those articles that appeared in the press,
14 did they indicate that Agent Orange was being used
15 in Southeast Asia?

16 A. Yes.

17 MR. RUSSO: Objection as to what the
18 article said.

19 A. Well, all of this is a hazy recollection. I
20 have to preface it with that. Our concern with the
21 environmentalists in this time frame was that they
22 were killing trees or killing vegetation which would
23 be a long time to regenerate and the people had an
24 economic dependence on it, you know, and all that
25 good stuff and, therefore, it was a naughty thing to

1 do.

2 Q. So, was it your understanding back in
3 that 1967, 1968 time frame that there were certain
4 environmentalists here in the United States who were
5 raising alarm over possible permanent ecological
6 damage to the foliage in Vietnam by using Agent
7 Orange?

8 A. When you say permanent, you mean permanent to a
9 particular tree or permanent for the indefinite
10 future?

11 Q. Permanent to a particular tree or --

12 A. To the tree. The regeneration rate of trees is
13 very low.

14 Q. Back when those articles were appearing
15 in the public press, is it your testimony that
16 somebody associated with the Office of the Secretary
17 of Defense asked you to write papers or to brief
18 that particular subject?

19 A. The only real recollection I have to that point
20 was that a lot of people would write in to their
21 Congressmen or to the President with questions which
22 I could paraphrase of the sort, Why are we killing
23 the poor trees, and standard practice in the
24 government is whenever Congressmen or the President
25 gets a letter of that sort which deals with some

1 substantive matter of one of the departments, the
2 letter is bucked to the department for an
3 information letter upon which they can base a reply
4 and so I would prepare letters of sort to be signed
5 by Dr. Foster or his deputy which would say the
6 President has asked me to reply to your -- or
7 Congressman so and so has asked me to reply to your
8 letter of so and so on the following matter. Here
9 are the facts and that sort of thing.

10 Now, those came through by the hundreds
11 at the time of the sheep incident in Utah, I
12 personally answered 585, also got a coronary
13 occlusion out of it. That's why it's very difficult
14 now when you ask me a question did you write a paper
15 on so and so, I wrote hundreds of papers. Whether
16 any of them went to Ted Hayward or whether any of
17 them were for Johnny Foster versus being signed by
18 Johnny Foster that goes somewhere else, it's
19 impossible to say at this point.

20 Q. In any event, though, sir, is it your
21 testimony that you did prepare some writings in or
22 about that time dealing with the subject of possible
23 permanent damage to trees resulting from use of
24 Agent Orange?

25 A. Yes.

1 Q. Can you tell me, sir, what formal
2 education you have had in the field of ecology?

3 A. If you phrase it that way, I guess I haven't
4 had any formally education in the field of ecology.

5 Q. Do you have any experience in the field
6 of ecology?

7 A. I have had a lot of collateral information.

8 Well, certainly, there is an ecology
9 branch at Edgewood. I was familiar with those
10 people, discussed with those people. I've had a --
11 kind of an avocational interest in the field of
12 agriculture ever since my Boy Scout days and so on,
13 but the substance of my discussions was not are the
14 trees dying or is that good or is that bad, but here
15 are the facts pertinent to your question as, for
16 example, I got one letter one time that said if one
17 of those ships that went to Vietnam with herbicides
18 in it sank in the ocean, it would kill all the
19 plantain in the ocean, all the oxygen in the air
20 comes from plantain in the ocean and we would all
21 suffocate. The substance of my reply was something
22 like this: If all the organic matter in the whole
23 biosphere were to be combusted with the atmospheric
24 oxygen it would take two percent of the oxygen in
25 the atmosphere -- one can make these calculations

1 offhand -- just from the gross amount of the oxygen
2 and organic matter. Also, I called the Department
3 of Agriculture and said what is the tolerance level
4 for plantain for the herbicides and mentioned a
5 specific herbicide, let's say, and they said, well,
6 it's such and such a dosage. So, I got out a slide
7 rule and I calculated, if all of the herbicides that
8 we ever shipped to Vietnam up to that point were to
9 sink in one section of ocean ten miles by ten miles
10 by one mile deep, it would come to 1/200ths of the
11 tolerance level for plantain and I just said that to
12 the people, you see, trying to put this thing in
13 perspective so that they wouldn't panic, you know.

14 Q. You mentioned that up spoke to somebody
15 at Agriculture with respect to that particular
16 inquiry. Do you remember the name of the person
17 that you spoke to at Agriculture?

18 A. It probably was Dr. Tschirley and he was my
19 reference for a number of these sort of questions to
20 answer this kind of -- in other words, I did not
21 rely where it required biological information on my
22 own expertise. I called the -- you know, whoever it
23 would be.

24 Q. Now, on the occasions that you responded
25 to inquiries with respect to potential damage to the

1 let's say, the trees and the foliage in Vietnam, did
2 you always contact Dr. Tschirley at the Department
3 of Agriculture for assistance?

4 A. Whenever there was something new.

5 Q. During your conversations with --

6 A. Not necessarily Tschirley. There was another
7 chap there and I can't remember his name. He was
8 one of the -- one of his associates of Dr. Tschirley.

9 Q. Did you ever speak to Dr. Warren Shaw at
10 the Department of Agriculture?

11 A. Yes, yes, that's the other one.

12 Q. During your conversations with either Dr.
13 Tschirley or Dr. Shaw, did the discussion of
14 potential adverse human health effects come up with
15 respect to the use of Agent Orange in Vietnam?

16 A. I didn't discuss it with him, no.

17 Q. Did they ever discuss it with you?

18 A. No, no.

19 Q. Prior to 1967, did you ever become aware
20 either through the press or through conversations
21 with anybody that allegations were being made of
22 potential adverse health effects associated with
23 Agent Orange in Vietnam?

24 A. Prior to when?

25 Q. Prior to 1967.

1 A. No.

2 Q. Prior to 1970, did it ever come to your
3 the attention by way of conversation or by reading
4 materials that some people were claiming, and by
5 some people, I'm referring to either citizens of the
6 United States or citizens of Vietnam, that there was
7 a potential adverse health effect associated with
8 the use of Agent Orange in Vietnam?

9 A. Somebody, and I'm not sure whether it was Dr.
10 Meselson and Westing or George Wald at Harvard,
11 somebody, or Barry Commoner, these were people that
12 were fighting in the general ecology business at the
13 time, made comments, and I think it was on the basis
14 of the Bionetics report so that would have been in
15 and around the 1970, 1969 or whenever that was, that
16 pregnant women could drink the water from their
17 sisterns when they get the water running off the
18 roof and so on, and so we sat down and made a
19 calculation based on the rat data which are the only
20 data you had and the only data they had that even
21 with the Bionetics sample which apparently was
22 fairly high in dioxin a woman would have had to
23 drink 160 liters of water per day -- and assuming a
24 certain deposition on the roof, you've got to make
25 an awful lot of assumptions, systems analysis she

1 would have to drink 160 liters every day during the
2 second trimester of her pregnancy to have these
3 effects, which did not seem logical.

4 Q. Who participated in that particular study?

5 A. Which study?

6 Q. The one that we just talked about that
7 concluded that a woman would have to drink a hundred
8 and --

9 A. I said -- I think I made that calculation.

10 Q. Did somebody assist you in that?

11 A. By assist --

12 Q. Or work with you is what I really mean.

13 A. No, the answer to that is no. The data I got,
14 I got by the people obviously, didn't get it out of
15 my own mind, got it out of the Bionetics report or
16 whatever it was and making reasonable assumptions of
17 the spray level that were made, we knew how much
18 spray was put down on the field and some of that
19 sort of thing.

20 Q. You were you directed by somebody within
21 the United States Government to conduct that study?

22 A. Oh, no, that was as a matter of answering these
23 letters, putting that in perspective, you know,
24 somebody would write in and say these people would
25 all die and we said it doesn't seem logical because

1 here is what would have to happen for that to obtain.

2 Q. Would it be fair to say that these
3 letters that you were referring to were addressed to
4 somebody other than yourself?

5 A. Well, the letters that I was preparing were --
6 and to which I was referring previously were in
7 answer to Congressional or Presidential letters from
8 the electorate.

9 Q. So the letters that you're referring to
10 came from a citizen to a Congressman and the
11 Congressman then referred it on to somebody in the
12 Secretary of Defense?

13 A. The Department of Defense and I prepared the
14 letter back to the Congressman which was signed by
15 Dr. Foster or his deputy.

16 Q. The inquiries that actually came from the
17 Congressman, those inquiries were not addressed to
18 you personally; were they?

19 A. No.

20 Q. They were addressed to somebody else in
21 the Secretary of Defense's office and then referred
22 to you for response; is that correct?

23 A. Precisely.

24 Q. Who did the Congressmen generally refer
25 those letters to?

1 A. If it came to me, it would be usually addressed
2 to the Secretary of Defense.

3 Q. To your knowledge --

4 A. Or to the President and at the White House the
5 buck goes over to us also.

6 Q. With respect to those particular letters
7 received from a Congress man addressed to the
8 Secretary of Defense, do you know if it was the
9 custom and practice of the Secretary of Defense to
10 review those letters prior to referring them on to
11 you for response?

12 MR. RUSSO: This is on his personal
13 knowledge. You don't want him to speculate on this,
14 do you?

15 MR. BURKE: Asking custom and practice.

16 MR. RUSSO: Personal knowledge.

17 Q. Your personal knowledge of the custom and
18 practice.

19 A. I don't know the routing to me.

20 Q. Okay.

21 Now, there came a time, did there not,
22 sir, in the late 1960's that you became aware of a
23 report that was published by the Bionetics Research
24 Labs Inc. regarding 2,4,5-T?

25 A. Yes.

1 MR. RUSSO: Is that late 1960's or 1970
2 that he testified to? Do we have to go back to the -

3 THE WITNESS: We haven't been able to
4 tack it down as to whether -- it certainly was prior
5 to this meeting but how prior is still up in the air
6 as far as my recollection is concerned.

7 Q. How did you first become aware of the
8 fact that Bionetics had published a report with
9 respect to their research into 2,4,5-T?

10 A. Well, I didn't say that they published it.
11 What I said was I went over to the National Cancer
12 Institute and picked up a copy of their report. I'm
13 not sure it wasn't even a draft copy, you know.

14 Q. Let me rephrase my question then.

15 When did you first become aware of the
16 fact that Bionetics prepared a report either in
17 draft form or in final form regarding a study that
18 they did on 2,4,5-T?

19 A. That's what we've been trying to figure out for
20 a good fraction of the day.

21 I'm just not sure. It was when I went
22 over and picked it up at the request of Mr. Hayward,
23 but the date of that and even the particular year
24 I'm not sure of.

25 Q. Would it be fair to say that since you

1 went over to NCI to pick up the Bionetics report
2 that the Bionetics report had not as yet been
3 published in the open literature?

4 A. I believe that's the case.

5 Q. Do you recall if the report that you
6 picked up was a draft report or a final report?

7 A. No, I don't.

8 Q. Has it ever come to your attention that
9 the Bionetics people prepared quarterly draft
10 reports which were submitted to NCI?

11 A. No.

12 Q. Was it Mr. Hayward who asked you to go to
13 NCI to pick up the report?

14 A. Yes.

15 Q. Did he tell you why he wanted that report?

16 A. He wanted to read it.

17 Q. Did he tell you why he wanted to read it?

18 A. No.

19 Q. Did he tell you what the report dealt
20 with?

21 A. Well, you mean when I was asked to go do it?

22 Q. Yes.

23 A. No, I don't believe so.

24 Q. When you obtained the report from
25 Bionetics, did you bring it back and give it to Mr.

1 Hayward?

2 A. Yes.

3 Q. Did you read it before you gave it to him?

4 A. No.

5 Q. Have you since read that report?

6 A. Yes.

7 Q. How long after you gave it to Mr. Hayward
8 was it that you read it?

9 A. I don't recall but it probably was within a
10 matter of a few days.

11 Q. When did you hear --

12 A. Since I was his deputy, I would have to cover
13 when he wasn't there so generally speaking, I read a
14 lot of the stuff that he read, but I wasn't
15 responsible for the stuff that many times -- unless
16 he wasn't there.

17 Q. The report that you read prepared by the
18 Bionetics people, did a part of that report deal
19 with a teratogenic study of mice and rats with
20 respect to 2,4,5-T?

21 A. Yes.

22 Q. When did you learn of the term dioxin for
23 the first time?

24 MR. RUSSO: Asked and answered.

25 MAJOR PARR: Answer it again.

1 MR. RUSSO: Asked and answered this
2 morning.

3 MR. BURKE: That's true.

4 A. I've got to try to remember it all over again
5 now.

6 Q. Let me rephrase the question, Doctor.
7 Maybe this will help.

8 MR. RUSSO: I'll get my notes if you wish.

9 MR. BURKE: Let me rely on my own notes,
10 Don.

11 MR. RUSSO: All right.

12 Q. Did you testify this morning that you
13 first became aware of the term dioxin when you read
14 the Bionetics report?

15 A. I believe so. That's my recollection.

16 Q. Let me ask you to take a look at a
17 document that's entitled "Evaluation of Carcinogenic,
18 Teratogenic and Mutinogenic Activities of Selected
19 Pesticides and Industrial Chemicals," Volume 2,
20 which has been previously marked as an exhibit
21 during the examination of Mr. Bates on July 21, 1982.

22 MR. RUSSO: Was this sent to us?

23 MR. BURKE: Sure, it was, it's the
24 Bionetics report.

25 MR. RUSSO: Was it sent to us as part of

1 the documents on this examination? Did you send
2 this to us, Mike?

3 MR. GORDON: No.

4 MR. BURKE: You've received it many times,
5 Don.

6 MR. RUSSO: Before you answer it, Doctor,
7 can I look at it before you answer any questions.

8 Q. Do you, sir, recognize that document
9 that's in front of you write now as being part of
10 the Bionetics study that you reviewed shortly after
11 you picked it up at NCI?

12 A. No.

13 Q. Can you say with any degree of certainty
14 that that document is not part of the Bionetics
15 study that you picked up?

16 A. No.

17 Q. Assume, if you will, for the moment that
18 the document that I have just shown you is a part of
19 the Bionetics report that was prepared for NCI and
20 which you picked up, okay, assume that fact for the
21 moment. Would you take a look through that report
22 and see if you can find the word "dioxin" in there.

23 MR. RUSSO: Please, let's not go on
24 assumptions, come on, now. You didn't connect him
25 to this document. He doesn't know whether this is

1 the one he read or not. Now you want him to
2 interpret the document.

3 MR. BURKE: Subject to connection and
4 subject to an offer being made with respect to that
5 document going into evidence.

6 MR. RUSSO: The document speaks for
7 itself. Whether it's in there or not, the document
8 speaks for itself. Why must you get it from him?

9 Q. On the basis of the document speaking for
10 itself, if I were to tell you, Doctor, that the word
11 "dioxin" does not appear in that document, would
12 that in any way change your answer as to how you
13 first became aware of the term dioxin?

14 A. Well, I don't know, because, you see, that's
15 Volume 2. Presumably there's a Volume 1.
16 Presumably there's also a draft, so I don't know
17 that this document per se tells me that.

18 Q. Assume, if you will, that none of the
19 reports prepared by Bionetics with respect to this
20 particular subject matter ever mentioned the word
21 "dioxin" would that change your answer as to how you
22 first became aware of the term dioxin?

23 MR. RUSSO: Objection to the form.

24 A. Well, I guess I would have to say if I had all
25 of the Bionetics reports and none of them used the

1 word "dioxin", then I would have to say I was wrong
2 in making the statement I made earlier.

3 Q. Going back to the late 1960s, do you --

4 A. Which incidentally was a hazy recollection, you
5 will recall.

6 Q. Okay.

7 Going back to the late 1960's, do you
8 recall specifically discussing the term dioxin with
9 any government personnel?

10 A. Late sixties, I do not -- I don't have any
11 clear recollection of anything regarding this whole
12 matter with the exception of going over and getting
13 the report and probably, as I said, reading it, and
14 attending the meeting with General Stone.

15 Now, the meeting with General Stone I
16 independently remember, you know, reasonably. In
17 between those two, I'd be hard put to say I had
18 discussed with anybody or with any specific person.

19 Q. The meeting with General Stone that
20 you've just referred to, is that the meeting that's
21 reflected in a March 11, 1970 memo which has been
22 marked today as Exhibit 1?

23 A. Yes.

24 Q. Did you ever talk to Sigmund Eckhaus in
25 the late 1960's about dioxin?

1 A. I don't have any recollection of talking to Sig
2 Eckhaus about dioxin at any time.

3 Q. When you were looking into the issue of
4 Agent Orange in 1967 or thereabouts with respect to
5 potential ecological, did you have an understanding
6 as to what chemicals made up Agent Orange?

7 A. Yes. The basic chemicals I knew. The butyl
8 ester of 2,4-D and 2,4,5-T, 50-50 mix.

9 Q. Now, there came a time, did there not,
10 that you attended a meeting or a briefing by Dow
11 Chemical Company representatives for General William
12 Stone which meeting occurred on March 6, 1970.

13 A. March 6.

14 Q. You can refer to Exhibit 1 to refresh
15 your recollection, if you'd like.

16 A. Oh, yes, I'm sorry. I was confusing the date
17 of the meeting with the date of the letter, yes.

18 Q. Who asked you to go to that meeting?

19 A. That's impossible to state at this moment. I --
20 it would be either Hayward had asked me to go in his
21 place or Stone had said here's something I ought to
22 know about, something of this sort, in my capacity
23 in DDR&E.

24 Q. Do you recall how many days prior to the
25 meeting you were asked to attend?

1 A. No.

2 Q. Would it be fair that you knew at least a
3 few days in advance that there was going to be a
4 meeting on March?

5 A. It would be likely it would be a few days in
6 advance and only a few days in advance because we
7 have meetings all the time, very short notice.

8 Q. When you were asked to go to this meeting
9 on March 6th, wherever it was that you were asked,
10 did the person who asked you to go tell you what the
11 meeting was going to be about?

12 A. I can't -- I just can't recall that at all. I
13 can't recall anybody talking or calling me, you know.

14 Q. Back in the early part of 1970, would it
15 be fair to say that you went to meetings on a fairly
16 regular basis?

17 A. Regular, no. Frequent, yes.

18 Q. It would not be unusual for you to go to
19 a meeting; is that right?

20 A. No.

21 Q. And it would not be unusual for you to go
22 to a meeting and, in effect, be representing Mr.
23 Hayward at that meeting, would it?

24 A. Precisely.

25 Q. And when you went in a representative

1 capacity such as that, would you later report to Mr.
2 Hayward on what was discussed at the meeting?

3 A. Substance of the meeting, right.

4 Q. Was it your habit back in early 1970 to
5 have at least some idea of the subject matter that
6 was going to be discussed at a meeting that you
7 would attend as a representative of Mr. Hayward's?

8 MR. RUSSO: Objection to the form.

9 A. Well, I'd be dogged if I would ever go to a
10 meeting I didn't know what the hell it was all about
11 unless there was some reason for them to withhold
12 the information and they gave me the reason.

13 Q. Do you recall anybody giving you a reason
14 why you shouldn't know what the subject matter of
15 the March 6th meeting was?

16 A. No.

17 Q. Is the answer yes or is the answer no?

18 A. Say it again.

19 MR. BURKE: Read the question back.

20 (The record is read)

21 A. I don't recall anything about it as I said
22 earlier.

15047

23 (The record is read)

24 Q. Would it be fair to say as you sit here
25 today that you in all likelihood know what the

1 subject matter was of this meeting that was called
2 for March 6th, 1970?

3 A. I think that's so.

4 Q. Do you recall if you had any discussions
5 with Mr. Hayward concerning the substantive aspects
6 of the topics to be discussed at this March 6th
7 meeting?

8 A. Ahead of time?

9 Q. Ahead of time.

10 A. I don't recall any such. Certainly told me
11 when I got back what it was all about.

12 Q. Would you review Pages 1 and 2 of Exhibit
13 1 marked this date.

14 A. Yes.

15 Q. Do you see anywhere on page 1 or 2 any
16 reference made to Agent Orange?

17 MR. RUSSO: Speaks for itself; objection
18 to the question. Which document are we referring to?

19 A. Yes, Page 2, Paragraph 2, "the acid and butyl
20 esters (used in Agent Orange.)"

21 Q. Do you recall how long this particular
22 meeting took?

23 A. No.

15048

24 Q. Would it be fair to describe this
25 memoranda as a synopsis of the discussions that were

1 held during the meeting of March 6th, 1970?

2 MR. RUSSO: Objection to the question; to
3 the form.

4 Q. Do you understand my question, Doctor?

5 A. Yes. You're asking me to, in effect, say that
6 these fellows reported everything that went on and I
7 have no way of knowing that.

8 Q. That's not my question to you.

9 A. Okay. Then I misunderstood it.

10 Q. Were things discussed at this meeting
11 that are not recorded in this memoranda?

12 A. I haven't any idea.

13 Q. Did you say anything at this meeting?

14 A. I don't recall.

15 Q. Do you recall if anybody other than the
16 Dow representatives said anything at this meeting?

17 A. I do not recall. I'd be damned surprised if
18 they didn't all say something, but I don't know what
19 they said.

20 Q. Do you recall Dr. Bernard Jandorf being
21 present at this meeting?

22 A. Well, I don't recall. It says here he was.

23 Q. As you sit here today, you don't have a
24 specific recollection of him being at the meeting?

25 A. The only one I remember being at the meeting

1 specifically, in fact, including Stone and the whole
2 bunch, was Sass. I know I had a meeting with Sass
3 at ACSFORD to which a lot of people were and I don't
4 remember the guest list.

5 Q. Do you recall if during this meeting
6 representatives from Dow said in words or in
7 substance that dioxin was known to them to be formed
8 during the manufacture of 2,4,5-T?

9 A. I do not recall it.

10 Q. Do you recall the word "dioxin" coming up
11 at this meeting?

12 A. I don't recall that.

13 I'd be surprised if it didn't, though. The
14 whole substance of this has to do with dioxin but I
15 don't recall it.

16 Q. Did you tell us earlier that you have a
17 specific recollection of attending this meeting?

18 A. Well, I'd have to amend what I just said a
19 moment ago. I remember discussing or being in a
20 meeting with Sass at which dioxin was discussed at
21 ACSFORD. I am assuming that this is the meeting
22 because Sass and Company made this note. This is --
23 my recollection is a little hazy in the sense that I
24 was already under orders to leave DDR&E. This was --
25 this was days before I left DDR&E, so I don't

1 remember, you know, whether I did any follow-up or
2 whatever afterwards. I probably just took -- went
3 back and told Hayward about it and days later I left
4 DDR&E.

5 Q. Is there any specific event or discussion
6 that you recall as you sit here today that allows
7 you to remember that Mr. Sass was at this meeting?

8 A. Well, I remember Sass being at a meeting to
9 which I was at ACSFORD in this time frame. I can't
10 certify this was that same meeting. It appears
11 likely it was.

12 Q. Do you recall if anybody at this meeting
13 other than the Dow representatives made a statement
14 in words or in substance that they were familiar
15 with dioxin for many years prior to this meeting?

16 A. Well, I don't recall any such comment.

17 Q. Do you recall anybody at this meeting
18 other than Dow representatives expressing any degree
19 of surprise that dioxin was a contaminant of 2,4,5-T?

20 A. No.

21 Q. When you called Dr. Jandorf in June of
22 1970, did you recall at that time that Dr. Jandorf
23 had attended the meeting on March 4th, 1970?

24 A. Wait a minute. I must apologize. I've been
25 getting confused -- maybe because of the lateness of

1 the hour, my comments with regard to my leaving
2 DDR&E within days of this previous meeting were
3 incorrect. It's this one that it was in days of,
4 the meeting of -- or the discussions of -- the 5
5 June memorandum, so we have to amend that previous
6 comment and it's really not all that pertinent
7 anyhow.

8 Now, with regard to this comment, would
9 you rephrase that question or read it back.

10 (The record is read)

11 A. I'll be damned if I remember. I don't remember
12 at all. I remember very little of this whole matter
13 because, as I said, perhaps during the break, this
14 was one of thousands of problems that we had and a
15 very minor one at the time with regard to our
16 involvement in DDR&E, so I made no real effort to
17 remember or record it.

18 Q. Have you ever been asked by the Secretary
19 of Defense or anybody associated with the Defense
20 Department to prepare a policy paper with respect to
21 the use of Agent Orange in Vietnam?

22 A. No.

23 MR. BURKE: Thank you, Doctor.

24 MR. MATTHEWS: I have no questions
25 subject to the previous exceptions made by Mr.

1 Gordon and Mr. Tyrrell pertaining to production of
2 other documents.

3 MR. RUSSO: Anybody else?

4 MR. GORDON: Dr. Harris, thank you very
5 much.

6 MR. RUSSO: Thank you very much, Doctor
7 (The proceedings are concluded at 3:45
8 p.m.)

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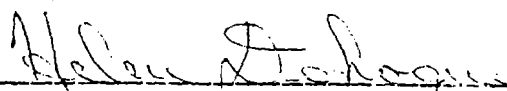
C E R T I F I C A T E

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I, HELEN DOHOGNE, a Certified Shorthand Reporter and Notary Public of the State of New Jersey, do hereby certify that prior to the commencement of the examination the witness and/or witnesses were sworn to testify the truth, the whole truth and nothing but the truth.

I do further certify that the foregoing is a true and accurate computer-aided transcript of the testimony as taken stenographically by and before me at the time, place and on the date hereinbefore set forth.

I do further certify that I am neither of counsel nor attorney for any party in this action and that I am not interested in the event nor outcome of this litigation.


Notary Public of the State of New Jersey clb

Dated: _____

Plausibility data base

Exhibits

~~AD case~~

PL. PRE-TRIAL ORDER

MOVIE V. BOY

15058

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R

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK
----- X

CLERK'S OFFICE
U. S. DISTRICT COURT E.D. N.Y.
APR 11 1984
TIME A.M. P.M.

In Re

"AGENT ORANGE"

MDL No. 381
(All Cases)

Product Liability Litigation
----- X

PLAINTIFFS' PRE-TRIAL ORDER

APRIL 11, 1984

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 With respect to:

 A. Dow Chemical Company

 B. Hercules Incorporated.

 C. Monsanto Chemical Company.

 D. Diamond Shamrock Corporation

 E. T H Agriculture & Nutrition Company.

 F. Uniroyal, Inc.

 G. Thompson Chemical Company.

 H. The United States Government

VII. DISPUTED ISSUES OF FACT AND LAW VII - 1

INTRODUCTION

Plaintiffs submit this Pre-Trial Order dated April 11, 1984 in response to the Magistrate's Pre-Trial Order No. 17.

Wherever possible, plaintiffs have attempted to follow the format set forth in that Pre-Trial Order. The table of contents and numbering of Exhibits attempt to follow the Order as closely as possible. Where "Bates" numbers appeared on the documents produced by the defendants or by the United States Government, or where the defendants or the Government used other designations in identifying the documents produced previously, plaintiffs have designated such documents by those numbers as a "Pretrial Identification Number" or "PIN" number in the text of the exhibit lists comprising portions of this order.

Where portions of the Pre-Trial Order are to be completed at later dates pursuant to the terms of Pre-Trial Order No. 17, the plaintiffs have simply made general statements to that effect, so as to allow the format to remain in conformity with the numbering system contained in the Magistrate's Pre-Trial Order.

Plaintiffs reserve the right, in view of the Magistrate's cognizance of the fact that discovery is continuing in these causes to supplement this Pre-Trial Order on the terms set forth in Pre-Trial Order No. 17.

The medical records of the individual plaintiffs are not being tendered at this time as exhibits to this Pre-trial Order. Plaintiff and defendants continue to assemble those records and plaintiffs presume that discussions will take place between counsel for all parties attempting to reach a stipulation regarding a common set of exhibits of that kind.

Plaintiffs have not in this submission copied and tendered the

voluminous contracts, of each defendant relative to the sale of A Orange herbicides to the United States Government. Those contracts are on file with the Clerk of the District Court in the defendant's several responses to Pre-trial Order No. 33. Plaintiffs have likewise not copied the defendants' answers to various interrogatories exhibits with this submission. They, too, are all on file with the Clerk.

Time constraints have made it literally impossible to edit or review all of the documents produced through the course of discovery or to completely paginate deposition testimony references. Plaintiffs respectfully request the opportunity to continue doing so for the purpose of including relevant documents and testimony in their amended submissions to be filed hereafter.

II

SUPPLEMENTATION OF THE PRE-TRIAL ORDER

Pursuant to the terms of the Magistrate's Pre-Trial Order No. 17, specifically paragraph "II" thereof, plaintiffs will supplement their Pre-Trial Order in conformity with those terms from time to time hereafter.

III

STIPULATION AS TO ADMITTED FACTS

In Supplements to this Pre-trial Order, plaintiffs will set forth any stipulations achieved with respect to facts admitted in this litigation. Thus far, no such stipulations have been entered into.

IV. A. Plaintiffs hereby submit the following list of identified Exhibits in response to requirements of Paragraph IV (E) (1) of the Magistrate's Pretrial Order No. 17.

Due to the fact that discovery in the form of depositions and document production to date has been so voluminous, plaintiffs believe that they should be allowed to supplement this list at the time that both the amendatory and final form Pretrial Orders are filed without regard to whether or not a specific document has been previously produced. Time constraints imposed in connection with the requirement of filing this Pretrial Order have been such that it has been physically impossible to review every document produced in this litigation despite the fact that plaintiffs' counsel have deployed many of themselves and their assistants on a round-the-clock basis to attempt to compile important documents for the purpose of including them in this list.

The voluminous copies of the individual plaintiffs' medical records are purposefully not being submitted at this time. Plaintiffs' and defendants' counsel have been attempting to reconcile and exchange such records in order to be certain that all parties have identical and complete sets of those records. Plaintiffs presume that it would be in all parties' best interests to attempt to stipulate as to a common set of such exhibits. Plaintiffs will attempt to achieve such stipulation prior to the time that the amendment to this Pretrial Order is due.

Plaintiffs also have purposefully not recopied each of the government contracts involved in this litigation for the reason that defendants have appended each of the contracts they claim to have fulfilled in each of their responses to Pretrial Order No. 33, all of which such copies are on file with the Clerk of this Court. Plaintiffs intend to rely upon those contracts as filed and further intend to rely upon statements contained in the defendants' filed answers to interrogatories from time to time throughout the course of this trial or of the trial of these

cases.

The plaintiffs' Exhibits are, as follows:

Exhibit #P0001

PIN # DOE120911
Date
Author HELEN KRIZEK
Addressee JONES, LINN
Description Bibliography - A Technicque for Testing
Acnegenic Potency in Rabbits.

Exhibit #P0010

PIN # 120224-26
Date
Author MARK WILTSE
Addressee BRYANT, CLYDE
Description memo entitled "tordon Chronology" bearing
Dow Document No. 120224.

Exhibit #P0011

PIN # A&G 500206
Date
Author LABEL LABEL
Addressee
Description SAMPLE OF COMMERCIAL HERBICIDES LABEL.

Exhibit #P0012

PIN # 005867-9
Date
Author ELMER P WHEELER
Addressee
Description MEMO OF ELMER P. WHEELER.

Exhibit #P0013

PIN # 005995
Date
Author ELMER P WHEELER
Addressee DUNLAP, W. P.
Description LETTER FROM ELMER P. WHEELER TO W. P.
DUNLAP.

Exhibit #P0014

15065

PIN # 006002
Date
Author R EMMET KELLY MD
Addressee EAKIN, FRANK
Description LETTER FROM R. EMMET KELLY, M.D. TO FRANK EAKIN, NITRO.

Exhibit #P0015
PIN # DOW1568528
Date
Author NONE DOW
Addressee NOONE
Description Handwritten description Boehringer process redacted.

Exhibit #P0016
PIN # DOW120791-2
Date
Author R A HICKMAN
Addressee BEUTEL, A.P. & OTHERS AT DOW
Description MONTHLY MARKETING REPORT

Exhibit #P0041
PIN # DOW278613
Date 01-Aug
Author V K ROWE MD
Addressee UNINTELLIGBLE & SMITH, H L
 WILLIAMS, G J & OTHERS
Description Letter denying the causal relationship between an exposed womans illness and her exposure to 245-T.

Exhibit #P0042
PIN # DOW980428-41
Date 04-Apr-40
Author UNKNOWN UNKNOWN
Addressee PHENOXY ACETIC ACID
Description This report goes through the different stages on how to make Phenoxy Acetic Acid.

Exhibit #P0045
PIN # DOW0614560
Date 24-Feb-49
Author UNKNOWN UNKNOWN
Addressee WARD, JUSTUS C. & USDA
 WASHINGTON, D.C.
Description Incomplete (p7) memo re health precautions to be used with 2,4,-D and 2,4,5-T

15066

Exhibit #P0047
PIN # 042221
Date 16-Aug-49
Author LOUIS SCHWARTZ MD
Addressee NELSON, DR.
Description CONFIDENTIAL LETTER OF 08-16-49 FROM LOUIS SCHWARTZ M.D. TO DR. NELSON AT MONSANTO.

Exhibit #P0054
PIN # DOW32707-13
Date 23-Aug-50
Author VERALD K ROWE
Addressee AGPROJCOMM. & DOW
LYNN, GEORGE E. & IRISH, D.D.
Description Results of Toxicological Tests on 2,4,5-Trichlorophenoxyacetic Acid reported by V.K. Rowe, "moderate acute oral toxicity"-rat most resistant of four species; Material markedly irritating to the eyes"; "slightly to moderately irritating to the skin upon prolonged exposure."

Exhibit #P0061
PIN # 006006
Date 06-Oct-52
Author C O KOCH
Addressee KELLY, DR.
Description MEMO TO DR. KELLY FROM C. O. KOCH.

Exhibit #P0067
PIN # DOW767092
Date 27-Oct-53
Author F OYEN
Addressee BOUNDY, R.H. & DIRECTOR OF RESEARCH
GAY, H.H. & ALLINSON, R.L.
SUNDERLAND, W.W. & LYNN, GEORGE E.
Description Reply to 060970 letter to R. Maybury re residue methodology re phenoxyacetic acids. Refers to Yip's method of extraction procedure. Quantitation by GLC. Refers to Pesticide Methodology Manual, Food and Drug Directorate. Also, "Analytical Methods for Pesticide Residues in Foods"

Exhibit #P0071
PIN # DOW874256-7
Date 09-Mar-54
Author WW SUNDERLAND
Addressee WHITE, R.O. & PESTICIDES SECTION
U.S.D.A. & PLANT PEST CONTROL
WASH., D.C.
Description Letter provides revised label copy for

15067

Kuron to U.S.D.A.; gives information regarding similarities of herbicide to 2,4-D and 2,4,5-T formulations.

Exhibit #P0077

PIN # DOW278614
Date 18-Jul-55
Author HAROLD H GAY MD
Addressee ROWE, V K. & CRANDALL, R A
SMITH, H L & WILLIAMS, G J
UNINTELLIGABLE, MD
Description Letter expanding upon Dr Rowe's letter of 7/12/55 which supports claim that Esteron 245 has not caused injury to man.

Exhibit #P0078

PIN # DOW278609
Date 24-Aug-55
Author HAROLD GAY MD
Addressee TAYLOR, HAROLD & SMITH, H L
ROWE, V K & YOST JR, F N
Description Letter in which Dow's Medical Director denies causal relation between human illness and 24-D Esteron Weed Spray.

Exhibit #P0079

PIN # DOW645090
Date 26-Aug-55
Author A WIDIGER
Addressee CENTRAL RESEARCH & MIDLAND RES.INDEX
A. GRISWOLD & W.H. WILLIAMS
E.C.BRITTON & F.N. ALQUIST
Description Letter from E. Wanless, Head, Drug Section, Canadian Department of National Health and Welfare, to H.A. Thomson outlining recommended methodology for detection of unnamed substances in phenoxy herbicides including ...
SUILVEXZ . MENTIONS ENTIONSentions 1 ppm standard. [A

Exhibit #P0083

PIN # 16349
Date 07-Dec-55
Author R E SODEN
Addressee DURLAND, DR. J. A.
Description CONFIDENTIAL MEMO FROM R. E. SODEN TO DR. J. A. DURLAND DATED 12-07-55.

Exhibit #P0087

PIN # DOW782178-98
Date 01-Apr-56
Author T R TORBLAN
Addressee MCCOLLISTER D.D.

15068

Description results of range finding toxicological test on M-531. the report states the problem, conclusions, hazards, precautions for safe handling and first aid measures such as ingestion, eye contact, skin contact-irritation, skin absorption and the forms that go along with these tests.

Exhibit #P0088

PIN # DOW782202-20
Date 11-Apr-56
Author MARK A WOLF
Addressee MCCOLLISTER, D. D.
Description results of range finding toxicological tests on 2-formulations of reddon. this states the problem, conclusions and first air measures for the areas of ingestion, eye contact, skin contact - irritation, skin contact - absorption, and form with the results from the tests.

Exhibit #P0088

Exhibit #P0088

Exhibit #P0088

PIN # DOW500014 18
Date 22-Feb-57
Author WALTER TRAPP
Addressee GOERGEN & ROWE, V.K.
OTHERS AT DOW
Description Dow Chemical International Ltd. writes letter to Boehringer Sohn thanking it for information re preparation of TCP to avoid chloracne but notes 1955 skin irritation problem Givaudan Corporation, Geneva and New Jersey with cover note distributing to trap from Goergen directing return of information to Lueck.

Exhibit #P0099

PIN # DOW278591-92
Date 21-Jun-57
Author V K ROWE
Addressee PLETCHER & CONNER, D.L.
GAY, H.H & ASHWORTH, R.H.

Description The pilot experienced eye, nasal, and throat irritation when applying Esteron 44. This suggests that the operation was being carried out with little regard for safety.

Exhibit #P0102

PIN # DOW767184
Date 06-Aug-57
Author MARK WOLF
Addressee BOUNDY, R.H. & MCINTYRE, H.H.
LYNN, G.E. & BARRONS, K.
MUSSELL, D.R. & SCOLES, G.

Description Mark Wolf of Dow Writes report of Results of Range Finding Toxicological Tests an M-1086 (a 2,4,5T and 2,4-D Alkyl Amine Formulation checked by D.D. McCollister and Distributed to many other at Dow. Shows material in undiluted form is markedly irritating and damaging to the eye, causing marked internal effects, with little healing in 7 days. Chemical workers goggles must be worn where eye contact likely and protective clothing

Exhibit #P0107

PIN # DOW767243
Date 20-Dec-57
Author K OLSEN
Addressee MCINTYRE, H.H. & WOLF, MARK A.
BIOCHEM RES. LAB. & MCCOLLISTER, D.D.
BOUNDY R.H. & LYNN, G.E.

Description Results of Range Finding Toxicological tests on Inverton Brush Killer showing that the undiluted material is severely damaging to the eye, resulting in conjunctivitis with extensive sweg and moderate corneal damage and internam capillary infiltration.

Exhibit #P0109

PIN # DOW728167
Date 14-May-58
Author MARK WOLF
Addressee MCCOLLISTER, D.D. & HOYLE, H.R.
BIOCHEM RES. LAB.

Description Data Sheet of Properties, Health hazards, and Precautions for Safe Handling of Materials of Veon Brush Killer M-1086; corrosive to metals but apparently safe to man.

Exhibit #P0110

PIN # DOW767213

15070

Date 21-May-58
Author K OLSEN
Addressee COULTER, L.L. & MCCOLLISTER, D.D.
BOUNDY, R.H. & MCINTYRE, H.H.
PERKINS, R.P. & HART, A.
Description Results of Range Finding Toxicological tests on weed killer formulation M-1094 containing a 2,4,5T ester; the undiluted material is moderately irritating to the eye, with direct contact likely to produce conjunctival swelling and corneal damage

Exhibit #P0111

PIN # DOW728101
Date 16-Jun-58
Author MARK WOLF
Addressee MCCOLLISTER, D.D. & HOYLE, H.R.

Description Data Sheet of Properties, Health Hazards, and Precaution for safe Handling of Materials re; Dowanol 97B70 ester of 2,4,5T acetic acid 64.4%

Exhibit #P0112

PIN # DOW727967
Date 30-Jun-58
Author MARK WOLF
Addressee MCCOLLISTER, D.D. & HOYLE, H. R.

Description Data Sheet of Properties, Health Hazards, and Precautions for Safe Handling of Materials; May cause some permanent loss of vision; single prolonged exposure may cause reddening of the skin

Exhibit #P0113

PIN # DOW728103
Date 30-Jun-58
Author MARK WOLF
Addressee MCCOLLISTER, D.D. & HOYLE, H.R.
BIOCHEM RES.LAB.

Description DATA SHEET OF HEALTH HAZARDS OF REDDON CONCENTRATE

Exhibit #P0116

PIN # DOW123584-95
Date 01-Jan-59
Author F BAHRBOHM
Addressee READER'S OF & DEUTSCH, GESUNGH,
WES. VOLUME 14

Description AN ARTICLE ON THE DANGERS INVOLVED IN BEING ASSOCIATED WITH CHLORINATED PHENOLS AND NINETEEN FATAL CASES ARE REPORTED IN THE LITERATURE OF WORKING WITH

15071

PENTACHLOROPHENOL AND SODIUM
PENTACHLOROPHENOL. A SURVEY WAS ALSO
PROVIDED.

Exhibit #P0124

PIN # 005693
Date 16-Jun-59
Author ELMER P WHEELER
Addressee WEGER, L. C.
Description LETTER FROM ELMER P. WHEELER TO L. C.
WEGER, NITRO, WEST VIRGINIA, DATED 06-16-59
REGARDING THE "CHLORACNE PROBLEM - GERMAN
ARTICLE."

Exhibit #P0126

PIN # DOW728049
Date 02-Jul-59
Author K OLSON
Addressee OYEN, FRITZ & HOYLE, H.R.
BIOCHEM.RES.LAB
Description Data Sheet of Properties, Health Hazards,
& Precautions for Safe Handling of
Materials re; M-1459 formulation of Dowanol
Ester 24D and 2,4,5T

Exhibit #P0139

PIN # DOW1123078
Date 09-Jun-60
Author CHEMICAL DOW
Addressee
Description THE LABEL FOR 2,4-DICHLOROPHENOXY-ACETIC
ACID, BUTYL ESTER FOR MANUFACTURING
PURPOSES. CAUTION MAY CAUSE SKIN
IRRITATION.

Exhibit #P0154

PIN # DOW1123026
Date 09-Jan-61
Author CHEMICAL DOW
Addressee
Description THE DOW CHEMICAL COMPANY LABEL FOR DOW
BUTYL 265 A 2,4-D WEED KILLER. FOR
CONTROLLING MOST BROAD-LEAVED WEEDS ON
FARMS. CONTAINS 3 1/3 LBS PER GALLON OF
THE BUTYL ESTERS OF 2,4-D. 2,4-D ACID
EQUIVALENT 2 2/3 PLBS PER GALLON.

Exhibit #P0157

PIN # DOW1122109-0
Date 22-Sep-61
Author CHEMICAL DOW
Addressee
Description THE DOW CHEMICAL COMPANY LABEL FOR TIPPON
2-2 BRUSH AND WEED KILLER. CAUTION: MAY

15072

CAUSE SKIN IRRITATION.

Exhibit #P0194

PIN # DOW728053
Date 08-Jan-63
Author KENNETH OLSON
Addressee OYEN, FRITZ & HOYLE, H.R.
BIOCHEMRESLAB
Description Data sheet of Properties, Health Hazards, and precautions For Safe Handling of Dowanol PIB ester of 2,4,5-T (91%)
-relatively no problems noted, except skin irritation, and slight eye irritation

Exhibit #P0196

PIN # DOW816874
Date 15-Jan-63
Author DEPT OF DOW BIOPRODUCTS
Addressee
Description TABLE OF CONTENT - CONTAINING TOXICOLOGICAL PROPERTIES OF TORDON AND TOXICOLOGICAL PROPERTIES OF TORDON 101 MIXTURE. A PRIVATE COMMUNICATION NOT FOR PUBLICATION REPRODUCTION, OR GENERAL DISTRIBUTION.

Exhibit #P0199

PIN # DOW650469
Date 01-Feb-63
Author GEORGE DOWNARD
Addressee DOW CHEMICAL & FALSEY, BILL
U.S.D.A.
Description Notice of Registration under FIFRA issued over sig. of G. Downard, Head of Registration Section, Pesticides Regulation Division re; Esteron 2,4,5-T concentrate on the basis of information "furnished by the registrant" (Dow)

Exhibit #P0203

PIN # DOW816959-60
Date 07-Mar-63
Author CHEMICAL DOW
Addressee
Description THE DOW CHEMICAL COMPANY COPY OF A LABEL FOR TORDON 101 MIXTURE WITH USE DIRECTIONS, USE PRECAUTIONS AND WARNING STATED.

Exhibit #P0204

PIN # DOW816955-56
Date 07-Mar-63
Author CHEMICAL DOW
Addressee
Description THE DOW CHEMICAL COMPANY LABEL FOR TORDON 101 MIXTURE. THE LABEL CONTAINS USE

15073

DIRECTIONS, USE PRECAUTIONS, AND WARNING.
(SEE EXHIBIT 207)

Exhibit #P0205

PIN # DOW818958
Date 12-Mar-63
Author MARK WOLF
Addressee MCINTYRE, M. M.
Description SUBJECT: SUGGESTED PRECAUTIONARY LABELING FOR TORDON 101 MIXTURE. STATES WHAT EFFECTS THE CHEMICAL HAS AND WHAT TO DO IF CONTACT OCCURS. THIS IS A SAMPLE LABEL.

Exhibit #P0207

PIN # DOW820879
Date 27-Mar-63
Author CHEMICAL DOW
Addressee
Description CONFIDENTIAL: COMPLETE INGREDIENT STATEMENT FOR TORDON 101 MIXTURE M-2439, THIS STATES ACTIVE AND INERT INGREDIENTS AND HOW MUCH OF EACH.

Exhibit #P0213

PIN # DOW119118-21
Date 19-Apr-63
Author MARK A WOLF
Addressee MNNAMARA, BERNARD & LYNN. G. E.
Description A TABLE CONTAINING A SUMMARY OF ACUTE ORAL TESTS (BY INTUBATION) ON 2,4-D AND 2,4,5-T AND A NUMBER OF THEIR DERIVATIVES PREPARED BY BIOCHEMICAL RESEARCH LABORATORY.

Exhibit #P0215

PIN # 0402786
Date 22-Apr-63
Author GEORGE LYNN
Addressee DELMORE, GEN. FRED & SHAW, DR. WARRENC.
U.S. ARMY & U.S. DEPT. DEFENSE
U.S.D.A. & ARMY CHEMICAL CENTER
Description LYNN LETTER TO DELMORE RE 24D&245T TOXICITY

Exhibit #P0216

PIN # D 802819-20
Date 22-Apr-63
Author G E LYNN
Addressee DELMORE, GEN. FRED J & SHAW, DR. WARREN C.
Description G. E. lynn's letter dated 04-22-63 to Brigadier General Fred J. Delmore.

Exhibit #P0220

15074

PIN # DOW650079-83
Date 29-Apr-63
Author MILT HUNT
Addressee LYNN, GEORGE & JOHNSON, JULIUS
COULTER, L.L. & WOLF, MARK
MCINTYRE, H.H. & FALKENSTEIN, W.J.
Description limited release for sales directed to many
at Dow relating to Vertron CE with Diesel
Fuel Oil and with sample label attached
refers to meeting customer (AT&T)
specifications

Exhibit #P0221

PIN # DS 17940-41
Date 02-May-63
Author R J MARRESE
Addressee CECIL, LARRY & GUIDI, R. A.
KING, J. O. & CHANDLER, E. L.

Description diamond alkali co. confidential interoffice
correspondence from R. J. Marrese to Larry
Cecil dated 05-02-63.

Exhibit #P0226

PIN # DOW650262-70
Date 17-May-63
Author JULIUS JOHNSON
Addressee LYNN, GEORGE & BARRON, K.C.
WOLF, MARK & MCINTYRE, H.H.
FALKENSTEIN, W.J. & COULTER, L.L.

Description limited release to sales of a 2,4,5-T
formulation known as Vertron T, with notes
of Julius Johnson and George Lynn, H.H.
McIntyre and others relating to use,
labeling, and fact that product had to be
registered to be sold to to customers
identified and with reference to competing
against Amchem for business.

Exhibit #P0232

PIN # DOW820874
Date 12-Jun-63
Author M W DUNDERLAND
Addressee DOWNARD, C.M. & LOARY, J. S.
LYNN, G. E.

Description LETTER FROM M.W. DUNDERLAND, STAFF
ASSISTANT, BIOPRODUCTS DEPARTMENT TO C.M.
DOWNARD REGARDING TORDON 10 MIXTURE AND A
ADDITIONAL INVESTIGATION OF THE EFFECTS.

Exhibit #P0233

PIN # DOW820866
Date 28-Jun-63
Author G M DOWNARD

15075

Addressee SUNDERLAND, W. W.
Description LETTER DATED 06-28-63 FROM G. M. DOWNARD
HEAD, REGISTRATION SECTION TO MR. W. W.
SUNDERLAND OF DOW C CHEMICAL COMPANY.
CONTAINING A REGISTRATION NOTICE UNDER THE
FEDERAL INSECTICIDE, FUNGICIDE, AND
RODENTICIDE ACT FOR TORDON 101 MIXTURE.
REGISTRATION NUMBER IS 464-306.

Exhibit #P0234

PIN # H28114
Date 03-Jul-63
Author JOHN FRAWLEY
Addressee ROWE, V.K. & DUNN, C.L.
HUNT, WM.H.,PH.D.
Description George Lynn, then Director of Registration,
Bioproducts Department of Dow, writes Brig.
General Fred J. Delmore, U.S. Army at the
request of Dr. Warren C. Shaw of U.S.D.A.
and encloses toxicity data re 2,4,5T and
2,4D, stating "We would like to also
mention that we have been manufacturing
2,4-D and 2,4,5-T for over ten years and
...to the best of our knowledge, none of
the workmen in these factories have shown
any ill effects as a result of working with
these

Exhibit #P0235

PIN # H28114-15
Date 03-Jul-63
Author JOHN P FRAWLEY
Addressee ROWE, V.K. & HUNT, W. H.
Description john p. frawley's letter to V. K. rowe of
07-03-63.

Exhibit #P0239

PIN # JUS215 1947
Date 19-Jul-63
Author ARMY ARMY
Addressee
Description 1963 MILITARY SPECIFICATIONS.

Exhibit #P0240

PIN # DOW981607
Date 19-Jul-63
Author ARMY ARMY
Addressee
Description MILITARY SPECIFICATIONS FOR HERBICIDE
N-BUTYL 2,4,5-TRICHLOROPHENOXYACETATE.

Exhibit #P0253

PIN # DOW816941

15076

Date 18-Nov-63
Author MARK G WILTSE
Addressee LYNN, G. E. & HAMMER, O.N.
RITTY, P. M. & BRYANT, C. A
FALSEY, W. P. & OTHERS
Description LETTER DATED 11-18-63 FROM MARK G. WILTSE,
MANAGER, TORDON PRODUCT PALNNING TEAM TO G.
E. LYNN, BIOPRODUCTS DEPT. REGARDING THE
CORRECTION OF TORDON 101 LABEL.

Exhibit #P0256
PIN # DOW820863
Date 04-Dec-63
Author CHEMICAL DOW
Addressee
Description CONFIDENTIAL: A LISTING OF INGREDIENTS
CONTAINED IN TORDON 101 MIXTURE AND THE
AMOUNT OF EACH

Exhibit #P0257
PIN # DOW820861-63
Date 05-Dec-63
Author N W MCINTYRE
Addressee MR. GEORGE M BERNARD & BIOPRODUCTS
WASHINGTON OFFICE
Description Revisions in labeling due to new findings
regarding purity of product.

Exhibit #P0263
PIN # DOW820833
Date 13-Jan-64
Author G M DOWNARD
Addressee SIDNEY B SACHS
Description U.S. Department of Agriculture is advising
Dow Chemical Company that the proposed new
labeling is not acceptable due to implied
change in weight.

Exhibit #P0274
PIN # DOW620859
Date 09-Mar-64
Author ILLEGIBLE ILLEGABLE
Addressee DR/MR LEARY
Description This memorandum is totally illegible.

Exhibit #P0293
PIN # DOW816938
Date 18-May-64
Author WP FALSEY
Addressee C.A. HIGHHILL & C. A. BRYANT
G.E. LYNN & L.L. COULTER
R. C. DOSSER & OTHERS
Description Because there is evidence that there is a
large amount of Tordon Acid below the 65%

15077

purity level, specifications are given on how to blend it with other materials going into Tordon 101 to achieve an AVERAGE of 65% purity. Mention is made that normally, this impure Tordon Acid would not be used.

Exhibit #P0308

PIN # DOW816937
Date 29-Jun-64
Author MR FALEDY
Addressee A.L. HOLIDAY & G.E. LYNN
J.A. TELLY & D. B. FLETCHER
GLENN SHAW
Description Request for written statements on waste disposal and statement that product is not being placed in water, streams, etc. They wish to avoid adverse publicity.

Exhibit #P0313

PIN # A&G85-87DOW
Date 30-Jul-64
Author RAY HOLMES
Addressee HOYLE, H.R.
Description 3 page letter giving history of process changes in 199 bldg. by holmes, supervisor of plant, and which documents high production and beginning of outbreak of chloracne in February, 1964 with dated summary of events on last page.

Exhibit #P0314

PIN # DOW 766762-4
Date 30-Jul-64
Author RAY HOLMES
Addressee HOYLE, H. R.
Description Ray holmes' letter to H. R. hoyle dated 07-30-64.

Exhibit #P0319

PIN # DOW132506
Date 08-Sep-64
Author L WESTOVER
Addressee HOLMES, RAY
Description Westover reports that Lab tests in 5 sample of caustic insoluble oil from TCP process estimates TCDD level at .2% and refers to the presence of other halogenated mamaterials detected as well.

Exhibit #P0320

PIN # DOW 132506
Date 08-Sep-64
Author L B WESTOVER
Addressee HOLMES, R

Description 09-10-64 westover report to holmes re:
results of analysis of dioxin in certain
samples.

Exhibit #P0323

PIN # DOW568604-5
Date 15-Sep-64
Author DR HANS MERTZ
Addressee DOW CHEMICAL CO.
Description Dr. Mertz related visit of Trapp, Lueck,
and Silverstein and encloses confidential
paper re isolation of chloracne excitors
and production of 2,4,5-T acid dated
12/09/56.

Exhibit #P0325

PIN # DOW132504-5
Date 05-Oct-64
Author RAY HOLMES
Addressee GOERGEN, G.G. & HUTCHENREUTHER, C.O.
DYLEWSKI, S.W. & HABERSTROH, W.H.

Description Holmes writes others at Dow re chloracne
producing material, and states attempts to
reduce the TCDD type materials made in our
process have not been encouraging; and "I
am not confident that we have done or are
doing enough at 199 Bldg. to overcome the
chloracne trouble" but "number of people
are encouraging me..to continue" at
capacity

Exhibit #P0326

PIN # DOW 132504-5
Date 05-Oct-64
Author R D HOLMES
Addressee GOERGEN, G. G. & HUTCHENREYTHHER, C
DYLEWSKI, S. W. & HABERSTRCH, W. H.

Description Ray holmes' letter of 10-05-64 to G. G.
Goergen and others.

Exhibit #P0331

PIN # DOW766704-8
Date 20-Nov-64
Author RAY HOLMES
Addressee UNKNOWN
Description Ray Homes, Supervisor of 199 bldg. at Dow,
writes Report (which has been re-dacted, in
pertinent part), re; Hydrolysis of Tetra-
Chlorobenzene using Flake Caustic In
(redaction); describes differences in pro-
cess from '46-52 and '55-62

Exhibit #P0334
PIN # DOW119502-3
Date 03-Dec-64
Author DAVID H GROTH
Addressee E.T. UPTON
Description Author speculates on root of skin an liver toxicity in 2,4,5-T is due to some by-product. Asks for samples of purest 2,4,5-T and commercial 2,4,5-T and product before the emulsifiers have been added for testing.

Exhibit #P0336
PIN # A&G 500040-1
Date 04-Dec-64
Author DR DAVID GROTH
Addressee UPTON, EDWARD T.
Description 12-04-64 LETTER FROM DR. DAVID GROTH TO MR. UPTON.

Exhibit #P0338
PIN # DOW33304-17
Date 08-Dec-64
Author N E SKELLY
Addressee BRADLY, K.B. & COULTER, K.E.
DELISLE, N.G. & GILL, H.M.
GOERGEN, G.G & OTHERS
Description Isolation and Identification of possible Acnegens from the Caustic-Insoluble Portion of the products from the 2,4,5-T Process. Skin sensitivity tests on rabbits have positively shown 2,3,7,-T to be by far the most severe skin irritant among the group of compounds identified.

Exhibit #P0339
PIN # 00000000
Date 11-Dec-64
Author LINDLEY S DEATLEY
Addressee DOSSER, P. C.
Description 12-11-64 LETTER FROM MR. DEATLEY TO DOSSER OF DOW.

Exhibit #P0341
PIN # DOW568606-8
Date 15-Dec-64
Author DR HANS MERTZ
Addressee DOW CHEMICAL CO.
Description Same exhibit as 370 except third page attached which shows molecular drawing of TCDD.

Exhibit #P0342
PIN # DOW568609-13

15080

Date 17-Dec-64
Author DR HANS MERTZ
Addressee SILVERSTEIN, LARRY
Description Boehringer informs Silverstein of Dow of rabbit testing data done in 1955 showing death, liver damage, kidney and lung failures.

Exhibit #P0343

PIN # DOW820336
Date 20-Dec-64
Author NONE NONE
Addressee
Description General Memorandum regarding materials of 3,5,6-T Chemical Tordon and directions for use. Back panel with caution shown.

Exhibit #P0344

PIN # DOW14050-57
Date 22-Dec-64
Author HAROLD GILL
Addressee COULTER, K.E. & GOERGEN, G.G.
HOLMES, RAY D. & HOYLE, H.R.
KEY, M. & SILVERSTEIN, L.
Description Harold Gill of Dow writes Analytical Method to determine TCDD in caustic insolubles of 2,4,5-TCP process and distributes it to 19 others at Dow

Exhibit #P0345

PIN # DOW 14050-57
Date 22-Dec-64
Author HAROLD GILLS
Addressee COULTER, K. L. & YRBLE, R.
ERLEY, D. S. & GREENE, L. M.
GOARGEN O. C. & HABERSTRCH, W. H.
Description Harold gill's gas/liquid chromatographic procedure to analyze caustic insolubles for compounds capable of causing chlorance, principally 2,3,7,8-tetrachlorodibenzo-p-dioxin.

Exhibit #P0346

PIN # 00000000
Date 28-Dec-64
Author LINDLEY S DEATLEY
Addressee DOSSER, P. C.
Description 12-28-64 LETTER OF DEATLEY TO DOSSER OF DOW.

Exhibit #P0351

PIN # 00000000
Date 12-Jan-65
Author L S DEATLEY

15081

Addressee THOMPSON, BOB & HOWARD, HAROLD
Description 01-12-65 T-H INTEROFFICE MEMO.

Exhibit #P0352
PIN # DOW766687-94
Date 12-Jan-65
Author N POFFENBERGER
Addressee SAUERS, R. & TRAPP, W.B.
 POFFENBERGER, N. & WIDIGER, A.
 LUECK, A & OTHERS
Description This information consists of diagrams and formulas which are difficult to interpret.

Exhibit #P0355
PIN # 00000000
Date 14-Jan-65
Author EDWIN T UPTON
Addressee GROTH, DR. DAVID
Description 01-14-65 LETTER FROM MR. UPTON TO DR. GROTH.

Exhibit #P0356
PIN # DOW1120903
Date 14-Jan-65
Author EDWIN T UPTON
Addressee GROTH, DR. DAVID M.
Description letter dated 01-14-65 from edwin t. upton to Dr. David M. Groth regarding the samples that were requested for the study of the chloracne problem.

Exhibit #P0357
PIN # DOW568569-72
Date 26-Jan-65
Author WALTER B TRAPP
Addressee CHAMBERLAIN, L.C. & COULTER, K.E.
 HABERSTROH, W.H. & GOERGEN, G.G.
 SAUERS, R.C.
Description Three page summary attached to cover letter admits TCDD chloracne exciter shows conditions which minimize TCDD formation and shows conditions which favor TCDD formation "the disadvantage of the non-aqueous solvent system is . . . which can plug a tube reactor."

Exhibit #P0358
PIN # DOW569137-38
Date 27-Jan-65
Author WALTER TRAPP
Addressee DOW CHEMICAL CO.
Description Graphs show Dow discovered increase in production of TCDD at higher temperature;

15082

2nd page initialed A.H.W. and dated January 28, 1964; A.H.W. is Dow's Widiger.

Exhibit #P0359

PIN # DOW568535-7
Date 28-Jan-65
Author WALTER B TRAPP
Addressee MERTZ, DR. HANS
Description This letter contains a report of a telephone conversation between four Dow people and Dr. Merz with recitation of questions and answers.

Exhibit #P0360

PIN # DOW1120905
Date 31-Jan-65
Author DAVID H GROTH
Addressee KRAUS, GUNTHER E.
Description reports stating people developing chloracne and liver damage from over exposure to 2,4,5t in industry.

Exhibit #P0361

PIN # DOW766309-36
Date 03-Feb-65
Author N POFFENBERGER
Addressee LUECK,AL & COULTER, K.
STAEBLING, E. & TRAPP, WALTER
HABERSTROH,W.H. & OTHERS
Description Preliminary process design for the manufacture of 245-Trichlorophenol using 100% NaOH distributed to manufacturing personnel at Dow, and designed at Dow

Exhibit #P0362

PIN # DOW766309-36
Date 03-Feb-65
Author N POFFENBERGER
Addressee
Description A process design is presented, that advantage be taken of the high reaction rates. This document goes into detail about various Recycle, Reaction, and Analysis Profiles.

Exhibit #P0363

PIN # DOW569168-92
Date 03-Feb-65
Author N POFFENBERGER
Addressee TRAPP, W. & COULTER, K.
LUECK, A. & OTHERS AT DOW
Description Poffenberger of Dow prepares and distributed processed design to prepare

15084

2,4,5-TCP using 100 percent sodium hydroxide.

Exhibit #P0364

PIN # UNKNOWN
Date 05-Feb-65
Author KY HANSON
Addressee SPALDING, J.L. & PATENT DEPARTMENT
566 BUILDING & DOW CHEMICAL

Description Letter shows Dow sold surplus 245-T and surplus 2,4-D, to which was added 481,500 pounds iso-butyl ester 2,4,5-T and sold to Army procurement at price of \$229,338. in November, 1961; Letter also refers to other sales, and bids and sales of Monsanto, Hercules & Diamond, and royalties due Dow on such sales.

Exhibit #P0365

PIN # DOW569105-12
Date 09-Feb-65
Author SAME ILLEGIBLE
Addressee ANDERSON & LUCEK
WOLF & WEST
TRAPP & OTHERS

Description This document provided by Dow Chemical are the Safety Techniques suggested.

Exhibit #P0366

PIN # 00000000
Date 10-Feb-65
Author LINDLEY S DEATLEY
Addressee WILLIAMS, G. J & GRANT, L .B
CORBIN, W. L. & HARRIS, T. W.
TUCKER, J. C. & THOMPSON, R. S.
Description MEMO OF DISCUSSIONS AT DOW CHEMICAL CO.
HELD 2/10-11/65, SIGNED BY MR. DEATLEY AND
DATED 2-15-65.

Exhibit #P0367

PIN # DOW568549
Date 15-Feb-65
Author WALTER B TRAPP
Addressee DOLL, DR. O.
Description Trapp thanks Boehringer for help, says restriction in communication because of our secrecy agreement and because of this, Koopmann not fully informed of seriousness of Dow health problem.

Exhibit #P0369

PIN # 0000000
Date 17-Feb-65

15085

Author EDWIN T UPTON
Addressee GROTH, DR. DAVID M
Description 02-17-65 LETTER TO MR. UPTON TO DR. GROTH.

Exhibit #P0370

PIN # DOW107810-11
Date 17-Feb-65
Author FRANK S DAVIS
Addressee GIBSON, JOHN
Description letter dated 02-17-65 from frank S. davis, research plant physiologist to Mr. John Gibson of dow and a paper on moisture stress based on an article given at WSA (on the Mechanism of inhibition of KAD-linked dehydrogenese Systems by Piclorax.

Exhibit #P0371

PIN # DOW129844-6
Date 22-Feb-65
Author DONALD PLETCHER
Addressee ROWE, V.K. & FALSEY, W.P.
HOYLE, H.R. & GILL, W.M.
SILVERSTEIN, LARRY & LYNN, GEORGE E.
Description minutes of meeting held at Dow among Dow employees; notes Dow knows rabbit ear tests sensitive to 4 ppb and "agreed that Rowe should move ahead with contact with U. S. Public Health Service and Department of Agriculture representatives as soon as our data is better corrolated." "contacts to be made with other" manufacturers; "Rowe to serve as Dow contact for any inquiries"

Exhibit #P0372

PIN # DOW 129844-6
Date 22-Feb-65
Author D E PLETCHER
Addressee ROWE, V. K. & FALSEY, W. P.
BARRON, K. C. & CORBIN, W. L
HOFF, R. C. & HOYLE, H. R.
Description D. E. pletcher report dated 2-22-65 of the "exciter problem" meeting which took place 2-18-65.

Exhibit #P0374

PIN # 5972-3
Date 24-Feb-65
Author EMMET KELLY
Addressee FILE & MONSANTO
Description Emmet Kelly, M.D. of Monsanto writes memo to file of his Telephone conversation with V.K. Rowe of Dow concerning Dow's analysis of Monsanto's 2,4,5-T at 3-10 ppm TCDD;

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together with customer complaint references and meetings to be held.

Exhibit #P0375

PIN # 005972-3
Date 24-Feb-65
Author R EMMET KELLY MD
Addressee
Description MEMO FROM R. EMMET KELLY, M.D. REGARDING HIS DISCUSSIONS WITH V. K. ROWE OF DOW, DATED 02-24-65.

Exhibit #P0376

PIN # MON 005972-3
Date 24-Feb-65
Author EMMET KELLY
Addressee FILE
Description DOW HAS 20 CASES OF CHLORACNE. DOW HAS ANALYSES SAMPLES FROM MONSANTO AND FOUND OUR 2,4,5-T AHS 3-10 PPM OF TCDD WHICH KELLY SAYS ROWE IS SURE IS THE CHLORACNE CAUSING AGENT. DOW WILL HAVE MANAGEMENT MEETING TODAY; ROWE WANTS CRASH MEETING WITH ALL PRODUCERS TO REACH A SPEC LEVEL IN ORDER TO ELIMINATE THIS PARTICULAR CONTAMINANT BEFORE THE PUBLIC HEALTH SERVICE GOT INTO THE ACT.

Exhibit #P0378

PIN # 00000000
Date 26-Feb-65
Author DR DAVID H GROTH
Addressee UPTON, EDWIN T.
Description 02-26-65 LETTER OF MR. UPTON TO DR. GROTH.

Exhibit #P0379

PIN # DOW 19294-5
Date 01-Mar-65
Author J D DOEDENS
Addressee ROWE, V. K.
Description TRICHLOROPHENOL SUMMARY DATED 3-1-65, BY J. D. DOEDENS OF DOW.

Exhibit #P0380

PIN # DOW19294-5
Date 01-Mar-65
Author J D DOEDENS
Addressee ROWE,V.K. & UNKNOWN
Description J.D. Doedens of Dow writes a very descriptive summary of the trichlorophenol producers, his personal knowledge of toxicology, V.K. Rowe's contacts (and those of others at Dow) with other producers, the

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scheduled meeting in March, 1965;"most toxic materials known"..."positive action at 40 parts per billion"..."equivocal results at 4 ppb"...identifies symmetrical dioxin as the agent.

Exhibit #P0381

PIN # DOW569221-33
Date 02-Mar-65
Author J L CORNELL
Addressee COULTER, K. E. & DELISLE, N. G.
DYLEWSKI, S. W. & GOERGEN, G. G.
HUTCHENREYTHYER C O & OTHERS
Description this contains the following information:
authorization request, project schedule -
projected targets, manpower, process review,
reactor procurement, plot plan and site,
research program and figures.

Exhibit #P0382

PIN # DOW129925
Date 02-Mar-65
Author V K ROWE
Addressee BARRONS, K.C. & CORBIN, W.L.
HOYLE, H.R.
Description This meeting was called to discuss the
disposition of the Monsanto 2,4,5-T which
contains from 3 to 7 ppm.

Exhibit #P0383

PIN # DOW569221-33
Date 02-Mar-65
Author S J HARRIS
Addressee LUECK, A F & COULTER, K E
DELISLE, N G & GOERGEN, G G
HUTCHENREUTHER, C O & OTHERS
Description This project deals with Authorization
Request, Project Schedule - Project
Targets, Manpower, Process Review, and
Discussion. Questions were raised
regarding many "if's" involved with this
project.

Exhibit #P0385

PIN # DOW1111-1127
Date 10-Mar-65
Author LARRY SILVERSTEIN
Addressee LYNN, GEORGE & HUTCHENREUTHER
GOERGEN & STAEBLING
BAILEY & UNIT INDEX
Description Early History of the Chloracne Problem -
Biochem's Contribution authored by Larry
Silverstein of Dow and distributed to other
Dow Employee's; Describes at length the

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chloracne outbreak, the disease, the identification of TCDD, liver damage, european experience, rabbit ear testing, german problems in '55, and '57 active samples from 199 Bldg. at Dow.

Exhibit #P0386

PIN # DOW129927
Date 10-Mar-65
Author LARRY SILVERSTEIN
Addressee ROWE, VERALD K. & LYNN, GEORGE
HUTCHENREUTHER, C.O. & GILL, W.M.
PLETCHER, DONALD & OTHERS
Description DOWNUMEROUS
Memo to 23 Dow employees relating the hazard found in Dow's analyses of lots of Monsanto's 2,4,5-T acid; "Material represents a definite hazards requiring all the precautions used in 199 building.."

Exhibit #P0387

PIN # DOW129927
Date 10-Mar-65
Author L G SILVERSTEIN
Addressee RILEY, P. H. & TUCKER, J.C.
SMILEY, R.N. & HARRIS, J. W.
GRANT, L.B. & OTHERS
Description Rabbit ear tests on twelve lost of Monsanto 2,4 T acid have shown moderate to severe response in eight to 20 percent concentration in ethanol. This material presents a definite hazard which would require all the precautions used in 199 Bldg and 349 Bldg.

Exhibit #P0388

PIN # DOW172136-37
Date 10-Mar-65
Author G SILVERSTEIN
Addressee RILEY, F.H. & TUCKER, J.C.
SMILEY, R.N. & HARRIS, J.W.
GRANT, L.B. & OTHERS
Description Rabbit ear tests have shown moderate to severe response in eight cased as 10% concentration in ethanol. This material presents a definite hazard which would require all precautions used in 199 Bldg and 349 Bldg to prevent injury. Shipping this material to Riverdale and Woodbury is a definite risk to their employees, especially since they are probably unaware of the problem and are probably taking no precautions.

Exhibit #P0389

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PIN # DOW569141-42
Date 10-Mar-65
Author A H WIDIGER
Addressee TRAPP & DOW CHEMICAL CO.

Description Widiger of Dow prepares graphs showing time--temperature, factors in reaction to produce tetrachlorobenzene.

Exhibit #P0390

PIN # DOW 1111-27
Date 11-Mar-65
Author LARRY SILVERSTEIN

Addressee
Description "EARLY DOW HISTORY OF THE CHLORACNE PROBLEM--BIOCHEM'S CONTRIBUTION" DATED 03-11-65 OVER INITIALS OF LARRY SILVERSTEIN OF DOW.

Exhibit #P0391

PIN # DOW1111-27
Date 11-Mar-65
Author LARRY SILVERSTEIN
Addressee BAILEY & HUTCHENSUTTEN
GOERSEN & LUCEK
OTHER ILLEGIBLE

Description An outbreak of chloracne in the trichlorophenol process has resulted in approximately 40 cases of chlora in Dow people. Chloracne is a skin disorder characterized by the appearance of black heads and small bumps.

Exhibit #P0393

PIN # DOW569239-43
Date 15-Mar-65
Author R E ANDERSON
Addressee DELISLE, N. G. & COULTER, K. E.
WOLF, R. W. & GOERGEN, G. G.
LUSCK, A & OTHERS

Description this reports states the reason for building a new facility.

Exhibit #P0394

PIN # DOW569239-43
Date 15-Mar-65
Author R E ANDERSON
Addressee COULTER, K.E. & WOLF, R
LUSCK, A. & TRAPP, W.
OTHERS

Description The major consideration in the design of the new plant is to prevent the production of chloracne compounds but to minimize operator contact with process streams and

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equipment.

Exhibit #P0395

PIN # DOW569251-4
Date 17-Mar-65
Author UNKNOWN REA
Addressee UNKNOWN
Description Dow document, evidently internal, composed by "R.E.A." describing the Trichlorophenol Reactor cycle. /

Exhibit #P0398

PIN # DOW569247-50
Date 18-Mar-65
Author J S HARRIS
Addressee ANDERSON, R. E & LUECK, A. F.
DELISLE, N .G & WEHN, W. E.
CORNELL, J. L. & OTHERS
Description discussed were preliminary/drying flow sheets, steel shell and tube phenate colers with temperature controls, etc.

Exhibit #P0399

PIN # DOW569247-50
Date 18-Mar-65
Author J S HARRIS
Addressee COULTER, K.E. & GRAVES, H.E.
WOLF, R.R. & HABERSTROH, W.H.
DYLEWSKI, S.W. & OTHERS
Description The purpose of the meeting was to review the preliminary reactor and neutralization/drying flow sheets.

Exhibit #P0400

PIN # DOW119084-5
Date 19-Mar-65
Author CH BOEHRINGER SOHN
Addressee DOW CHEMICAL & BRANCH, C.B.,V.P.
Description C.H. Boehringer Sohn of Germany writes Dow letter form agreement calling for the payment by Dow to the German firm for disclosure of processes aimed at the prevention of chloracne arising out of the production of sodium 2,4,5-trichlorophenate; Calls for payment of \$35,000 (sic?)(copy # not clear).

Exhibit #P0401

PIN # 19193-8
Date 19-Mar-65
Author LARRY SILVERSTEIN
Addressee ROWE, V.K. & LYNN, GEORGE
HUTCHENREUTHER C.O. & WILTSE, MARK

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Description PETERSEN, JACK & OTHERS
Larry Silverstein of Dow writes detailed report concerning the discussion held at Dow on 3-24-65 among representatives of Dow, Hooker, Diamond Alkali and Hercules; document references the presentations that were made by Dow employees at the meeting, together with extensive knowledge of the toxic properties of dioxin.

Exhibit #P0402

PIN # 379-80
Date 19-Mar-65
Author VERALD ROWE
Addressee KELLY, EMMET, M.D. & WILKENFELD, DR.J.
VERHOEZE, RAYMOND & KENNEDY, FRANCIS
CHANDLER, ED & FRAWLEY, DR. JOHN P.

Description 3-19-65 letter from V.K. Rowe of Dow to various manufacturer's representatives, describing conversations he has had with them, and setting up meeting to be held 3-24-65 at Dow, Midland, MI.

Exhibit #P0403

PIN # DOW 119084-5
Date 19-Mar-65
Author C H BOEHRINGER SOHN
Addressee BRANCH, C. B. & DOW CHEMICAL CO.

Description LETTER FROM AGREEMENT BETWEEN C. H. BOERINGER SOHN AND DOW CHEMICAL COMPANY, DATED 3-19-65.

Exhibit #P0404

PIN # DOW19200-1
Date 19-Mar-65
Author V K ROWE
Addressee KELLY, EMMET & WILKENFELD, DR. J
VERHOEZE, RAYMOND & KENNEDY, FRANCIS
CHANDLER, DR. ED & OTHERS

Description letter inviting each to Midland to discuss the toxicological problems caused by the presence of certain highly toxic impurities in 2,4,5-t and related materials.

Exhibit #P0405

PIN # DOW568796-7
Date 19-Mar-65
Author SOHN BOEHRINGER
Addressee DOW CHEMICAL

Description English translation of an agreement letter.

Exhibit #P0415

15092

PIN # DOW 19193-98
Date 29-Mar-65
Author L Q SILVERSTEIN
Addressee RILEY, F. H. & SMILEY, R. N.
GRANT, L. B. & HUTCHENREUTHER, C.O.
AMSTUTZ, F. C. & FALSEY, W. P.
Description 03-29-65 "REPORT ON THE CHLORACNE PROBLEM
MEETING ON 03-24-65" BY L. G. SILVERSTEIN
OF DOW TO V. K. ROWE AND MANY OTHERS.

Exhibit #P0416

PIN # DOW019193
Date 29-Mar-65
Author V K ROWE
Addressee RILEY, F.H. & SMILEY, R.N.
GRANT, L.B. & LYNN, O.
PLETCHER, D & OTHERS
Description illegible

Exhibit #P0417

PIN # DOW29959-64
Date 29-Mar-65
Author V K ROWE
Addressee RILEY, F.H. & SMILEY, R.H.
GRANT, L.B. & HUTCHENREUTHER, C
AMSTUTZ, F.C. & OTHERS
Description Dr. Holder reviewed the medical side of the
Dow and said that we now have approximately
60 to 70 cases of individuals with
chloracne ranging from severe cases to mild
cases. The limit is 1 ppm for 2,4,5-T and
for 2,4,5-T Acid, either acetic or pro-
pionic.

Exhibit #P0424

PIN # DOW568583
Date 09-Apr-65
Author WALTER B TRAPP
Addressee MERTZ, DR. HANS & FRANKFORT OFFICE DOW
AMOS DOW INT'L
Description Trapp reports results of Dow studies on
Boehringer TCP samples including rabbit
tests and analyses of TCBD content.

Exhibit #P0427

PIN # DOW751869
Date 15-Apr-65
Author HAROLD L GORDON
Addressee FLAMMANG & DIVISION MANAGER
MAGNA CORP. & ROWE, V.K.
OTHERS AT DOW
Description Medical Director of Dow writes Division
Manager of a customer giving complete
assurance that impurity present in Dovicide

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2 could not cause chloracne even with gross overexposure and says Dow imposed standard on finished product of zero using an analytical method to 1ppm.

Exhibit #P0428

PIN # DOW568577-8
Date 22-Apr-65
Author CH BOEHRINGERSOHN
Addressee DOW CHEMICAL & RE245TCONTRACT

Description Letter in german from C.H. Boehringer Sohn to Dow Chemical Company, Midland, Michigan, re; 2,4,5-T"KontraKt"

Exhibit #P0431

PIN # DOW012036-37
Date 04-May-65
Author L C WHITE JR
Addressee AMSTUTS, F.C. & HOFF, R. C.
SOULATI, J. J. & SILVERSTEIN, L.
DOSSER, R. C. & SMITH, K. A.

Description a conference to discuss the dioxin addition to the specification.a tentative program of testing for the dioxin was set up.

Exhibit #P0433

PIN # DOW765918
Date 19-May-65
Author JS HARRIS
Addressee COULTER, K.E. & LUECK, A.F.
TRAPP, W. & HABERSTROH, W.H.
WIDIGER, A.H. & OTHERS

Description 2,4,5-trichlorophenol process data and physical properties summary showing heats of reaction data "assembled to assist those working on the trichlorophenol process problem"

Exhibit #P0434

PIN # DOW765918-19
Date 19-May-65
Author J S HARRIS
Addressee COULTER, K.E. & GRAVES, H.E.
ANDERSON, R.E. & LUECK, A.F.
WEHN, W.E. & OTHERS

Description Existing and generated raw material, intermediate and byproduct, and product data are herein assembled assist those working on the trichlorophenol process problem.

Exhibit #P0436

PIN # DOW107740-45

15094

Date 01-Jun-65
Author UNIVERSITY COLORADO STATE
Addressee
Description an article by colorado state university,
"how safe are chemical weed killers". it
states the steps of testing that is done
before a chemical goes on the market.

Exhibit #P0438
PIN # DOW 004
Date 02-Jun-65
Author EDWIN T UPTON
Addressee GROTH. DR. DAVID H
Description 06-02-65 LETTER OF MR. UPTON TO DR. GROTH.

Exhibit #P0441
PIN # 21745-48
Date 22-Jun-65
Author UNKNOWN DOWCHEMICAL
Addressee NOT SHOWN
Description Dow's Method for the Determination of
2,3,7,8 TCDD in 2,4,5-T by GLC dated June
22, 1965

Exhibit #P0442
PIN # DOW12986061
Date 24-Jun-65
Author VERALD ROWE
Addressee MULHOLLAND, ROSS & SILVERSTEIN, LARRY
HOLDEMAN, GRADY & GOERGEN, G.
HOYLE, H. & FALSEY, W.
Description Dow's V.K. Rowe writes, Ross Mulholland of
Dow of Canada, and describes the concern
arising out of the contamination of tcp and
245-t; he describes the "exceptional
toxicity" of dioxin; and "P.S. Under no
circumstances may this letter be repro-
duced, shown, or sent to anyone outside of
Dow

Exhibit #P0443
PIN # DOW 129860-1
Date 24-Jun-65
Author V K ROWE
Addressee MULHOLLAND, ROSS & SILVERSTEIN, L.
OTIS, C. & HOLDEMAN, ORADY
AMSTUTZ, F. C. & GOARGAN, O
Description V. K. ROWE'S LETTER TO ROSS MULHOLLAND
DATED 06-24-65.

Exhibit #P0445
PIN # DOW568533-34
Date 07-Jul-65
Author WALTER B TRAPP

Addressee MERZ, DR. HANS & BOEHRINGER, SOEN

Description Germans ask Dow for information re analytical methods using GLC to determine TCDD; encloses copy of method for analysis for dioxin in 2,4,5-T acid (MLW 65.11).

Exhibit #P0452

PIN # DOW547077-82
Date 24-Aug-65
Author UNKNOWN DOW
Addressee UNKNOWN
Description Description of EWsteron T2 formulation with labeling information on Dow letterhead refers to patent and recommendations for use.

Exhibit #P0454

PIN # DOW547074
Date 02-Sep-65
Author SIDNEY SACHS
Addressee DOWNARD, GEORGE M. & USDA
HAMMER, O.H. & SUNDERLAND, W.W.
Description Letter from Dow to USDA enclosing materials to review to issue registration for Esteron T2 formulation

Exhibit #P0455

PIN # DOW547074
Date 02-Sep-65
Author SIDNEY B SACHE
Addressee DOWNARD, GEORGE M. & HAMMER, O. H.
SUNDERLAND, W. W.
Description letter dated 09-02-65 from sidney B. sache to Mr. George M. Downard on the subject: Initial registration of Est???? t2.

Exhibit #P0457

PIN # 001564-69
Date 14-Sep-65
Author W R UDELL
Addressee TAKE - NITRO, E.F. & DUNLAP, W. P.
STEPHENS, J. A. & SHARP, D. B.
Description REPORT FROM W. R. UNDELL OF AGRICULTURAL RESEARCH DATED 09-14-65.

Exhibit #P0459

PIN # DOW19800-2,4
Date 15-Sep-65
Author DR KEITH C BARRONS
Addressee
Description final contract report covers the laboratory

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and greenhouse testing of new chemical structures synthesized as potential herbicides.

Exhibit #P0461

PIN # DOW816919-20
Date 20-Oct-65
Author CONFIDENTIAL DOW
Addressee
Description a dow confidential statment on the ingredients in TORDON 101 mixture (active and inert ingredients and the amount of each).

Exhibit #P0462

PIN # DOW201091
Date 20-Oct-65
Author W R DIXON
Addressee BOSSCHER, H. & HENSKE, J.M.
PLETCHER, D.E.
Description Decision has been made on the Midland Division Trichlorophenol Plant.

Exhibit #P0480

PIN # DOW124400-01
Date 03-Mar-66
Author BILL GILL
Addressee WILTSE, MARK & HANSON, K. Y.
OTIS, C. E. & BRYANT, C. A.
MCCOY, W. J. & RYAN, W. J.
Description Questions asked by Olmstead airforce and answered by dow chemical regarding the quantity of tordon 101 and 2,4,5-t.

Exhibit #P0484

PIN # DOW1120842
Date 14-Apr-66
Author JACK MATHES
Addressee BILLS, WELTON & COLLINS, GEORGE
BARBARINE, AUGUST & BRUCE, JAMES
HENDLEY, M. J. & OTHERS
Description form regarding the quantities of orange.

Exhibit #P0485

PIN # DOW009037
Date 22-Apr-66
Author RICHARD G CARLSON
Addressee MR. HAROLD BOSSCHER
Description Memo is "blanked" in parts of text, but describes the two steps and overall plan being used to produce tetrachlorobenzene. Memo cites exposure to tetrachlorobenzene fumes presently exceed the long-term Industrial Hygiene Standard in exisiting

facility.

Exhibit #P0486

PIN # DOW0201033
Date 22-Apr-66
Author J D VANARSDALE
Addressee R.G. CARLSON
Description Memo to Phenol Section from Production Planning and Control which projects the demand for 2,4-ST acid equivalent from 1966 to 1970 and, the portion attributed to government bid business.

Exhibit #P0487

PIN # DOW765248
Date 22-Apr-66
Author FD AXE
Addressee ROWE, V.K. & HOYLE, H.R.

Description F.D. Axe, Safety Department, Dow Chemical writes Rowe and Hyle of Dow to report that "we have just seen the first new cases of chloracne in the Tordon plant in more than six months." Since "the Pittsburg Tordon Plant (picoline process) will continue to operate to two or three years..we won't let up on the chloracne problem."

Exhibit #P0489

PIN # DOW120843-46
Date 13-May-66
Author R A HICKMAN
Addressee ARNOLD, C. W. & BEUTEL, O. E.
BRYANT, C .A & HANES, J. H.
MAASBERG, A. T. & OTHERS

Description subjects covered in the Report of call tordon/orange herbicide - defoliant, trichloroethylene, anti-freeze, methylene chloride, and dursban.

Exhibit #P0490

PIN # DOW0201026
Date 23-May-66
Author H BOSSCHER
Addressee MAX KEY, DIR OF MFG.

Description Memorandum which is "blanked", cites that new equipment for removal of "?" will be at new location. Memo cites that capacity will be increased and that the removal of "?" will reduce the incidences of chloracne in the Trichlorophenol Plant.

Exhibit #P0491

PIN # DOW816964-65

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Date 27-May-66
Author CONFIDENTIAL DOW
Addressee
Description dow confidential letter stating the ingredients in m-3083 brush killer. Composition consists of active and inert ingredients and raw materials.

Exhibit #P0492

PIN # DOW820792-94
Date 31-May-66
Author MR LYNN
Addressee WARD, JUSTUS
Description letter dated 05-31-66 from G. E lynn, director to Mr. Justus Ward, Director on how the chemical tordon is to be used or not used and what not to mix with.

Exhibit #P0494

PIN # D437060-102
Date 22-Jun-66
Author HOWARD H GRAVES
Addressee
Description This report is a summary of the pilot plant data obtained on the Boehringer Process for the caustic hydrolysis of 1,2,4,5-T using meOH as a solvent to produce 2,4,5-T (TCP).

Exhibit #P0497

PIN # DOW1119993
Date 05-Jul-66
Author C E OTIS
Addressee CORBIN, W. L. & BRANAMAN, R. J.
BEUTEL, DR. & YANKA, D. E.
Description amendment to W. J. mccoys' july 5 letter to w. j. ryan on the subject "basis for pricing of orange." the price of orange to the government at \$7.39 per gallon and the reasons why.

Exhibit #P0498

PIN # DOW119541-47
Date 11-Jul-66
Author ARMY ARMY
Addressee
Description military specification on herbicide; n-butyl 2,4,5-trichlorophenoxyacetate. Standard sections regarding are included: Scope, Applicable documents, etc. note: precaution - not for domestic use.

Exhibit #P0500

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PIN # DOW00013078
Date 13-Jul-66
Author J S JR CORT
Addressee A.B. TILLMAN
Description Appropriation request is for funds for expansion of the 2,4-D Acid facility, modification of the 2,4,5-T Acid facility, purification of TCP and additional warehousing facilities. Memo cites that TCP purification is designed to eliminate a major health problem at Newark and potential health problems with customers.

Exhibit #P0504

PIN # DOW201024
Date 01-Aug-66
Author DOW BD OF DIRECTORS
Addressee BD OF DIRECTORS
Description Meeting addresses Tetracholobenzene Expansion on a new building. This new facility is needed to provide for sales primarily of 2,4,5-t and of silvex,ronnel and Dowicides.

Exhibit #P0505

PIN # DOW816681
Date 06-Aug-66
Author O H HAMMER
Addressee WOLF, M.A. & LYNN, G. E.
Description technical information on tordon requested by ralph C wands. supplied on governmental agencies on a semi-confidential basis and not for reproduction, publication or general distribution.

Exhibit #P0506

PIN # DOW19997-8
Date 11-Aug-66
Author C E OTIS
Addressee CORBIN, W. L. & GOWELL, J. H.
MCCOY, W. J. & WILTSE, M. G.
Description states the military needs for orange in gallons for 1966 -1967 by the month. also states what orange is composed of : 4 lbs. a/e of 2,4,5-t and 4 lbs. a/e of 2,4-d per gallon.

Exhibit #P0513

PIN # DOW119483-84
Date 08-Sep-66
Author SUPPLY CENTER DEFENSE GENERAL
Addressee

Description order form, contract #: dsa-400-67-c-1820
for a grand total shipped 377123 gallons.

Exhibit #P0515

PIN # DOW201022
Date 26-Sep-66
Author CHESTER OTIS
Addressee DIXON, W.R. & BOSSCHER, H.
HARDING, K. & ARMSTRONG, C. C.
PLETCHER, D. E. & OTHERS

Description The Plant Science business feels it is
necessary to defer the Tetrachlorobenzene
expansion (new building), auth. no.
MP-32383A.

Exhibit #P0533

PIN # DOW770187-95
Date 04-Nov-66
Author A WIDIGER
Addressee JOHNSON, A. & DUGAN, G.F.
COULTER, K.E. & GOERGEN, G.G.
LOUCK, A. & OTHERS

Description Widiger, Johnson, and Dugan of Dow report
on new process developed to prepare 245TCP
from Trichlorobenzene; claims that although
the process is more complicated than the
present Dow process, it is continuous
oriented and of simpler design which
"should require less capital, less
maintenance labor, and less operating
labor."

Exhibit #P0535

PIN # DOW0400-406
Date 07-Nov-66
Author PROJECT ARMY MU
Addressee PN 6840 AO40 & MILITARY SPECS

Description Supercedes spec of 19-July-63. Gives
military specs for ordering one type of
herbicide consisting of normal-butyl
2,4,5-Trichlorophenoxyacetate molecular
weight 311.60. Specs include standards
requirements (composition, appearance,
etc.), Quality Assurance Provisions,
Packaging, Testing, Marking, etc. Gov't
reserved inspection rights but vendor can
use any acceptable lab. Marking specs
contain provision for marking in accordance
with MIL-STD-129 and in compliance with the
Federal

Exhibit #P0547

PIN # DOW0035-53

Date 01-Dec-66
Author GEORGE F COLLINS
Addressee DOW CHEMICAL CO.
Description Contract issued by Directorate for Procurement and Production - Defense General Supply Center to Dow Chemical at the Abbott Road Bldg. This is a confirming telegraphic offer dated 11/25/66 and acceptance dated 12/01/66. Order is for 6840 NSN, Herbicide, Butyl Esters: MIPR No. MA-6-16445. Section B relates product specifications.

Exhibit #P0548

PIN # DOW119485
Date 01-Dec-66
Author NONE DEFENSE SUPPLY
Addressee DOW GENERAL
Description Reference to contract DSA-400-67-c-4029/PC409 Total amount of contract cited as 128,000 gal. with a 5% increase 0% decrease variation clause. Columns relate to quantity expected and quantity shipped from 2/13/67 to 3/2/67.

Exhibit #P0553

PIN # DOW88930-41
Date 09-Dec-66
Author GEORGE LYNN
Addressee HAMMER, O.H. & TOXIC LAB
BIO-PRODUCTS CENTER
Description Reports after requests for screening or application testing re: a Dow herbicide formula - includes toxicological evaluation and results of animal testing.

Exhibit #P0554

PIN # DOW1120855
Date 09-Dec-66
Author R A HICKMAN
Addressee WHITESELL, RUSS & BEUTEL, A. P.
CORBIN, W. L. & DIXON, W. R.
GOWELL, J. H. & OTHERS
Description Bdsa inquiry - tetrachlorobenzene capacity. states in view of the in-company shortage of tetrachlorobenzene, they were not in a position to supply the material to other producers.

Exhibit #P0555

PIN # DOW1120224-6
Date 01-Jan-67
Author MARK WILTSE
Addressee BRYANT, CLYDE & COWELL, JIM

15103

Description a chronological report based on information from mark wiltse, clyde bryant and jim cowell. for the period of early 1965 thru 1967 when the texas plant came on stream and the price of tordon was reduced to 6.4443.

Exhibit #P0560

PIN # DOW1120862
Date 14-Jan-67
Author SUPPLY CENTER DEFENSE GENERAL
Addressee BENDALL, T. L. & BEUTEL, A. P.
BYRD, B. C. & CORBIN, W. L.
GOWELL, J. H. & 10 OTHERS

Description requirements from the field still call for tremendous quantities of orange to be shipped by 3-31.

Exhibit #P0562

PIN # DOW751877
Date 17-Jan-67
Author L G SILVERSTEIN
Addressee GILMAN, DR. HENRY & IOWA STATE UNIV.

Description Silverstein says tetrabromodioxin sample about as potent as TCDD in rabbits.

Exhibit #P0564

PIN # DOW120078
Date 24-Jan-67
Author H D DOAN
Addressee J. M. LYLE

Description Memo stresses the safe peace time use of Tordon 101 as a brush killer. Memo further expounds upon virtues of Dow with regard to development and use of its herbicides. The ultimate debate is over price.

Exhibit #P0565

PIN # DOW120836
Date 27-Jan-67
Author D PLETCHER
Addressee DIXON, W.R. & HICKMAN, R.A.
STACHLING, E & MCCOY, W.

Description Because of certain inefficiencies and because of certain health problems which require extra cost for employee protection, we hope to replace our present TCB facility with on or two years. Major Concerns are: Strata not suited for wells for wasted disposal, Alternate will be expensive in dollars and time. Little or no processing

equipment.

Exhibit #P0566

PIN # DOW500-03
Date 27-Jan-67
Author D E PLETCHER
Addressee DIXON, W.R. & HICKMAN, R.A.
STROHLING, E.C. & MCCOY, W.S.
DELINE, D. & OTHERS
Description Because of certain inefficiencies and because of certain health problems which require extra cost for employee protection, we hope to replace our present TCB facility with 1 to 2 years.

Exhibit #P0569

PIN # DOW120840-41
Date 30-Jan-67
Author R A HICKMAN
Addressee BEUTEL, A.P. & CORBIN, W.L.
DIXON, W.R. & GOWELL, J.H.
HICKMAN, R.A. & OTHERS
Description We advised Gen. Hebbeler that our people had called from Muscle Shoals and advised that it would be very expensive to build the plant and that we were developing an interim report based on total cost of building a plant to produce "orange" starting with the production of tetrachlorobenzene.

Exhibit #P0570

PIN # DOW0069-87
Date 31-Jan-67
Author GEORGE F COLLINS
Addressee DOW CHEMICAL CO
Description CONTRACT FOR 6840 NSN HERBICIDE, BUTYL ESTERS MIPR NO MA 6-16445 PRI 02.
CONTRACT CALLS FOR 2,4-D AND 2,4,5-T IN A 50-50 BLEND CONFORMING TO MIL-H-51147 (MU) OF 19-JUL-63 EXCEPT ACID PURITY SHALL BE 99.0% MINIMUM BY WEIGHT ACID EQUIVALENT SHALL NOT BE LESS THAN 79.9% NOR MORE THAN 80.0%; THE FREE ACID SHALL NOT BE MORE THAN 0.5% 50% OF N-BUTYL 2,4,5-T CONFORMING TO MIL-H-51148 (MU) DATED 19-JUL-63, EXCEPT ACID PURITY SHALL BE 98.0% MINIMUM BY

Exhibit #P0571

PIN # DOW119200
Date 02-Feb-67
Author R H BOUNDY
Addressee DOW CHEMICAL
Description Supplement addresses the resolution for

supplemental costs potentially due Dow.

Exhibit #P0572

PIN # DOW751971
Date 03-Feb-67
Author W J MCCOY
Addressee CORBIN, W.L. & PLETCHER, D. E.
GOWELL, J.H.
Description Call indicating that he believed they have a severe chloracne problems with some of their employees.

Exhibit #P0573

PIN # DOW751874
Date 03-Feb-67
Author W J MCCOY
Addressee ROWE, V.K. & CORBIN, W.L.
PLETCHER, D.D. & GOWELL, J.H.
Description McCoy of Dow advises of phone call from Thompson Chemical indicating severe chloracne problem "we do not feel friendly towards this competitor . . . but believe that any advice would be in order."

Exhibit #P0576

PIN # JUS 215
Date 09-Feb-67
Author A P BEUTEL
Addressee TRAUB, JOHN L. & CHIEF, CHEM.PROC.
ARMY, EDGEWOOD
Description Beutel advises Army Dow management reviewing whether it will participate in army plan to produce Orange at Wilson Dam, Alabama. Report to come.

Exhibit #P0577

PIN # DOW0201020
Date 13-Feb-67
Author D E PLETCHER
Addressee E.B. BARNES & HAROLD BOSSCHER
E.C. STAEHLING & G.G. GOERGEN
W.R. DIXON & OTHERS
Description Memo deals with Dow's decision that it is still more cost effective to "make" rather than "buy" Tetrachlorobenzene. Also mentioned is the fact that the new facility is necessary to correct environmental health problems.

Exhibit #P0578

PIN # DOW201020-21
Date 13-Feb-67
Author D E PLETCHER

15108

15107

Addressee BOSSCHER HAROLD & STAEBLING, E
GOERGEN, G & DIXON, W
HENSKE, J & GILL, W

Description We are asking that we proceed at once with Phase IV engineering on this project. While this is a logical steop to meet our projected commercial requirements, it is also a first step if the situation is realized where DOW moves to provide very substantially increased quantities of Orange for the Defense Department.

Exhibit #P0579

PIN # DOW751872
Date 13-Feb-67
Author V K ROWE
Addressee CORBIN, W.L. & PLETCHER, D.E.
COWELL, J.H. & MCCOY, W.J.

Description Dow received a call from Thompson Chemical Co. stating that some men thought they had rec'd chloracne. They wondered if Dow could advise them to medical practice. Under certain circumstances the caustic insloulbe oils could contain considerable amounts of a very highly toxic substance which was identified as 2,3,7,8-T.

Exhibit #P0580

PIN # DOW751872
Date 15-Feb-67
Author V K ROWE
Addressee DIXON, WILLIAM B & CORBIN, W.L.
PLETCHER, D.E. & GOWELL, J.H.
MCCOY, W.J. & HOLDER, B.B., M.D.

Description V.K. Rowe relates developments regarding Thompson Chemical Company request for information concerning Thompson's chloracne problem. Rowe advised existence TCDD "extremely toxic systemically . . . also . . . potent chloracnegen; extreme precautions to clean up equipment "the information on the physiological activity was perhaps even less than . . . given . . . other producers of TCP over a year ago. . . . because . . . apparent Buckley had little understanding of . . . problem."

Exhibit #P0584

PIN # DOW816875
Date 20-Feb-67
Author G F LYNN
Addressee W. R. DIXON & D. E. PLETCHER
W. L. CORBIN & J. HL COWELL

15108

Description J. N. O'CONNOR & OTHERS
Dow is trying to get restrictions lifted from the label of Tordon 101. Dr. Hays is reluctant to enter into a controversy with potential legal implications. The procedure of appeal to the NAS was pursued.

Exhibit #P0588

PIN # DOW816873
Date 24-Feb-67
Author GEORGE LYNN
Addressee DIXON, W.R. & PLETCHER, D.E.
CORBIN, W.L. & O'CONNOR, J.N.
WILTSE, M.G. & OTHERS

Description I called Dr. Hays concerning the Tordon 101 label. He has discussed the matter in detail with the USDA attorney, Mr. Robertson, and between them, do not see any reason to do anything concerning either the TORDON 101 Label or the Barovert label. Unless we re-open the matter I gather the USDA will consider it closed.

Exhibit #P0589

PIN # JUS215-524-6
Date 24-Feb-67
Author A P BEUTEL
Addressee TRAUB, JOHN, ARMY & EDGEWOOD

Description Dow reports its attitude to army proposal to produce orange at phosphate development works, Wilson Dam, Ala., cites large capital required, time for engineering & construction, manpower problems, and concludes the proposal does not appear to have the potential to meet the urgency of the U.S. Gov't requirements.

Exhibit #P0591

PIN # DOW088969
Date 27-Feb-67
Author K J OLSON
Addressee F. OYEN & H. R. HOYLE
DOW EMPLOYEES

Description Data Sheet of Precautions cites possible skin disorders for Tordon 105 Mixture; 2,4,5-T Severe eye irritation possible; safety glasses required.

Exhibit #P0594

PIN # DOW120107
Date 07-Mar-67
Author R A HICKMAN

15109

Addressee MR. WOLTON BILLS
Description Dow is trying to get committment of money or guarantees for building of new facility to supply government with Tordon 101 or Super Orange

Exhibit #P0597

PIN # DOW091173-76
Date 17-Mar-67
Author KEN OLSON
Addressee F.OYER & R.H. BOUNDY
B. HOLDER, MD & D. KILIAN, MD
R.D. MOSS & OTHERS
Description A sample mix of Tordon 105 composed of 21.6% 2,4,5-T, and 5.4% of 4-amino 3,5,6 tri. acid and 44.1% water proved to be only slightly irritating to intact or freshly abraded skin.

Exhibit #P0598

PIN # 120679
Date 21-Mar-67
Author R HICKMAN
Addressee CLYDE BRYANT & CHET OTIS
BILL RYAN
Description Letter states that The United States Government is now Dow Chemicals Number Two Customer through the Bioproducts Department and the Tordon area.

Exhibit #P0600

PIN # DOW119501
Date 24-Mar-67
Author UNKNOWN UNKNOWN
Addressee DOW & HICKMAN
Description Letter directs Dow to accelerate delivery of existing contract for the defoliant "Orange" at a monthly rate of 93,000 gallons 4/3/67. Also directed to give monthly reports on production, shipments and inventory.

Exhibit #P0602

PIN # DOW120720-22
Date 29-Mar-67
Author R A HICKMAN
Addressee HOSLEY R. KOETER
Description Dow states experimental deliveries made to the government since 1962 and that selected type orange and tordon 101 have been supplied since fall of 1965. Dow is commenting on differential pricing and ability to provide herbicides to the

government in the future based on financial
committment by government.

Exhibit #P0603

PIN # 120671,720-2
Date 29-Mar-67
Author R A HICKMAN
Addressee BILLS, WELTON & KOSTER, WOALEY R

Description R. A. hickman letter of 3-30-67 to Mr.
Welton Bills , Defense General Supply
Center

Exhibit #P0605

PIN # DOW120671
Date 30-Mar-67
Author R A HICKMAN
Addressee MR. WELTON BILLS

Description Confidential report attached (not with
exhibit) was prepared for BDSA outlining
Dow's ability to supply defoliation
chemicals. They further request contracts
for Tordon 101 and Orange ASAP.

Exhibit #P0609

PIN # DOW120432-58
Date 17-Apr-67
Author GEORGE F COLLINS
Addressee DSASR

Description an award/contract between dow chemical
company and directorate of procurement &
production @Attn:pc433 it states what the
product herbicide, butyl esters should
consist of, how to be shipped and supply
warranty.

Exhibit #P0610

PIN # DOW119947-52
Date 17-Apr-67
Author W R NUMMY
Addressee PLETCHER, D. E. & BOSSCHER, H.
TIMM, W. C. & COULTER, K.E.
TRACEY, W. J. & OTHERS

Description Fredricks' Letter dated March 31,1967
solicited reasonable solutions to the
problem of supplying all or any part of the
estimated additonal requir- ment of
8,000,000 gallons of "Orange" per year. It
further stated that more detailed proposals
would be requested for those solutions
considered to be most feasible.

Exhibit #P0613

PIN # DOW1120723

15111

Date 21-Apr-67
Author R A HICKMAN
Addressee HEATH, OTIS & GILL, W.
HANES, J H & NUMMY, W R
PATTERSON, R. M. & OTHERS
Description letter dated 04-21-67 from R. A. hickman to
Otis heath regarding the conversation with
jane lewis confirming no relaxation in
waivers of import duty on 2,4,5-t and
2,4-d. if imported and duty was paid, it
may be sold in civilian market and not
subject to directive issued by BDSA
recently.

Exhibit #P0614

PIN # DOW120724,26
Date 25-Apr-67
Author R A HICKMAN
Addressee BALLMAN, DONALD K. & BEUTEL, A. P.
EVERSON, J. W. & WILLIAMS, G. J.
COFFEY, W. H. & OTHERS

Description report states a contract of 167,000 gallons
a month from august 1967 thru march 1969,
the government asked this be kept
confidential because of the size of the
contract, other suppliers were also
bidding.

Exhibit #P0622

PIN # DOW650139-45
Date 22-May-67
Author BARRY BYRD
Addressee DOW SALES & JOHN SPALDI

Description Sales release cites that Tordon 155 mixture
should never be mixed with water and should
not be allowed to contaminate soil used to
grow desirable plants such as vegetables,
etc. Do not store near food, seeds, etc.
Avoid breathing mist, harmful if swallowed,
may cause irritation

Exhibit #P0623

PIN # DOW650139
Date 22-May-67
Author BARRY BYRD
Addressee

Description

Exhibit #P0626

PIN # DOW201049-50
Date 31-May-67
Author RICHARD G CARLSON
Addressee HAROLD BOSSCHER

15112

Description Blanked out memo relates to step one of 2 step expansion plan. New 819 building is to be constructed. Existing 636 building is cited as being congested and in violation of long term Industrial Hygiene Standard.

Exhibit #P0629

PIN # DOW201044
Date 08-Jun-67
Author HAROLD BOSSCHER
Addressee DR. E. B. BARNES
Description Memo cites 636 building is extremely congested and resulting in problems in safety, maintenance and operation. They hope to reduce chloracne problem.

Exhibit #P0633

PIN # 0000000
Date 28-Jun-67
Author GEORGE F COLLINS
Addressee THOMPSON-HAYWARD & CHEMICAL CO.

Description JUNE 1967 CONTRACT TO PRODUCE AGENT ORANGE.

Exhibit #P0634

PIN # DOW120735
Date 28-Jun-67
Author R A HICKMAN
Addressee BALLMAN, DONALD K & BEUTEL, A. P.
EVERSON, J. W. & WILLIAMS, G. J.
COFFEY, W. H. & OTHERS

Description states a shortage due to increased military use of orange and tordon 101, the shipments of other weed killing agents increased. a new plant to be built in two untis in weldon springs, missouri for production of 2,4-d and 2,4,5-t. purchase of this product will be transferred from DSA to army, and coded as a weapon rather than a herbicide.

Exhibit #P0636

PIN # DOW0426-36
Date 30-Jun-67
Author ARMY ARMY
Addressee DOW
Description Supercedes MIL-9-51239(MU) 30-Dec-65. Mostly illegible, but contains standard paragraphs regarding inspection, labeling, precautions, etc.

Exhibit #P0647

PIN # DOW1120680

15113

Date 01-Aug-67
Author R A HICKMAN
Addressee BALLMAN, DONALD K. & BEUTEL, A. P.
EVERSON, J. W. & WILLIAMS, G. J.
COFFEY, W. H. & OTHERS
Description military increases consumption of tordon
and orange . 2,4-d and 2,4,5-t forced into
short supply. other weed killers are being
bought by government agencies (Esteron 99
Concentrate).

Exhibit #P0654

PIN # DOW1120687
Date 30-Aug-67
Author R A HICKMAN
Addressee BALLMAN, DONALD K. & BEUTEL, A. P.
EVERSON, J.W. & WILLIAMS, G. J.
COFFEY, W. H. & OTHERS
Description due to continued shortage of 2,4-d and
2,4,5-t through shipments of orange is
accelerating shipment of esteron 99, sodium
tca, and other herbicides.

Exhibit #P0655

PIN # DOW979868
Date 01-Sep-67
Author R W WRIGHT
Addressee BARNES, E. B. & BEUTEL, A. P.
BOSSCHER, H. & COFFEY, W. H.
HICKMAN, R. & OTHERS

Description

Exhibit #P0656

PIN # DOW979868-74
Date 01-Sep-67
Author R A HICKMAN
Addressee BEUTEL, A.P. & NUMMY, W.R.
PLETCHER, D.E. & MANYOTHER DOW

Description Hickman prepared lengthy call report
describing conversations with various
government representatives concerning the
policies and needs of the Gov't for Orange;
report cites many of these conversations.

Exhibit #P0658

PIN # DOWH15454-56
Date 05-Sep-67
Author M A TAVES
Addressee REGAN J M & RANO P J
TURK E DR. & GIVENS K T
WILDER H K & OTHERS

Description On September 1, 1967, Bill Clark and Regan

visited the Defense Center to discuss the procedure used to analyze "orange" herbicide mixture.

Exhibit #P0659

PIN # H15454-56
Date 05-Sep-67
Author M A TAVES
Addressee WILDER, H. E. & SIDWELL, DR. A. E.
CLARK, W. H. & RENO, P. J.
TURK, DR. E. & SCOTT, DR. R. B.

Description Herculesletter from M. A. Taves to Mr. J. M. Eagan, dated 09-05-67.

Exhibit #P0661

PIN # DOW979869
Date 06-Sep-67
Author W J TACEY
Addressee C. BAILEY & R. CARLSON
F. CHASE & J. COPPAGE
D. DELINE & OTHERS

Description The accompanying chart list the Unit Ratios for use in the new 8.1 MM gallon Orange Plant Study. The Ratios list are, in general, the 1967 standards.

Exhibit #P0662

PIN # DOW1120692-3
Date 07-Sep-67
Author R A HICKMAN
Addressee GOWELL, J. H. & BEUTEL, A. P.
KEIL, R. M. & NUMMY, W. R.
ROBERTSON, R. W. & OTHERS

Description when first discussed tordon there were only laboratory results and mini-plant production. dow states that sales to the civilian market would be more profitable for them than to the government and proven an effective weapon in vietnam. this is the only other effective weapon for its specific use except orange.

Exhibit #P0667

PIN # DOW817294-99
Date 13-Sep-67
Author M LONG

Addressee

Description points to consider in connection with use of tordon - 2,4-d in rangeland and pasture are what it does to the grass, cattle and crops.

Exhibit #P0670

PIN # DOW3444
Date 26-Sep-67
Author J M ILLEGIBLE

Addressee DOW LAB

Description Report of laboratory analysis on t-acid from drier. Concentration of dioxin of t.c.p. used to produce t-acid=1.9 to get 1.5 in t-acid.

Exhibit #P0678

PIN # DOW1124975
Date 11-Oct-67
Author L C WHITE
Addressee SCULATI, J. J. & HAWLEY, H. M.

Description dow chemical co. raw material specification form for 2,4,5-t. it states test items, limits and test methods.

Exhibit #P0684

PIN # DOW1125124
Date 24-Oct-67
Author V K ROWE
Addressee SNYDER, FRED H

Description this is in response to a letter of 10-18-67 regarding acnegens and laboratory method for evaluatin same.

15116

Exhibit #P0686

PIN # DOW119486-7
Date 30-Oct-67
Author SUPPLY CENTER DEFENSE GENERAL

Addressee

Description order form, contract # dsa-400-67-c-5534 /pc440, total amount of contract - 170,000 gallons with a 5% increase 0% decrease variation clause. also contract # dsa-400-67-c-8032.

Exhibit #P0691

PIN # DOW852482-3
Date 08-Nov-67
Author C L DUNN
Addressee MEMBERS NATIONAL & AGRICULTURAL CHEMICALS ASSOC.

Description report states tolerances of phenoxy herbicides on range and pasture grasses at high residue levels shortly after application.

Exhibit #P0694

PIN # DOW1120713
Date 09-Nov-67
Author R A HICKMAN
Addressee HEATH, OTIS & GILL, W
COWELL, J. M. & RYAN, W. J.
YANKS, D. E.

Description the conversation entailed questions like: it tc3 imported, could it be converted to 2,4,5-t and sold to customers other than government. the directive that had been issued against dow and industry called all 2,4,5-t capacity and production be made available to government.

Exhibit #P0695

PIN # DOW1120714-5
Date 09-Nov-67
Author R A HICKMAN
Addressee GOWELL, J. H & GILL, W.
HEATH, O & RYAN, W. J.
YANKA, D. E.

Description memo states the requirements for 1968 to be

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6? gallons of herbicide. Mr. Minarik stated the figures for 1969 in the area of 11-15m gallons.

Exhibit #P0697

PIN # DOW852481
Date 27-Nov-67
Author C L DUNN
Addressee MEMBERS NATIONAL & AGRICULTURAL
CHEMICALS ASSOC. & ?, J. A.

Description the conference dealt with the farmers and the product phenoxy herbicides.

Exhibit #P0700

PIN # DOW1120717
Date 29-Nov-67
Author R A HICKMAN
Addressee BALLMAN, DONALD K
Description regarding a bid for supplying a quantity of tetrachlorobenzene to be used in the production of orange at weldon springs.

Exhibit #P0701

PIN # DOW817053
Date 02-Dec-67
Author UNKNOWN UNKNOWN
Addressee NANCY
Description note to nancy regarding tordon 155 mixture and the label for this product, stating something about a new ingredient.

Exhibit #P0706

PIN # DOW1112041-2
Date 22-Dec-67
Author R A HICKMAN
Addressee MCCOY, V. J. & HANSON, K. Y.

Description reason for call was to review the oct. report filed by otis heath of dow. There was an error in the report which caused BDSA to make an incorrect analysis of the

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ability to produce trichlorophenol and 2,4,5-t.

Exhibit #P0707

PIN # DOW1120743-5
Date 27-Dec-67
Author R A HICKMAN
Addressee BALLMAN, DONALD K & BEUTEL, A.P.
EVERSON, J. W. & QUIGLEY, F. K.
COFFEY, H. H. & OTHERS

Description a review states, tordon and orange requirements for fiscal year 1969 the period 4/1/68 thru 3/31/69. a team went to edgewood arsonal, and dow's management decided not to bid the 30,000,000 lbs. tetrachlorobenzene plant and bid on the 10,000,000 lbs. plant whose end product to be used by the government operated plant at weldon springs, missouri, in production of orange.

Exhibit #P0711

PIN # DOW119555-6
Date 31-Dec-67
Author COMPANY DOW CHEMICAL
Addressee NONE

Description analysys of competitive bidding on orange delivered for the year ended 12-31-67 contains: contract No., gallons delivered, dow's unit price and amount, lowest non-dow bid unit price and amount, and average non-dow high and low bid unit price and amount. the comparision with competitive prices received on solicitation of orange bid proposals (furnished by eastern regional renegotiation board) contains: contract date nad number, bids received per gallon for dow and all competitors by number.

Exhibit #P0712

PIN # DOW893805-8
Date 01-Jan-68
Author C E MINARIK
Addressee

15119

Description the article states how the herbicides were used in vietnam and what some effects were. it also contains when and where some of the spraying took place.

Exhibit #P0717

PIN # DOW817423
Date 08-Jan-68
Author GEORGE E LYNN
Addressee NUMMY, W.R. & BARRONS, K.C.
HAMMER, O.H. & SUNDERLAND, WW
WILTSE, M.G. & LENG, M.L.

Description Lynn writes report to Nummy and others at Dow, of Conference with Pesticides Regulation Division, USDA, of 1-4-68; reference the Division's position that Tordon does not appear useful for the purposes for which tolerances were being sought.

Exhibit #P0720

PIN # DOW820921-36
Date 11-Jan-68
Author O H HAMMER
Addressee ALFORD, HAROLD G. & USDA
LICHY, C.T. & SUNDERLAND, W.W.
TALCOTT, A.T.

Description Hammer of the Registration Section of Dow encloses a report of the Toxicological Properties and Industrial Handling Hazards of Tordon 144 mixture Herbicide

Exhibit #P0728

PIN # DOW821106-7
Date 26-Jan-68
Author HAROLD ALFORD
Addressee MCINTYRE, H.H. & DOW CHEMICAL
LABELING & REG'N & MIDLAND, MI.

Description Alford, of USDA writes McIntyre of Dow Labeling and Product Registration Section that the labelling submitted previously was not acceptable and gives form letter advising Dow of additional materials

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required.

Exhibit #P0729

PIN # DOW120759-60
Date 26-Jan-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & DOUGLAS, BURKE
HANSON, K.Y. & MCCOY, W.J.
RYAN, W.J. & YANKA, D.E.

Description Hickman, U.S. Gov't Marketing Mgr. of Dow, advises others at Dow as to details of situation regarding Dow's bids to supply orange and efforts to supply Tordon.

Exhibit #P0733

PIN # DOW120761-3
Date 31-Jan-68
Author R A HICKMAN
Addressee DOW EMPLOYEES
Description Example of monthly report written to numerous Dow employees by the Gov't Marketing Mgr., and also refers to efforts of Dow to sell Tordon to the Gov't for use in S.E. Asia

Exhibit #P0734

PIN # DOW120766
Date 02-Feb-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & DOUGLAS, BURKE
HANSON, K.Y. & MCCOY, W.J.
RYAN, W.J. & YANKA, D.E.

Description Hickman reports that he spoke with Miss Jane Lewis and Mr. Carl Rolle separately and they advised as to herbicide requirements and fact of gov't disappointment that Dow did not bid on TCP plant of the Edgewood Arsenal. "we were not too concerned about keeping other chemical companies honest"

15121

Exhibit #P0737

PIN # DOW816698
Date 09-Feb-68
Author GEORGE LYNN
Addressee DRAFT & DISTRIBUTORS
TORDON
Description Draft of "Important Notice" to be sent to distributors advising that the labeling of Tordon and Borolin has been revised to delete the use on cropland

Exhibit #P0738

PIN # DOW120769
Date 16-Feb-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & GOWELL, J.
MCCOY, W.J. & RIDNER, J.H.
YANKA, D.E. & DOW INTERNAL
Description Hickman, Gov't Marketing Mgr. of Dow writes memo of telephone conf. with Jane Lewis of government advising that Hoffman-Taft in position to make Orange; Other producers had their equipment ordered.

Exhibit #P0740

PIN # DOW120770-1
Date 21-Feb-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & YANKA, D.E.
BYRD, B.C. & GOWELL, J.H.
NUMMY, W.R. & PAC
Description Hickman writes a summary of a strategy meeting where it was agreed to try to reconfirm strategy for future herbicide production by Dow.

Exhibit #P0744

PIN # DOW817051
Date 26-Feb-68
Author DOW UNKNOWN
Addressee UNKNOWN & DOW EMPLOYEES

Description Dow Confidential description of composition of active ingredients, inerts and acid equivalence of Tordon 155.

Exhibit #P0747

PIN # DOW120772-4
Date 27-Feb-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & BALLMAN, D.K.
EVERSON, J.W. & QUIGLEY, F.K.
SALES DEPARTMENT

Description Hickman writes monthly report of sales activities to Department Personnel and Supervisor "strategies have been developed for pushing Super-Orange as a long range replacement for both Tordon and Orange" -- Edgewood requests the Dow bid again on TCB plant "for all practical purposes, the door closed for future opportunities to bid on this plant."

Exhibit #P0751

PIN # DOW816696-7
Date 04-Mar-68
Author G E LYNN
Addressee NUMMY, W.R. & JOHNSON, J.E.
WILTSE, M.G. & GOWELL, J.H.
BARRONS, K.C. & OTHERS AT DOW

Description Lynn reports his telephone conference with Harold Alfred, U.S.D.A., re Tordon registration difficulties

Exhibit #P0752

PIN # DOW120775
Date 04-Mar-68
Author R A HICKMAN
Addressee BARRONS, K.C. & GOWEL, J.H.

Description Hickman reports Jane Lewis interested in Gowel's comments in view of many criticisms directed at use of herbicides in Vietnam.

15123

Exhibit #P0755

PIN # DOW12779
Date 19-Mar-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & GOWEL, J.H.
MCCOY, W.H. & YANKA, D.E.
OTHERS AT DOW
Description The Hickman reports that Miss Lewis discussed slowdown on shipments of Orange to the Government and fact that Government would let industry police itself in sale of 2,4,5-T to existing customers to make sure of no black market.

Exhibit #P0756

PIN # DOW120776-78
Date 22-Mar-68
Author R A HICKMAN
Addressee GOWEL, J.H. & WILTSE, M.G.
OTHERS AT DOW
Description Hickman discusses strategy meeting re Super-Orange and fulfillment of Tordon contract and notes concerns about attitude at Fort Detrick involving Army's indicated need for additional data; shows Dow actively pursuing government market.

Exhibit #P0757

PIN # DOW120781
Date 28-Mar-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & GOWEL, J.H.
MCCOY, W.J. & OTHERS AT DOW
Description Hickman reports discussions at St. Louis meeting between he and five others (non-Dow); further references Thompson Chemical and Sterans and Roger.

Exhibit #P0758

PIN # DOW538350-1
Date 08-Apr-68
Author DREW M BAKER
Addressee DUNN, C.L. & CHAIRMAN NACA

15124

INDUSTRY TASK FORCE & USDA PEST. DIV.

Description Mr. Baker of HEW describes the residued data HEW wants submitted in order to support industry requests for residue tolerances of 2,4,5-T.

Exhibit #P0770

PIN # DOW120795-6
Date 14-May-68
Author R A HICKMAN
Addressee CORBIN, W.L. & GILL, W.M.
GOWEL, J.H. & OTHERS AT DOW

Description Hickman describes telephone conversations with Jane Lewis, BBSA, and George Collins, DGSC, re supply of TCP to Woodbury Chemical "we might . . . help her . . . if we could supply TCP to Woodbury * * * this . . . might hurt our obtaining as large a portion of future Orange contracts as we would like."

Exhibit #P0773

PIN # DOW720805-31
Date 01-Jun-68
Author J L ENGER
Addressee DOW PERSONNEL & DOW SUB-PERSONNEL

Description A report of Dow marketing research regarding pesticide exports during 1967 re 2,4-D and 2,4,5-T.

Exhibit #P0775

PIN # DOW120804-5
Date 07-Jun-68
Author R A HICKMAN
Addressee DOW INTERNAL
Description Hickman reports "we have kept very close to Miss Lewis as a source of factual . . . completely accurate information." Discusses quantity of herbicide to be sprayed in fiscal 1969 developed from pilot information; also discusses lack off Tordon acceptance.

15125

Exhibit #P0779

PIN # DOW14082-3
Date 17-Jun-68
Author E MONROE
Addressee GREENE, L. M.
Description letter states the analytical method. along with the letter is a routine sheet for the release of technical information regarding the determination of 2,3,7,8-tetrachlorodibenzo-p-dioxin in 2,4,5- trichlorophenoxyacetic acid by gas-liquid chromatography.

Exhibit #P0780

PIN # DOW120808-9
Date 21-Jun-68
Author R A HICKMAN
Addressee INTERNAL DOW
Description Hickman summarizes quality control and shipping problems in calls made to various government employees and inspectors to solve the same "planes flew Sorties like hell all last month."

Exhibit #P0782

PIN # DOW811635-48
Date 28-Jun-68
Author O H HAMMER
Addressee MCCOLLISTER, D.D. & LYNN, G.E.
BLAIR, E.H. & WILTSE, M.
LENG, M.L. & OTHERS
Description Hammer responds to McCollister request to pull together his thoughts on "what seems to be needed prior to . . . any further requests to USDA for registration of use of Tordon . . . on crop land.

Exhibit #P0786

PIN # DOW120816
Date 17-Jul-68

15126

Author A P BEUTEL
Addressee ASST. CHIEF OF STAFF & FORCE DEVELOPMENT
ARMY & PENTAGON, WASH. D.C.
GENERAL HEBBELER
Description Beutel, Vice-President and Director of
Government affairs at Dow writes Brig. Gen.
J.A. Hebbeler attempting to extol the
merits of Super-Orange.

Exhibit #P0787

PIN # 9369
Date 23-Jul-68
Author NONE NONE
Addressee
Description Excerpts of the Twenty-First Meeting of
Research Laboratories Review Point I
Committee, dated July 23, 1968.

Exhibit #P0788

PIN # DOW120829
Date 31-Jul-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & BALLMAN, D.K.
ECCLES, R.P. & QUIGLEY, F.K.
Description Monthly report for July, 1968, re
Government

Exhibit #P0792

PIN # DOW580567-85
Date 22-Aug-68
Author UNKNOWN UNKNOWN
Addressee DOW
Description Technology Review on products-Dowanol
Chloroacetate, Butuil Chloracetate,
Iso-Octyl Chloroacetate. Uses - 2,4,D Weed
Killers and 2,4,5 T Weed Killers

Exhibit #P0793

PIN # DOW120818-22
Date 28-Aug-68
Author R A HICKMAN

15127

Addressee BEUTEL, A.P. & BALLMAN, D.K.
ECCLES, R.P. & QUIGLEY, F.K.

Description Hickman's report includes reference to presentation made on Super-Orange and requirements for Tordon 101 together with bulk movement of defoliants and possible storage and mixing facilities in Vietnam but states if supply depot damaged by bomb possibly too much liquid herbicide in the area to ever again use the land for growth of any kind and other uses of 55 gallons drums of such wide variety; drums have advantages in and of themselves.

Exhibit #P0794

PIN # DOW979845-61
Date 30-Aug-68
Author A P BEUTEL
Addressee SHEAD, COL. C.G. & KELLY AIR FORCE BASE

Description Buettel writes Col. Shead enclosing a Dow proposal planning document re bulk shipment (converting from drums), suggests Dow should manage program and again seeks to sell Super-Orange

Exhibit #P0795

PIN # DOW120827
Date 04-Sep-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & GOWEL, J.H.
MCCOY, W.J. & OTHERS AT DOW

Description Hickman writes of his concerns and those of industry people that Weldon Springs plant would produce Orange causing industry to supply TCB and referencing serious situation regarding pollution such plant would cause.

Exhibit #P0798

PIN # DOW119942
Date 17-Sep-68
Author W J ZEPP

15128

Addressee HICKMAN, R.A. & ROLLE, CARL
LEWIS, JANE & OTHER GOVT. EMP.

Description W.J. Zepp of the Government relieves Dow of the 93,000 additional gallons per month over base of 222,000 gallons per month on Orange contract cited.

Exhibit #P0800

PIN # DOW120655-7
Date 25-Sep-68
Author R A HICKMAN
Addressee BEUTEL, A.P. & BALLMAN, P.K.
OTHERS AT DOW

Description hickman r Hickman reports 222,000 gallons per month continue to be shipped and references opportunity to bid on Tordon.

Exhibit #P0802

PIN # DOW979843-63
Date 30-Sep-68
Author K E HONEYCUTT
Addressee BEUTEL, A.P. & HICKMAN, R.A.
OTHERS AT DOW

Description

Exhibit #P0804

PIN # DOW17180-83
Date 04-Oct-68
Author M F WILKERSON
Addressee HOCHBERG M

Description Based upon present industry capacity to produce both D and T as opposed to present purchase patterns of the military, it was concluded we have a case to present to the defense and Commerce Departments.

Exhibit #P0805

PIN # DS 17180-3
Date 04-Oct-68
Author M F WILKERSON
Addressee HOCHBERG, H

Description INTEROFFICE CORRESPONDENCE DATED 10-04-68

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FROM M. F. WILKERSON TO H. HOCHBERG OF
DIAMOND SHAMROCK.

Exhibit #P0807

PIN # DOW120633
Date 07-Oct-68
Author R A HICKMAN
Addressee HOLDEMAN, GRADY & MCCOY, W.J.
OTHERS AT DOW
Description Hickman writes Dow sales people re
conversations with Carl Rolle and Fred
Knapp where they asked Dow to write specs
for Super-Orange and to quote in their
procurement when order is placed; Knapp
also asked Dow to update Tordon
specifications.

Exhibit #P0809

PIN # 125528-32
Date 18-Oct-68
Author R A HICKMAN
Addressee BEUTEL, DR. A P
Description R. A. Hickman letter of 10-18-68 to Dr. A.
P. Beutel and others.

Exhibit #P0810

PIN # DOW125528-32
Date 18-Oct-68
Author RA HICKMAN
Addressee BEUTEL, A.P. & CORBIN, W.L.
GOWELL, J.H. & OTHERS AT DOW
Description Hickman reports because of the "concern" of
his department and other departments at Dow
on the status of the military herbicide
business and Dow's efforts to sell to the
Gov't with predictions as to effects on
business if bombing stops in North Viet
Nam, and other considerations.

Exhibit #P0812

PIN # DOW120654

15130

Date 30-Oct-68
Author R A HICKMAN
Addressee CORBIN,W.L. & DOW AG PROD SALES

Description Hickman report of conversation with Jane Lewis of Gov't indicates industry had a law firm deliver a letter which concerned her; re; deliveries of 2,4-D and 2,4,5-T and reports his info. re actual gallons required by U.S. /

Exhibit #P0825

PIN # DOW119490
Date 31-Dec-68
Author R G GOVT KNOTT
Addressee DOW CHEMICAL & USGOV'TAGENCIES

Description Sample Shipping and Receiving Form issued by U.S. Gov't appropriate agencies re; some of Orange delivered by Dow to U.S.

Exhibit #P0831

PIN # D725522-44
Date 06-Jan-69
Author UNKNOWN UNKNOWN
Addressee

Description PRODUCT SPECIFICATION FOR BRUSH KILLER T-334

Exhibit #P0837

PIN # DOW538375
Date 25-Jan-69
Author C L DUNN
Addressee DUBRIDGE, LEE, DR. & DIR.OFFICE OF SCIENCE & TECH. & PRES. USA OTHERS

Description Author states that a soundly designed experiment is absolutely necessary to determine if a teratologic hazard is associated with 245-T. Requests support in request to FDA to defer action on 245-T until additional information is available for study and evaluation.

Exhibit #P0839

PIN # DOW852450
Date 07-Feb-69
Author JAMES B LAMB
Addressee DUNN, C.L. & NACA INDUST.TASK
FORCE & USDA

Description HEW writes Industry Task Force on Phenoxy Herbicides regarding deficiencies in the petitions proposing tolerances for residues of 2,4,5-T,2,4-D,Silvex,and MCPA,and noting further info.required.

Exhibit #P0843

PIN # 001502-3
Date 21-Feb-69
Author J C STRUM
Addressee NITRO PROGRESS RPT
Description NITRO PLANT PROGRESS REPORT FROM J.C. STRUM
DATED 02-21-69.

Exhibit #P0845

PIN # DOW276151-52
Date 27-Feb-69
Author EUGENE BENEGNA
Addressee RIDER, J.M. & RITTY, P.M.
SHAVER, R.J. & SHELDON N.W.
SOUTHWICK, R & OTHERS

Description Comparison of the toxicological effect of herbicides to fish is difficult because of the wide variation in test methods.

Exhibit #P0848

PIN # DOW124722-7
Date 18-Apr-69
Author D E YANKA
Addressee BEUTEL,A.P. & COFFEY, W.H.
GOWELL, J.H. & HICKMAN,R.A.
WRIGHT,R.W. & OTHERS AT DOW

Description Yanka of Dow writes Report on Renegotiable Dow Contracts to 10 Dow co-employees; The

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report argues that only renegotiable area of Dow's business for 1967 involve sales of Tordon and Agent Orange to the United States. Complains of fact that Dow had large (millions) investment in comm'l market, and huge demands of U.S., which caused industry to expand capacity beyond comm'l market; complains of low U.S.gov't price com- pared to comm'l market.

Exhibit #P0854

PIN # DOW856385
Date 23-Jul-69
Author B C BYRD
Addressee LYNN, GEORGE E. & MOSS, R.D.
LANING, E.R. & HYMAS, T.A.
HANSEN, J.C. & DAVIDSON, J.H.

Description Product Technical Specialist of Ag. Dep't Dow writes memo to co-employees of tel. call from Al Young, Lt., USAF, advising Young said he had to "go to the top" to get permission for joint Dow-Air Force publication-with references to permission to classify if results not in interest of either Dow or the Air Force; "There is no way of predicting whether normal degradation of phenoxies would occur under this regime"

Exhibit #P0856

PIN # DOW 817491-0
Date 04-Aug-69
Author GEORGE E LYNN
Addressee MCCOLLISTER, D.D. & LANING, E.R.
BLAIR, ETCYL H. & NUMMY, W.R.
LENG, M.L. & OTHERS AT DOW

Description Five Dow employees attended a meeting with the USDA Pesticides Regulation Division on 7/29/65 re; application for registration of Tordon 225 to control mesquite on permanent rangelands and pastures; and proposing tolerances for residues in forage grasses, meat & Milk. This is the Dow internal report of that meeting.

Exhibit #P0861

PIN # DOW981712-18
Date 26-Sep-69
Author GSA USFEDSUPPSERV
Addressee USA
Description federal specifications for herbicide
2,4,5-T (both salts and esters) superceding
prior specs.

Exhibit #P0862

PIN # DOW550401-07
Date 30-Sep-69
Author J E MUTCHLER
Addressee TREE R M & PLEPYS R A
BAILEY C Z & KRAMER C G
MORSE D B & OTHERS

Description Temperature controls have been installed on
penta feed line to the prill pot.
September wipe tests are now nearing
completion. Four samples are active
including two new active samples, both
located near the fluid bed drier.

Exhibit #P0864

PIN # DOW124858-61
Date 10-Nov-69
Author C L DUNN
Addressee NACA & INDUSTRY TASK
FORCE ON PHENOXY & HERBICIDE MEMBERS

Description Report of urgent meeting of Oct.28, 1969
between industry and gov't
reps.;re;Bionetics indications of
teratogenicity, and reports of birth defects
in Vietnam;also references DuBridge's
announcement and positions of the parties
in attendance, with listing of persons
present; On Hercules letterhead.

Exhibit #P0867

PIN # DOW754888-89
Date 25-Nov-69

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Author G E LYNN
Addressee ROWE V.K.
Description Dow identified the principal chloracnegen as the sym Tetrachlorodibenzyl-p-Dioxin in late 64'.Dow was bu Herculos is late 65' and sample was from 3rd or 4th batch shipped and high dioxin thought to "pushing" capacity of plant.

Exhibit #P0868

PIN # DOW 754888-9
Date 25-Nov-69
Author G E LYNN
Addressee JOHNSON, J. E. & ROWE, V. K.

Description Notes for J. E. Johnson from G. E. Lynn and V. K. Rowe dated 11-25-69.

Exhibit #P0869

PIN # DOW754888-9
Date 25-Nov-69
Author GEORGE E LYNN
Addressee ROWE,V.K. & JOHNSON, JULIUS E.

Description These notes outline knowledge lynn & rowe claim Dow had of acnegen, Dow Feb.,1964 problems, 2,4,5- T also contained the chloracnegen; the 3/24/65 meeting; and an outline of contamination of various manufacturers' products.Also cites Hercules at up to 3 ppm.

Exhibit #P0871

PIN # DOW549692-93
Date 01-Dec-69
Author CHEMICAL EXP LOG
Addressee

Description Statistical Analysis on Report # 23.14-23-6/5065.

Exhibit #P0874

PIN # DOW 28610-11

15135

Date 10-Dec-69
Author GEORGE LYNN
Addressee HANSEN, J C & JOHNSON, J E
MCCOLLISTER, D D & NAEGELE, R E
ROBINSON, V B & OTHERS

Description

Exhibit #P0875

PIN # DOW766734-36
Date 12-Dec-69
Author ALEX WIDIGER
Addressee CHANG, K Y & LEAVITT, F C
DEMONTT, D N & POFFENBERGER, N
SCHMIDTKE, D & OTHERS

Description Chemical companies are offering flake 2,4,5 T on world market which is strongly resistant to blooming. We have found the following affects reduce the tendency to bloom: proglonged heat treating, thinner flakes, the presence of caustic insoluable methoxy compounds.

Exhibit #P0883

PIN # DOW538377
Date 29-Dec-69
Author CL DUNN
Addressee F. MCFARLAND & FDA
HARRY HAYS & NED BAYLEY
L.L. DANIELSON

Description LETTER NOTES THERE HAS BEEN NO RESPONSE TO REQUEST OF 12/5/69 REGARDING EXTENTION FOR ACTION ON PESTICIDE PETITION 8F0669 (2,4,5-T) AND IN ACCORDANCE WITH FEDERAL REGULATIONS WITHDRAWS WITHOUT PREJUDICE SAID PETITION.

Exhibit #P0884

PIN # 000657-660
Date 07-Jan-70
Author H H STEHL
Addressee ROWE, V K & GILL, H
SKELLY, N & HALLEY, C
DUNN, F

Description JANUARY 7, 1970 DOW SCIENTISTS DETERMINED THAT SAMPLES TESTED OF DIAMOND SHAMROCK 2,4,5-T (trichloro- phenoxyacetic acid) AVERAGED 27 PPM (PLUS OR MINUS 8 PPM THEREFORE, AVERAGED 19 PPM - 35 PPM) USING GAS LIQUID-LIQUID CHROMATOGRAPHY METHOD OF EXTRACTION.

Exhibit #P0885

PIN # D817130-218
Date 08-Jan-70
Author M MCCLURE
Addressee MORGAN R.W.
Description Meeting to discuss the reasons given by PRD for rejection of the Dow Applications for Temporary Permit to Ship Tordon 166 Mixture and Tordon 169 Mixture herbicides. The outcome of this parley was assent by PRD to reconsider issuance of the Permits is resubmitted.

Exhibit #P0886

PIN # DOW 1257-59
Date 12-Jan-70
Author GEORGE E LYNN
Addressee EGEBERG, DR. & LINDSAY DALE DR.
KOTIN, PAUL DR. & BURGER EDWARD DR.
MITCHELL IAN DR. & OTHERS

Description Concerned that the sample used could have contained a highly toxic impurity. We strongly urge that action concerning the status of 2,4,5-T be held in abeyance until the testing program is completed.

Exhibit #P0887

PIN # DOW23034-36
Date 12-Jan-70
Author GEORGE E LYNN
Addressee EGEBERG, DR. ROGER & HEW
LINDSAY, DALE, FBA & BAYLEY, NED D.
USDA & KOTIN, PAUL, ETAL.

Description Lynn's letter to Egeberg and other governmental officials advises Dow's

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knowledge in 50's; activity of TCDD, Dow's
1 ppm spec., bionetics samples 27+ ppm
contamination; describes Dow's coming
territological testing.

Exhibit #P0888

PIN # DOW746134-38
Date 15-Jan-70
Author V K ROWE
Addressee BURGER, E.J. & OST
PRESIDENT USA
Description Rowe encloses summary data oral toxicity
TCDD.

Exhibit #P0889

PIN # 1232987-91
Date 16-Jan-70
Author V K ROWE
Addressee BURGER, EDWARD J. & CC: OTHERS
Description IN RESPONSE TO INQUIRY OF OFFICE OF SCIENCE
AND TECHNOLOGY, EXECUTIVE OFFICE OF
PRESIDENT, WASH., D.C., JANUARY 1970, DR.
ROWE MERELY INDICATES THAT HE HAS ENCLOSED
TABLES ON RATS AND GUINEA PIGS FOR THE
GOVERNMENT TO INTERPRET. "NO RELIABLE DATA
FOR RABBITS LD50 TO BE ESTABLISHED."
RABBITS DIED.

Exhibit #P0891

PIN # DOW746169
Date 19-Jan-70
Author G E LYNN
Addressee VERRETT, J.M. & FDA
RICHARDSON, H.L. & FDA
Description Letter recites Dow sending 25 gr. 2,4,5-T
representing that sample meets Dow's 1 ppm
specification.

Exhibit #P0892

PIN # 999600-02

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Date 19-Jan-70
Author RUDOLPH H STEHL
Addressee ROWE, V K & DUNN, F
GILL, H & SKELLY, K.
BAILEY, C
Description IN SAMPLES OF DOW 2,4,5-T TESTED BY DOW'S
OWN LABORATORY, RESIDUES WERE LEFT IN THE
100-150 PPM, BUT DOW'S CLAIMS THE TCDD
RESIDUE IS ONLY IN THE 3-8 PPM RANGE.

Exhibit #P0893

PIN # DOW028238-42
Date 21-Jan-70
Author G E LYNN
Addressee BLAIR, E. H. & BROWER, H. H.
CRUMMETT, W. R. & FERNANDEZ, J. E.
HANSEN, J.C. & 8 OTHERS

Description stating he is keeping a record of all
samples of 2,4,5-t , 2,4-d and silvex
(including derivatives) that are sampled.

Exhibit #P0894

PIN # 028238-42
Date 21-Jan-70
Author GEL LYNN
Addressee ROWE, VK & BLAIR, E H
CRUMMETT, W R & FERNANDEZ, J B
GETZENDANER, M E & HANSEN, J C. ET AL

Description DOW IN-HOUSE MEMO REGARDING ANY OUTGOING
SAMPLES TO BE SENT TO THE EPA OR ANY OTHER
GOVERNMENTAL AGENCY MUST BE CLEARED
THROUGH LYNN. THE SAMPLES SUPPLIED MUST
MEET THE DOW SPEC, AND LAB REFERENCE
STANDARD OF VERY HIGH PURITY- LIMITED IN
SUPPLY MUST BE CAREFUL NOT TO LET JUST ANY
OLD SAMPLE OF 2,4,5-T OUT OF THIS COMPANY.

Exhibit #P0898

PIN # 746158-616
Date 06-Feb-70
Author V K ROWE
Addressee FALK, HANS & TRIANGLE PARK, NC
DEPT. HEW

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Description LETTER OF ROWE, FROM DOW TO DR. HANS FALK, DIRECTOR OF LABORATORY RESEARCH, RESEARCH PARK, NORTH CAROLINA, DEPARTMENT OF HEALTH, EDUCATION AND WELFARE DISCUSSING SENDING THE SAMPLES OF PURIFIED 2,3,7,8 -TCDD AND THE EXTREME TOXICITY OF THIS COMPOUND. THE REASONS GIVEN FOR THE DELAY IN SHIPPING WAS THE NECESSARY PRECAUTIONS THAT HAD TO BE TAKEN NOT TO CONTAMINATE OTHERS. ALSO DOW INFORMED GOVERNMENT THAT IT HAD A NEW METHOD OF DETECTING TCDD, "DOW ANALYTICAL METHOD MLW -65.11" WHICH ROWE FORGOT TO INCLUDE, SEE NEXT EXHIBIT IN WHICH DR. FALK RESPONDS.

Exhibit #P0902

PIN # DOW1119842
Date 10-Feb-70
Author UNKNOWN UNKNOWN
Addressee LOGAN?
Description DOCUMENT ENTITLED PURCHASE DESCRIPTION HERBICIDE ORANGE SETTING FORTH AN AMENDMENT TO PURCHASE DESCRIPTION AFFID 6840-1, 1/2/70 WITH REGARD TO PARAGRAPH 4.2.4.1.

Exhibit #P0903

PIN # DOW028605
Date 10-Feb-70
Author HANS L FALK
Addressee ROWE, DR. V.K.
Description letter of thanks for information and a request for missing data. dow called and the problem of shipment of the dioxin is solved. now the next set of experiments can get under way.

Exhibit #P0904

PIN # 028605
Date 10-Feb-70
Author HANS FALK
Addressee HEW & TO ROWE, VK
RE 434
Description DR. HANS FALK OF THE DEPARTMENT HEALTH, EDUCATION AND WELFARE, DIRECTOR FOR LABORATORY RESEARCH NATIONAL INSTITUTE OF

15140

HEALTH, TRIANGLE PARK, NORTH CAROLINA IS
ASTONISHED AT THE EXTREME TOXICITY DATA
THAT DR. V.K. ROWE HAS JUST SENT IN EXHIBIT
434.

Exhibit #P0905

PIN # DOW445809
Date 11-Feb-70
Author UNKNOWN UNKNOWN
Addressee LEGATOR, FDA & VERRETT, FDA
RICHARDSON, FDA & MANY OTHER
FDA AND USDA
Description Notice of meeting of government scientists
with technical personnel of Dow to discuss
chick edema factor methodology shows Dow
reps to attend.

Exhibit #P0907

PIN # DOW1130312
Date 13-Feb-70
Author UNKNOWN DOW
Addressee AGRI PRODUCTS
Description DOCUMENT ENTITLED SALES SPECIFICATION WITH
RESPECT TO 2,4,5-T ACID SETS FORTH
2,3,7,8-TCDD AT 1 PPM.

Exhibit #P0908

PIN # DOW028232-36
Date 13-Feb-70
Author GEORGE LYNN
Addressee WILLIAMS, C G & NAEGELE, R E
DONALDS, JOHN E & SPARTA, TOM
JOHNSON, JULIUS & ROWE, VK ET AL
Description GEORGE LYNN GOVERNMENT REGULATORY RELATIONS
FOR DOW CHEMICAL REPORTS IN A CONFIDENTIAL
MEETING MEMO THE MEETING BETWEEN DOW
(CRUMMETT, HOLDER, LEAVITT LYNN) AND THE
FDA HELD IN WASHINGTON, FEBRUARY 11, 1970.
DR. CAMPBELL MADE THE PRESENTATION FOR FDA;
CRUMMETT AND HOLDER MADE THE PRESENTATION
FOR DOW. THE FDA IS CONCERNED THAT CDD'S
MAY BE WIDESPREAD IN ENOUGH QUANTITY TO BE
HAZARD TO HUMANS; CARCINOGENIC RISK; SAME

15141

PERSISTENCE AS DDT AND BIOMAGNIFICATION; DR
KRAYHILL SAID SHOULD NOT BE PERMITTED;
"ONE MOLECULE IS TOO MUCH." DR KRAYBILL.
DR. A. D. CAMPBELL, CHIEF CONTAMINANTS
BRANCH, FDA WASHINGTON, DC

Exhibit #P0909

PIN # DOW751916-7
Date 20-Feb-70
Author RALPH C WANDS
Addressee LONGENECKER, W.H. & FT. DETRICK
ROWE, V.K.
Description Wands' director, Advisory Center on
Toxicology, NAS, suggests Longenecker
arrange meeting with V.K. Rowe to learn
something of the toxicology of TCDD.

Exhibit #P0912

PIN # DOW040862-66
Date 27-Feb-70
Author GEORGE LYNN
Addressee MASON, JOHN & WILLIAMS, G.J.
SPARTA, TOM & NAEGELE, R.E.
DONALDS, JOHN & OTHERS
Description Goal: To establish the principal uses of
Chlorophenols and to utilize this
information in seeking out the ways in
which they could possibly be related to the
presence of chlorodebenz-p-dioxins in
fats, soap stocks, etc.

Exhibit #P0914

PIN # DOW538598
Date 10-Mar-70
Author HAROLD ALFORD
Addressee FED REG & ECONOMIC
POISON
Description Letter states additional safety studies are
needed for 2,4,5-T currently registered,
among others and that data on
carcinogenicity or teratogenicity should be
submitted immediately. If such data is not
available studies are requested
immediately. Epidemiological studies also

requested.

Exhibit #P0917

PIN # DOW007830
Date 17-Mar-70
Author JAMES ILLEGIBLE
Addressee

Description Dow scientists presented detailed evidence showing that a contaminant rather than the compound 2,4,5-T was probably the cause of birth abnormalities. The National Cancer Institute indicated higher than normal rates of birth defects in test animals treated with massive doses of 2,4,5-T.

Exhibit #P0918

PIN # 392436-38
Date 17-Mar-70
Author G L SPARSCHU
Addressee DUNN, F L & ROWE, V K

Description PAPER PRESENTED AT THE MEETING OF THE SOCIETY OF TOXICOLOGY ATLANTA, GEORGIA, MARCH 17, 1970 RESULTS INDICATE A HIGH LEVEL OF MATERNAL AND FETAL TOXICITY TO BE ASSOCIATED WITH 2,3,7,8-TCDD, STUDY BY DOW. TERATOGENIC

Exhibit #P0919

PIN # DOW392434-35
Date 17-Mar-70
Author J L EMERSON
Addressee GERBIG, C G & ROBISON, V B

Description THIS ABSTRACT WAS PRESENTED SIMULTANEOUSLY WITH THE EXHIBIT NO'S 437 AT THE SOCIETY OF TOXICOLOGY IN ATLANTA, GA; HOWEVER THE FINDINGS OF THIS GROUP OF DOW SCIENTISTS DISAGREE WITH THE BIONETICS RESEARCH LABS, BETHESDA, MD.

Exhibit #P0921

15143

PIN # DOW120584
Date 18-Mar-70
Author GEORGE E LYNN
Addressee HAYS, HARRY W. & USDA
LINDSAY, DR. DALE & FDA/HEW
BCCDOW OTHERS & ACTION FILE 245T

Description leteter seeks to assure Department of Agriculture about the quality of the composition of commercial 2,4,5-T acid produced by Dow Chemical. Claims that in 1965 a rigid production standard was imposed by Dow of less than 1 ppm of TCDD in 2,4,5-T.

Exhibit #P0924

PIN # DOW582853
Date 23-Mar-70
Author C DOW
Addressee JOHNSON, J.E. & LUECK, A.T.
LYNN, G.E. & BLAIR, E.H.

Description Memo re status of 2,4,5-T backup program.

Exhibit #P0926

PIN # DOW28243-44
Date 26-Mar-70
Author GEORGE LYNN
Addressee JOHNSON, J & WILLIAMS, C J
NAEGELE, R & DONALDS, JOHN
BLAIR, E & OTHERS

Description Dow and Monsanto can begin to predict where the bulk of the chlorophenols are going and evaluate some of the potentials for contaminent problems.

Exhibit #P0927

PIN # DOW028243-44
Date 26-Mar-70
Author GEORGE E LYNN
Addressee WILLIAMS, C J & NAEGELE, R. E.
DONALDS, JOHN E. & SPARTA, TOM A.
LEAVITT, F. C. & OTHERS

Description the report is from meetings 2/25, 3/19, 3/23.

Exhibit #P0928

PIN # DOW582854-55
Date 26-Mar-70
Author GEORGE E LYNN
Addressee JOHNSON, JULIUS & WILLIAMS, G.J.
OTHERS AT DOW

Description Lynn writes Johnson, Rowe and 12 others at Dow to report on meetings of 02/25, 03/19, and 03/23, re dioxin and Monsanto koppers human health problems.

Exhibit #P0929

PIN # DOW1104-8
Date 31-Mar-70
Author BENJAMIN B HOLDER
Addressee LYNN, GEORGE E. & NO OTHERS SHOWN

Description Letter is a summary of clinical information distributed to various institutions by Dow regarding the 1964 chloracne episode at the Midland Plant. Attached to the letter is a "Review of occupational health problems associated with th the manufacture of chlorinated phenols at Midland, MI in 1964. Notes that disease primarily affects the skin and with extreme exposure "... a general organ toxicity can result." Liver and nervous disorders naote noted and no specific treatment for disease is known.

Exhibit #P0930

PIN # 1170342
Date 31-Mar-70
Author V K ROWE
Addressee DUNN, F L & GORDON, H L
HOLDER, B B & HINMAN, C W
HOYLE, H R & JOHNSON, J E

Description WE DO NOT HAVE ENCLOSURE

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Exhibit #P0932

PIN # DOW1103
Date 02-Apr-70
Author GEORGE LYNN
Addressee

Description In discussing the attached information with Dr. Holder he says the chloracne problem was related to the "accident" in the 2,4,5-T plant and the culprit was principally 2,3,7,8-T.

Exhibit #P0934

PIN # DOW999363-67
Date 07-Apr-70
Author CHARLES KRAMER
Addressee JOHNSON, JULIUS

Description One hundred thirty employees who have worked more than six months in areas where exposure to 2,4,5-T occurred and on whom recent medical examination data was available.

Exhibit #P0935

PIN # DOW119849-68
Date 07-Apr-70
Author CHARLES KRAMER
Addressee JULIUS JOHNSON

Description At present we are involved in an extensive reworking of the program based on review of the "first cycle" results. Approximately 10 percent of the subjects participating in the health inventory have prompt follow up by a physician on the basis of suspected abnormalities detected during inventory.

Exhibit #P0936

PIN # DOW549641-91
Date 10-Apr-70
Author F D AXE
Addressee DOW

Description Measurements to describe the chemical exposures of workmen engaged in the

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manufacture of 2,4,5-T. Dry Dust of 2,4,5-T has the capacity to produce upper respiratory irritation. Dust levels are frequently high enough to be very noticeably irritating. Observations indicate nasal irritation sneezing and a bitter taste may result from brief exposures.

Exhibit #P0937

PIN # 549641-660
Date 10-Apr-70
Author F D AXE
Addressee FILE & LYNN, G E
DELINE, DD & SCHMIDTKE, D J
HODSON, R E & MILLER, D E OTHERS

Description BIOCHEMICAL RESEARCH LAB AT DOW CHEMICAL CO., F. D. AXE DISTRIBUTED A STUDY OF CHEMICALLY EXPOSED WORKERS IN BUILDING 267 BUILDING (2,4,5-T PLANT); ALTHOUGH HE STATES THE LEVELS OF EXPOSURE ARE BELOW MINIMUM THRESHOLD LIMIT VALUE, DRY DUST HAS CAPACITY TO PRODUCE UPPER RESPIRATORY IRRITATION AT LEVELS MUCH LOWER THAN TLV; RECOMMENDS IMPROVE DUST CONTROL AT THE PACKING STATION- DUST ESCAPES FROM SEAL (FAULT OF EITHER SEAL OR INSUFFICIENT AIR VELOCITY).

Exhibit #P0939

PIN # DOW392412-23
Date 15-Apr-70
Author JULIUS JOHNSON
Addressee SENATE COMMITTEE
Description Reference to birth defects observed in tests. The most sensitive toxic reaction observed in humans to this impurity was manifested by a condition known as chloracne, a skin disorder suffered by teenagers. Exposure to this waste oil was the cause of the acne in the workmen.

Exhibit #P0940

PIN # DW 392412-23
Date 15-Apr-70

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Author JULIUS E JOHNSON
Addressee SUBCOMMITTEE ON & ENERGY

Description STATEMENT BY JULIUS E. JOHNSON, VICE PRESIDENT AND DIRECTOR OF RESEARCH, THE DOW CHEMICAL COMPANY, BEFORE THE SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES AND THE ENVIRONMENT OF THE SENATE COMMITTEE ON COMMERCE, DATED 04-15-70.

Exhibit #P0941

PIN # DOW130436-7
Date 15-Apr-70
Author JULIUS JOHNSON
Addressee USA PUBLIC & HART SENATE COMM.

Description Copies from Dow produced documents of minutes of Julius Johnson's testimony given April 15, 1970, before Hart Senate subcommittee on the environment, presumably from the Federal Register or Congressional Record; confirms Johnson of Dow made disclosures contained in full text of speech drafted for him at Dow.

Exhibit #P0945

PIN # DOW547219-20
Date 20-Apr-70
Author HARRY W HAYS
Addressee ECONOMIC POISONS

Description This herbicide may present an imminent health hazard to women of child-bearing age and has recommended suspension of certain registered uses of 2,4,5-T. In order to prevent an imminent hazard containing 2,4,5-T to the public it is necessary to suspend the registration for these products.

Exhibit #P0946

PIN # DOW547221
Date 20-Apr-70
Author HARRY HAYES
Addressee DOW CHEMICAL

Description It is hereby found that in order to prevent

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an imminent hazard to the public it is necessary to suspend the registration for products containing 2,4,5-T.

Exhibit #P0947

PIN # 999173
Date 23-Apr-70
Author R L LAPE
Addressee LYNN, G E & ROWE, V K
FERNANDEZ, J
Description DOW TESTED 10 BATCHES OF AGENT ORANGE FROM FT DETRICK AND FOUND IT CONTAINED BETWEEN 1-15PPM OF 2,3,7,8-TCDD

Exhibit #P0948

PIN # DOW119606
Date 01-May-70
Author G J WILLIAMS
Addressee
Description Letter written by G.J. Williams stating how he feels that Dow should make its position known to the rest of the Government rather than give the Department of Defense an option.

Exhibit #P0949

PIN # DOW130323-24
Date 11-May-70
Author PROD AND MKT CANADA DEPT AGR
Addressee
Description Further evidence show that 2,4,5-T is potentially capable of causing abnormal development. This dioxin can also cause a serious skin condition known as chloracne. Findings suggest that this could constitute a hazard to children and women exposed during pregnancy.

Exhibit #P0950

PIN # DOW582846-7
Date 11-May-70
Author FRED LEAVITT

15150

Addressee BLAIR, E. & 31 OTHER DOW EMP.
Description Memo re environmental problems re chlorinated phenols.

Exhibit #P0951
PIN # DOW119791-7
Date 14-May-70
Author GARETH OWEN
Addressee LYNN, GEORGE E
Description along with the letter are the results of teratological studies done in charles river cd rats.

Exhibit #P0952
PIN # DOW582836-7
Date 22-May-70
Author R A PLEPYS
Addressee LYNN, G. & BLAIR, E.H.
ROWE, V.K. & HOLDER, V.B.
LUECK, A. & 19 OTHER DOW EMP.
Description Minutes of meeting eco-studies of chlorophenols.

Exhibit #P0954
PIN # DOW770705-09
Date 25-May-70
Author P BRADY
Addressee HABERSTROH W.H & WILLIAMS L
VOGELSANG P & CHASE F
KENSICKI R & SCHMIDTKE D
Description The manufacture of Phenoxy-Herbicides requires the removal of unreacted phenols from the reactor product mix. Laboratory data indicates that a flow of ----- lbs. of Trichlorobenzene for each pound of Silvex solution using ---- stages will remove ----- of the unreacted phenol.

Exhibit #P0955

15151

PIN # DOW956820-24
Date 28-May-70
Author GEORGE LYNN
Addressee US DEPT OF AGRIC.
Description Cancellation of 2,4,5-T Products bearing certain directions for use. All uses on food crops intended for human consumption shall cease.

Exhibit #P0956

PIN # DOW119607
Date 03-Jun-70
Author BARSTOW BLDG DOW CHEMICAL
Addressee CLIFFORD M. HARDIN
Description TORDON has limited registration for use on non-food cropland and right of way maintenance in the United States. Requests for registration on pasture and rangeland have been submitted.

Exhibit #P0960

PIN # DOW424633-64
Date 15-Jun-70
Author C J WILLIAMS
Addressee LAIRD, MELVIN & DR. LEE DUBRIDGE
ELLIOT RICHARDSON & WALTER J. HICKEL
Description There is abundant evidence that 2,3,7,8-T is highly toxic. The Dow Company recommends strongly that the government set appropriate specifications and controls to insure that no 2,4,5-T be used if it contains more than one part per million 2,3,7,8-T.

Exhibit #P0961

PIN # DOW392412-23
Date 15-Jun-70
Author JULIUS JOHNSON
Addressee SENATE COMMITTEE
Description The possibility of a highly toxic impurity being formed in 2,4,5-T as a side reaction under conditions of elevated processing temperatures. This impurity is a condition known as chloracne, a skin disorder. It is

in these oils that the impurities are concentrated. Exposure to this waste oil was the cause of the acne in the workmen.

Exhibit #P0962

PIN # DOW 424633-4
Date 15-Jun-70
Author G J WILLIAMS
Addressee LAIRD, HON MELVIN R
Description G. J. WILLIAMS , VICE PRESIDENT OF DOW,
LETTER TO HON. MELVIN R. LAIRD, SECRETARY
OF DEFENSE, DATED 06-15-70.

Exhibit #P0966

PIN # DOW119979
Date 29-Jun-70
Author D D MCCOLLISTER
Addressee DREW BAKER, JR. & DR. W. UPHOLT
MR. K.K. KRAUSCHE & MR. C.L. DUNN

Description Analytical chemists of the Dow Chemical Co. have utilized a GLC procedure essential that for analyzing 2,3,7,8-T. The procedure was sensitive enough to detect as little as 0.1 ppm.

Exhibit #P0967

PIN # DOW129637-42
Date 01-Jul-70
Author SAMUEL EPSTEIN
Addressee READER OF ENVIRON
Description Linking birth defects to the weed killer 2,4,5-T have resulted in restrictions on the use of this product. The warnings stem from the discovery that several variants, or esters of 24-D including the one commonly used in weed control, have caused birth defects in animals.

Exhibit #P0968

PIN # DOW766740-50
Date 20-Jul-70

15153

Author KOU YUAN CHANG
Addressee TOU, JAMES C. & LOOK, A.
SHEETZ, D. & DEMOTT, D.N.
POFFENGERGER N. & OTHERS

Description Two major concerns in the production of 2,4,5 T are the chloracne problem and the product quality. It is unlikely that a change in the reaction condition of the present process can eliminate the formation of methoxydichlorophenols.

Exhibit #P0970

PIN # DOW149715-42
Date 23-Jul-70
Author PRESIDENT ADVISORY COMM

Addressee

Description In general, 2,4,5-T residues can be expected to be unstable materials in the environment. Chemistry analysis is provided.

Exhibit #P0972

PIN # DOW367964-66
Date 11-Aug-70
Author MARGUERITE L LONG
Addressee K.C. BARRONS & E.M. BLAIR
J.M. DAVIDSON & G.E. BLAIR
D.D. MCCOLLISTER & OTHERS

Description Studies by the Dow Chemical have shown that cows fed 700 ppm 2,4,5-T in the total diet gave milk containing in the neighborhood of 0.3 ppm 2,4,5-T.

Exhibit #P0974

PIN # DOW12388-423
Date 26-Aug-70
Author JULIUS JOHNSON
Addressee DOW CHEMICAL

Description The purpose is to explore possible public health consequences of widespread use. The data presented will emphasize exposure toxicity and chemistry. There were detectable levels of 2,4-D and 2,4,5-T in

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the air up to 0.06 micrograms per cubic meter. Direct skin contact, together with vapor and mist exposure are encountered in varying degrees by applicators and employees in manufacturing plants.

Exhibit #P0975

PIN # DOW018868-83
Date 15-Sep-70
Author UNKNOWN UNKNOWN
Addressee MOUNTAIN LAKE & ROW MAINTENANCE
CONFERENCE.

Description this was an oral presentation, along with the article are chemical diagrams.

Exhibit #P0978

PIN # DOW538823-30
Date 01-Nov-70
Author G L SPARSCHU
Addressee DUNN F L (AUTHOR) & ROWE V K (AUTHOR)

Description

Exhibit #P0979

PIN # DOW751854-55
Date 18-Nov-70
Author D D MCCOLLISTER
Addressee J.E. JOHNSON & G.E. LYNN
E.H. BLAIR & P.M. RITTY
E.E. KENAGA & OTHERS

Description One notable void in this package is the information that Dr. Danielson requested on the acute oral toxicity of the various chlordioxins. A group of experts from EP Board in Sweden have been appointed to evaluate the phenoxy herbicide situation.

Exhibit #P0982

PIN # DOW538372
Date 05-Dec-70
Author CL DUNN

Addressee JAMES LAMB & HEW FDA
DUBRIDGE & H.L. LEY
NED BAYLEY & H. W, HAYS

Description requests an extension until April 1970 on the Pesticide Petition 870669 on 2,4,5, -T which deadline was set for January 1, 1970. Letter states that additional studies are underway which will present important data to be reviewed.

Exhibit #P0984

PIN # DOW 00842
Date 11-Dec-70
Author L A DALTON
Addressee J.E.JOHNSON
Description Conclusion of tested showed that all skin contact with the test material should be avoided.

Exhibit #P0985

PIN # DOW120142-9
Date 30-Dec-70
Author MATTHEW MESELSON
Addressee WESTING, ARTHUR H. & CONSTABLE, JOHN D.
COOK, ROBERT E.
Description herbicide assessment commission of the American Association for the Advancement of Science.

Exhibit #P0986

PIN # DOW579003-9
Date 31-Dec-70
Author MIKE SIEDEL
Addressee
Description This spec has no written description, it is a diagram of the Alkaline Hydrolysis.

Exhibit #P0995

PIN # JUS215-704-8
Date 08-Mar-71

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Date 10-Dec-69
Author GEORGE LYNN
Addressee HANSEN, J C & JOHNSON, J E
MCCOLLISTER, D D & NAEGELE, R E
ROBINSON, V B & OTHERS

Description

Exhibit #P0875

PIN # DOW766734-36
Date 12-Dec-69
Author ALEX WIDIGER
Addressee CHANG, K Y & LEAVITT, F C
DEMONTT, D N & POFFENBERGER, N
SCHMIDTKE, D & OTHERS

Description Chemical companies are offering flake 2,4,5 T on world market which is strongly resistant to blooming. We have found the following affects reduce the tendency to bloom: proglonged heat treating, thinner flakes, the presence of caustic insoluable methoxy compounds.

Exhibit #P0883

PIN # DOW538377
Date 29-Dec-69
Author CL DUNN
Addressee F. MCFARLAND & FDA
HARRY HAYS & NED BAYLEY
L.L. DANIELSON

Description LETTER NOTES THERE HAS BEEN NO RESPONSE TO REQUEST OF 12/5/69 REGARDING EXTENTION FOR ACTION ON PESTICIDE PETITION 8F0669 (2,4,5-T) AND IN ACCORDANCE WITH FEDERAL REGULATIONS WITHDRAWS WITHOUT PREJUDICE SAID PETITION.

Exhibit #P0884

PIN # 000657-660
Date 07-Jan-70
Author H H STEHL
Addressee ROWE, V K & GILL, H
SKELLY, N & HALLEY, C
DUNN, F

15157

Description JANUARY 7, 1970 DOW SCIENTISTS DETERMINED THAT SAMPLES TESTED OF DIAMOND SHAMROCK 2,4,5-T (trichloro- phenoxyacetic acid) AVERAGED 27 PPM (PLUS OR MINUS 8 PPM THEREFORE, AVERAGED 19 PPM - 35 PPM) USING GAS LIQUID-LIQUID CHROMATOGRAPHY METHOD OF EXTRACTION.

Exhibit #P0885

PIN # D817130-218
Date 08-Jan-70
Author M MCCLURE
Addressee MORGAN R.W.
Description Meeting to discuss the reasons given by PRD for rejection of the Dow Applications for Temporary Permit to Ship Tordon 166 Mixture and Tordon 169 Mixture herbicides. The outcome of this parley was assent by PRD to reconsider issuance of the Permits is resubmitted.

Exhibit #P0886

PIN # DOW 1257-59
Date 12-Jan-70
Author GEORGE E LYNN
Addressee EGEBERG, DR. & LINDSAY DALE DR.
KOTIN, PAUL DR. & BURGER EDWARD DR.
MITCHELL IAN DR. & OTHERS
Description Concerned that the sample used could have contained a highly toxic impurity. We strongly urge that action concerning the status of 2,4,5-T be held in abeyance until the testing program is completed.

Exhibit #P0887

PIN # DOW23034-36
Date 12-Jan-70
Author GEORGE E LYNN
Addressee EGEBERG, DR. ROGER & HEW
LINDSAY, DALE, FBA & BAYLEY, NED D.
USDA & KOTIN, PAUL, ETAL.

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Description Lynn's letter to Egeberg and other governmental officials advises Dow's

knowledge in 50's; activity of TCDD, Dow's
1 ppm spec., bionetics samples 27+ ppm
contamination; describes Dow's coming
territological testing.

Exhibit #P0888

PIN # DOW746134-38
Date 15-Jan-70
Author V K ROWE
Addressee BURGER, E.J. & OST
PRESIDENT USA
Description Rowe encloses summary data oral toxicity
TCDD.

Exhibit #P0889

PIN # 1232987-91
Date 16-Jan-70
Author V K ROWE
Addressee BURGER, EDWARD J. & CC: OTHERS
Description IN RESPONSE TO INQUIRY OF OFFICE OF SCIENCE
AND TECHNOLOGY, EXECUTIVE OFFICE OF
PRESIDENT, WASH., D.C., JANUARY 1970, DR.
ROWE MERELY INDICATES THAT HE HAS ENCLOSED
TABLES ON RATS AND GUINEA PIGS FOR THE
GOVERNMENT TO INTERPRET. "NO RELIABLE DATA
FOR RABBITS LD50 TO BE ESTABLISHED."
RABBITS DIED.

Exhibit #P0891

PIN # DOW746169
Date 19-Jan-70
Author G E LYNN
Addressee VERRETT, J.M. & FDA
RICHARDSON, H.L. & FDA
Description Letter recites Dow sending 25 gr. 2,4,5-T
representing that sample meets Dow's 1 ppm
specification.

Exhibit #P0892

PIN # 999600-02

15159

Date 19-Jan-70
Author RUDOLPH H STEHL
Addressee ROWE, V K & DUNN, F
GILL, H & SKELLY, K.
BAILEY, C
Description IN SAMPLES OF DOW 2,4,5-T TESTED BY DOW'S
OWN LABORATORY, RESIDUES WERE LEFT IN THE
100-150 PPM, BUT DOW'S CLAIMS THE TCDD
RESIDUE IS ONLY IN THE 3-8 PPM RANGE.

Exhibit #P0893

PIN # DOW028238-42
Date 21-Jan-70
Author G E LYNN
Addressee BLAIR, E. H. & BROWER, H. H.
CRUMMETT, W. R. & FERNANDEZ, J. E.
HANSEN, J.C. & 8 OTHERS

Description stating he is keeping a record of all
samples of 2,4,5-t , 2,4-d and silvex
(including derivatives) that are sampled.

Exhibit #P0894

PIN # 028238-42
Date 21-Jan-70
Author GEL LYNN
Addressee ROWE, VK & BLAIR, E H
CRUMMETT, W R & FERNANDEZ, J B
GETZENDANER, M E & HANSEN, J C. ET AL

Description DOW IN-HOUSE MEMO REGARDING ANY OUTGOING
SAMPLES TO BE SENT TO THE EPA OR ANY OTHER
GOVERNMENTAL AGENCY MUST BE CLEARED
THROUGH LYNN. THE SAMPLES SUPPLIED MUST
MEET THE DOW SPEC, AND LAB REFERENCE
STANDARD OF VERY HIGH PURITY- LIMITED IN
SUPPLY MUST BE CAREFUL NOT TO LET JUST ANY
OLD SAMPLE OF 2,4,5-T OUT OF THIS COMPANY.

Exhibit #P0898

PIN # 746158-616
Date 06-Feb-70
Author V K ROWE
Addressee FALK, HANS & TRIANGLE PARK, NC
DEPT. HEW

Description LETTER OF ROWE, FROM DOW TO DR. HANS FALK, DIRECTOR OF LABORATORY RESEARCH, RESEARCH PARK, NORTH CAROLINA, DEPARTMENT OF HEALTH, EDUCATION AND WELFARE DISCUSSING SENDING THE SAMPLES OF PURIFIED 2,3,7,8 -TCDD AND THE EXTREME TOXICITY OF THIS COMPOUND. THE REASONS GIVEN FOR THE DELAY IN SHIPPING WAS THE NECESSARY PRECAUTIONS THAT HAD TO BE TAKEN NOT TO CONTAMINATE OTHERS. ALSO DOW INFORMED GOVERNMENT THAT IT HAD A NEW METHOD OF DETECTING TCDD, "DOW ANALYTICAL METHOD MLW -65.11" WHICH ROWE FORGOT TO INCLUDE, SEE NEXT EXHIBIT IN WHICH DR. FALK RESPONDS.

Exhibit #P0902

PIN # DOW119842
Date 10-Feb-70
Author UNKNOWN UNKNOWN
Addressee LOGAN?
Description DOCUMENT ENTITLED PURCHASE DESCRIPTION HERBICIDE ORANGE SETTING FORTH AN AMENDMENT TO PURCHASE DESCRIPTION AFFID 6840-1, 1/2/70 WITH REGARD TO PARAGRAPH 4.2.4.1.

Exhibit #P0903

PIN # DOW028605
Date 10-Feb-70
Author HANS L FALK
Addressee ROWE, DR. V.K.
Description letter of thanks for information and a request for missing data. dow called and the problem of shipment of the dioxin is solved. now the next set of experiments can get under way.

Exhibit #P0904

PIN # 028605
Date 10-Feb-70
Author HANS FALK
Addressee HEW & TO ROWE, VK
RE 434
Description DR. HANS FALK OF THE DEPARTMENT HEALTH, EDUCATION AND WELFARE, DIRECTOR FOR LABORATORY RESEARCH NATIONAL INSTITUTE OF

HEALTH, TRIANGLE PARK, NORTH CAROLINA IS
ASTONISHED AT THE EXTREME TOXICITY DATA
THAT DR. V.K. ROWE HAS JUST SENT IN EXHIBIT
434.

Exhibit #P0905

PIN # DOW445809
Date 11-Feb-70
Author UNKNOWN UNKNOWN
Addressee LEGATOR, FDA & VERRETT, FDA
RICHARDSON, FDA & MANY OTHER
FDA AND USDA
Description Notice of meeting of government scientists
with technical personnel of Dow to discuss
chick edema factor methodology shows Dow
reps to attend.

Exhibit #P0907

PIN # DOW1130312
Date 13-Feb-70
Author UNKNOWN DOW
Addressee AGRI PRODUCTS
Description DOCUMENT ENTITLED SALES SPECIFICATION WITH
RESPECT TO 2,4,5-T ACID SETS FORTH
2,3,7,8-TCDD AT 1 PPM.

Exhibit #P0908

PIN # DOW028232-36
Date 13-Feb-70
Author GEORGE LYNN
Addressee WILLIAMS, C G & NAEGELE, R E
DONALDS, JOHN E & SPARTA, TOM
JOHNSON, JULIUS & ROWE, VK ET AL
Description GEORGE LYNN GOVERNMENT REGULATORY RELATIONS
FOR DOW CHEMICAL REPORTS IN A CONFIDENTIAL
MEETING MEMO THE MEETING BETWEEN DOW
(CRUMMETT, HOLDER, LEAVITT LYNN) AND THE
FDA HELD IN WASHINGTON, FEBRUARY 11, 1970.
DR. CAMPBELL MADE THE PRESENTATION FOR FDA;
CRUMMETT AND HOLDER MADE THE PRESENTATION
FOR DOW. THE FDA IS CONCERNED THAT CDD'S
MAY BE WIDESPREAD IN ENOUGH QUANTITY TO BE
HAZARD TO HUMANS; CARCINOGENIC RISK; SAME

PERSISTENCE AS DDT AND BIOMAGNIFICATION; DR
KRAYHILL SAID SHOULD NOT BE PERMITTED;
"ONE MOLECULE IS TOO MUCH." DR KRAYBILL.
DR. A. D. CAMPBELL, CHIEF CONTAMINANTS
BRANCH, FDA WASHINGTON, DC

Exhibit #P0909

PIN # DOW751916-7
Date 20-Feb-70
Author RALPH C WANDS
Addressee LONGENECKER, W.H. & FT. DETRICK
ROWE, V.K.
Description Wands' director, Advisory Center on
Toxicology, NAS, suggests Longenecker
arrange meeting with V.K. Rowe to learn
something of the toxicology of TCDD.

Exhibit #P0912

PIN # DOW040862-66
Date 27-Feb-70
Author GEORGE LYNN
Addressee MASON, JOHN & WILLIAMS, G.J.
SPARTA, TOM & NAEGELE, R.E.
DONALDS, JOHN & OTHERS
Description Goal: To establish the principal uses of
Chlorophenols and to utilize this
information in seeking out the ways in
which they could possibly be related to the
presence of chlorodebenz-p-dioxins in
fats, soap stocks, etc.

Exhibit #P0914

PIN # DOW538598
Date 10-Mar-70
Author HAROLD ALFORD
Addressee FED REG & ECONOMIC
POISON
Description Letter states additional safety studies are
needed for 2,4,5-T currently registered,
among others and that data on
carcinogenicity or teratogenicity should be
submitted immediately. If such data is not
available studies are requested
immediately. Epidemiological studies also

requested.

Exhibit #P0917

PIN # DOW007830
Date 17-Mar-70
Author JAMES ILLEGIBLE

Addressee
Description

Dow scientists presented detailed evidence showing that a contaminant rather than the compound 2,4,5-T was probably the cause of birth abnormalities. The National Cancer Institute indicated higher than normal rates of birth defects in test animals treated with massive doses of 2,4,5-T.

Exhibit #P0918

PIN # 392436-38
Date 17-Mar-70
Author G L SPARSCHU
Addressee DUNN, F L & ROWE, V K

Description

PAPER PRESENTED AT THE MEETING OF THE SOCIETY OF TOXICOLOGY ATLANTA, GEORGIA, MARCH 17, 1970 RESULTS INDICATE A HIGH LEVEL OF MATERNAL AND FETAL TOXICITY TO BE ASSOCIATED WITH 2,3,7,8-TCDD, STUDY BY DOW. TERATOGENIC

Exhibit #P0919

PIN # DOW392434-35
Date 17-Mar-70
Author J L EMERSON
Addressee GERBIG, C G & ROBISON, V B

Description

THIS ABSTRACT WAS PRESENTED SIMULTANEOUSLY WITH THE EXHIBIT NO'S 437 AT THE SOCIETY OF TOXICOLOGY IN ATLANTA, GA; HOWEVER THE FINDINGS OF THIS GROUP OF DOW SCIENTISTS DISAGREE WITH THE BIONETICS RESEARCH LABS, BETHESDA, MD.

Exhibit #P0921

15164

PIN # DOW120584
Date 18-Mar-70
Author GEORGE E LYNN
Addressee HAYS, HARRY W. & USDA
LINDSAY, DR. DALE & FDA/HEW
BCCDOW OTHERS & ACTION FILE 245T

Description leteter seeks to assure Department of Agriculture about the quality of the composition of commercial 2,4,5-T acid produced by Dow Chemical. Claims that in 1965 a rigid production standard was imposed by Dow of less than 1 ppm of TCDD in 2,4,5-T.

Exhibit #P0924

PIN # DOW582853
Date 23-Mar-70
Author C DOW
Addressee JOHNSON, J.E. & LUECK, A.T.
LYNN, G.E. & BLAIR, E.H.

Description Memo re status of 2,4,5-T backup program.

Exhibit #P0926

PIN # DOW28243-44
Date 26-Mar-70
Author GEORGE LYNN
Addressee JOHNSON, J & WILLIAMS, C J
NAEGELE, R & DONALDS, JOHN
BLAIR, E & OTHERS

Description Dow and Monsanto can begin to predict where the bulk of the chlorophenols are going and evaluate some of the potentials for contaminent problems.

Exhibit #P0927

PIN # DOW028243-44
Date 26-Mar-70
Author GEORGE E LYNN
Addressee WILLIAMS, C J & NAEGELE, R. E.
DONALDS, JOHN E. & SPARTA, TOM A.
LEAVITT, F. C. & OTHERS

Description the report is from meetings 2/25, 3/19, 3/23.

Exhibit #P0928

PIN # DOW582854-55
Date 26-Mar-70
Author GEORGE E LYNN
Addressee JOHNSON, JULIUS & WILLIAMS, G.J.
OTHERS AT DOW

Description Lynn writes Johnson, Rowe and 12 others at Dow to report on meetings of 02/25, 03/19, and 03/23, re dioxin and Monsanto koppers human health problems.

Exhibit #P0929

PIN # DOW1104-8
Date 31-Mar-70
Author BENJAMIN B HOLDER
Addressee LYNN, GEORGE E. & NO OTHERS SHOWN

Description Letter is a summary of clinical information distributed to various institutions by Dow regarding the 1964 chloracne episode at the Midland Plant. Attached to the letter is a "Review of occupational health problems associated with th the manufacture of chlorinated phenols a t Midland, MI in 1964. Notes that disease primarily affects the skin and with extreme exposure "... a general organ toxicity can result." Liver and nervous disorders naote noted and no specific treatment for disease is known.

Exhibit #P0930

PIN # 1170342
Date 31-Mar-70
Author V K ROWE
Addressee DUNN, F L & GORDON, H L
HOLDER, B B & HINMAN, C W
HOYLE, H R & JOHNSON, J E

Description WE DO NOT HAVE ENCLOSURE

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Exhibit #P0932

PIN # DOW1103
Date 02-Apr-70
Author GEORGE LYNN
Addressee
Description In discussing the attached information with Dr. Holder he says the chloracne problem was related to the "accident" in the 2,4,5-T plant and the culprit was principally 2,3,7,8-T.

Exhibit #P0934

PIN # DOW999363-67
Date 07-Apr-70
Author CHARLES KRAMER
Addressee JOHNSON, JULIUS
Description One hundred thirty employees who have worked more than six months in areas where exposure to 2,4,5-T occurred and on whom recent medical examination data was available.

Exhibit #P0935

PIN # DOW119849-68
Date 07-Apr-70
Author CHARLES KRAMER
Addressee JULIUS JOHNSON
Description At present we are involved in an extensive reworking of the program based on review of the "first cycle" results. Approximately 10 percent of the subjects participating in the health inventory have prompt follow up by a physician on the basis of suspected abnormalities detected during inventory.

Exhibit #P0936

PIN # DOW549641-91
Date 10-Apr-70
Author F D AXE
Addressee DOW
Description Measurements to describe the chemical exposures of workmen engaged in the

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manufacture of 2,4,5-T. Dry Dust of 2,4,5-T has the capacity to produce upper respiratory irritation. Dust levels are frequently high enough to be very noticeably irritating. Observations indicate nasal irritation sneezing and a bitter taste may result from brief exposures.

Exhibit #P0937

PIN # 549641-660
Date 10-Apr-70
Author F D AXE
Addressee FILE & LYNN, G E
DELINE, DD & SCHMIDTKE, D J
HODSON, R E & MILLER, D E OTHERS

Description BIOCHEMICAL RESEARCH LAB AT DOW CHEMICAL CO., F. D. AXE DISTRIBUTED A STUDY OF CHEMICALLY EXPOSED WORKERS IN BUILDING 267 BUILDING (2,4,5-T PLANT); ALTHOUGH HE STATES THE LEVELS OF EXPOSURE ARE BELOW MINIMUM THRESHOLD LIMIT VALUE, DRY DUST HAS CAPACITY TO PRODUCE UPPER RESPIRATORY IRRITATION AT LEVELS MUCH LOWER THAN TLV; RECOMMENDS IMPROVE DUST CONTROL AT THE PACKING STATION- DUST ESCAPES FROM SEAL (FAULT OF EITHER SEAL OR INSUFFICIENT AIR VELOCITY).

Exhibit #P0939

PIN # DOW392412-23
Date 15-Apr-70
Author JULIUS JOHNSON
Addressee SENATE COMMITTEE
Description Reference to birth defects observed in tests. The most sensitive toxic reaction observed in humans to this impurity was manifested by a condition known as chloracne, a skin disorder suffered by teenagers. Exposure to this waste oil was the cause of the acne in the workmen.

Exhibit #P0940

PIN # DW 392412-23
Date 15-Apr-70

15168

Author JULIUS E JOHNSON
Addressee SUBCOMMITTEE ON & ENERGY

Description STATEMENT BY JULIUS E. JOHNSON, VICE PRESIDENT AND DIRECTOR OF RESEARCH, THE DOW CHEMICAL COMPANY, BEFORE THE SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES AND THE ENVIRONMENT OF THE SENATE COMMITTEE ON COMMERCE, DATED 04-15-70.

Exhibit #P0941

PIN # DOW130436-7
Date 15-Apr-70
Author JULIUS JOHNSON
Addressee USA PUBLIC & HART SENATE COMM.

Description Copies from Dow produced documents of minutes of Julius Johnson's testimony given April 15, 1970, before Hart Senate subcommittee on the environment, presumably from the Federal Register or Congressional Record; confirms Johnson of Dow made disclosures contained in full text of speech drafted for him at Dow.

Exhibit #P0945

PIN # DOW547219-20
Date 20-Apr-70
Author HARRY W HAYS
Addressee ECONOMIC POISONS

Description This herbicide may present an imminent health hazard to women of child-bearing age and has recommended suspension of certain registered uses of 2,4,5-T. In order to prevent an imminent hazard containing 2,4,5-T to the public it is necessary to suspend the registration for these products.

Exhibit #P0946

PIN # DOW547221
Date 20-Apr-70
Author HARRY HAYES
Addressee DOW CHEMICAL

Description It is hereby found that in order to prevent

an imminent hazard to the public it is necessary to suspend the registration for products containing 2,4,5-T.

Exhibit #P0947

PIN # 999173
Date 23-Apr-70
Author R L LAPE
Addressee LYNN, G E & ROWE, V K
FERNANDEZ, J
Description DOW TESTED 10 BATCHES OF AGENT ORANGE FROM FT DETRICK AND FOUND IT CONTAINED BETWEEN 1-15PPM OF 2,3,7,8-TCDD

Exhibit #P0948

PIN # DOW119606
Date 01-May-70
Author G J WILLIAMS
Addressee
Description Letter written by G.J. Williams stating how he feels that Dow should make its position known to the rest of the Government rather than give the Department of Defense an option.

Exhibit #P0949

PIN # DOW130323-24
Date 11-May-70
Author PROD AND MKT CANADA DEPT AGR
Addressee
Description Further evidence show that 2,4,5-T is potentially capable of causing abnormal development. This dioxin can also cause a serious skin condition known as chloracne. Findings suggest that this could constitute a hazard to children and women exposed during pregnancy.

Exhibit #P0950

PIN # DOW582846-7
Date 11-May-70
Author FRED LEAVITT

15170

Addressee BLAIR, E. & 31 OTHER DOW EMP.
Description Memo re environmental problems re chlorinated phenols.

Exhibit #P0951
PIN # DOW119791-7
Date 14-May-70
Author GARETH OWEN
Addressee LYNN, GEORGE E
Description along with the letter are the results of teratological studies done in charles river cd rats.

Exhibit #P0952
PIN # DOW582836-7
Date 22-May-70
Author R A PLEPYS
Addressee LYNN, G. & BLAIR, E.H.
ROWE, V.K. & HOLDER, V.B.
LUECK, A. & 19 OTHER DOW EMP.
Description Minutes of meeting eco-studies of chlorophenols.

Exhibit #P0954
PIN # DOW770705-09
Date 25-May-70
Author P BRADY
Addressee HABERSTROH W.H & WILLIAMS L
VOGELSANG P & CHASE F
KENSICKI R & SCHMIDTKE D
Description The manufacture of Phenoxy-Herbicides requires the removal of unreacted phenols from the reactor product mix. Laboratory data indicates that a flow of ----- lbs. of Trichlorobenzene for each pound of Silvex solution using ---- stages will remove ----- of the unreacted phenol.

Exhibit #P0955

15171

PIN # DOW956820-24
Date 28-May-70
Author GEORGE LYNN
Addressee US DEPT OF AGRIC.
Description Cancellation of 2,4,5-T Products bearing certain directions for use. All uses on food crops intended for human consumption shall cease.

Exhibit #P0956

PIN # DOW119607
Date 03-Jun-70
Author BARSTOW BLDG DOW CHEMICAL
Addressee CLIFFORD M. HARDIN
Description TORDON has limited registration for use on non-food cropland and right of way maintenance in the United States. Requests for registration on pasture and rangeland have been submitted.

Exhibit #P0960

PIN # DOW424633-64
Date 15-Jun-70
Author C J WILLIAMS
Addressee LAIRD, MELVIN & DR. LEE DUBRIDGE
ELLIOT RICHARDSON & WALTER J. HICKEL

Description There is abundant evidence that 2,3,7,8-T is highly toxic. The Dow Company recommends strongly that the government set appropriate specifications and controls to insure that no 2,4,5-T be used if it contains more than one part per million 2,3,7,8-T.

Exhibit #P0961

PIN # DOW392412-23
Date 15-Jun-70
Author JULIUS JOHNSON
Addressee SENATE COMMITTEE
Description The possibility of a highly toxic impurity being formed in 2,4,5-T as a side reaction under conditions of elevated processing temperatures. This impurity is a condition known as chloracne, a skin disorder. It is

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in these oils that the impurities are concentrated. Exposure to this waste oil was the cause of the acne in the workmen.

Exhibit #P0962

PIN # DOW 424633-4
Date 15-Jun-70
Author G J WILLIAMS
Addressee LAIRD, HON MELVIN R
Description G. J. WILLIAMS , VICE PRESIDENT OF DOW,
LETTER TO HON. MELVIN R. LAIRD, SECRETARY
OF DEFENSE, DATED 06-15-70.

Exhibit #P0966

PIN # DOW119979
Date 29-Jun-70
Author D D MCCOLLISTER
Addressee DREW BAKER, JR. & DR. W. UPHOLT
MR. K.K. KRAUSCHE & MR. C.L. DUNN

Description Analytical chemists of the Dow Chemical Co. have utilized a GLC procedure essential that for analyzing 2,3,7,8-T. The procedure was sensitive enough to detect as little as 0.1 ppm.

Exhibit #P0967

PIN # DOW129637-42
Date 01-Jul-70
Author SAMUEL EPSTEIN
Addressee READER OF ENVIRON
Description Linking birth defects to the weed killer 2,4,5-T have resulted in restrictions on the use of this product. The warnings stem from the discovery that several variants, or esters of 24-D including the one commonly used in weed control, have caused birth defects in animals.

Exhibit #P0968

PIN # DOW766740-50
Date 20-Jul-70

15173

Author KOU YUAN CHANG
Addressee TOU, JAMES C. & LOOK, A.
SHEETZ, D. & DEMOTT, D.N.
POFFENGERGER N. & OTHERS

Description Two major concerns in the production of 2,4,5 T are the chloracne problem and the product quality. It is unlikely that a change in the reaction condition of the present process can eliminate the formation of methoxydichlorophenols.

Exhibit #P0970

PIN # DOW149715-42
Date 23-Jul-70
Author PRESIDENT ADVISORY COMM

Addressee
Description In general, 2,4,5-T residues can be expected to be unstable materials in the environment. Chemistry analysis is provided.

Exhibit #P0972

PIN # DOW367964-66
Date 11-Aug-70
Author MARGUERITE L LONG
Addressee K.C. BARRONS & E.M. BLAIR
J.M. DAVIDSON & G.E. BLAIR
D.D. MCCOLLISTER & OTHERS

Description Studies by the Dow Chemical have shown that cows fed 700 ppm 2,4,5-T in the total diet gave milk containing in the neighborhood of 0.3 ppm 2,4,5-T.

Exhibit #P0974

PIN # DOW12388-423
Date 26-Aug-70
Author JULIUS JOHNSON
Addressee DOW CHEMICAL

Description The purpose is to explore possible public health consequences of widespread use. The data presented will emphasize exposure toxicity and chemistry. There were detectable levels of 2,4-D and 2,4,5-T in

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the air up to 0.06 micrograms per cubic meter. Direct skin contact, together with vapor and mist exposure are encountered in varying degrees by applicators and employees in manufacturing plants.

Exhibit #P0975

PIN # DOW018868-83
Date 15-Sep-70
Author UNKNOWN UNKNOWN
Addressee MOUNTAIN LAKE & ROW MAINTENANCE
CONFERENCE.

Description this was an oral presentation, along with the article are chemical diagrams.

Exhibit #P0978

PIN # DOW538823-30
Date 01-Nov-70
Author G L SPARSCHU
Addressee DUNN F L (AUTHOR) & ROWE V K (AUTHOR)

Description

Exhibit #P0979

PIN # DOW751854-55
Date 18-Nov-70
Author D D MCCOLLISTER
Addressee J.E. JOHNSON & G.E. LYNN
E.H. BLAIR & P.M. RITTY
E.E. KENAGA & OTHERS

Description One notable void in this package is the information that Dr. Danielson requested on the acute oral toxicity of the various chlordioxins. A group of experts from EP Board in Sweden have been appointed to evaluate the phenoxy herbicide situation.

Exhibit #P0982

PIN # DOW538372
Date 05-Dec-70
Author CL DUNN

15175

Addressee JAMES LAMB & HEW FDA
DUBRIDGE & H.L. LEY
NED BAYLEY & H. W, HAYS

Description requests an extension until April 1970 on the Pesticide Petition 870669 on 2,4,5, -T which deadline was set for January 1, 1970. Letter states that additional studies are underway which will present important data to be reviewed.

Exhibit #P0984

PIN # DOW 00842
Date 11-Dec-70
Author L A DALTON
Addressee J.E.JOHNSON
Description Conclusion of tested showed that all skin contact with the test material should be avoided.

Exhibit #P0985

PIN # DOW120142-9
Date 30-Dec-70
Author MATTHEW MESELSON
Addressee WESTING, ARTHUR H. & CONSTABLE, JOHN D.
COOK, ROBERT E.
Description herbicide assessment commission of the American Association for the Advancement of Science.

Exhibit #P0986

PIN # DOW579003-9
Date 31-Dec-70
Author MIKE SIEDEL
Addressee
Description This spec has no written description, it is a diagram of the Alkaline Hydrolysis.

Exhibit #P0995

PIN # JUS215-704-8
Date 08-Mar-71

15176

Author RICHARD M PATTERSON
Addressee CHMN.ARMED FORCES & PEST CONTROL BOARD
WASH.,D.C.
Description Gov't relations mgr. Dow writes AFPCB to advise Dow's capabilities in destroying herbicides, the combustion of TCDD on incineration, and encloses report re same given 2-24-71; states "more than 40%) of the Orange inventory is unusable because of a dioxin level higher than one part per million".

Exhibit #P1000

PIN # DOW120239-40
Date 31-Mar-71
Author A T TALCOTT
Addressee KANESHIRO K.R.
& O'CONNOR J.N
MCCOLLISTER D.D. & LYNN G.E.
PIPPENGER P. & OTHERS

Description This letter contains the total number of containers of 2,4,5-T in inventory on April 29, 1970.

Exhibit #P1001

PIN # DOW119670-84
Date 01-Apr-71
Author DOW DOW CHEMICAL

Addressee
Description The EPA has also advised that a specific tolerance for phenoxies in grass is necessary: a tolerance in grass had not been requested by ITFPHT as it did not appear necessary.

Exhibit #P1005

PIN # DOW 047457
Date 01-Jun-71
Author GEORGE LYNN
Addressee R.E. NAEGELE & JULIUS JOHNSON
F.H. BLAIR & T.A. BYMAS
D.D. MCCOLLISTER & OTHERS

Description A letter stating that a report will be

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considered by the Administrator of EPA in making his descions about the suspended and cancelled registrations of 2,4,5-T.

Exhibit #P1009

PIN # DOW550150-71
Date 06-Jul-71
Author R D OLSEN
Addressee D.D. DELINE & C.Z. BAILEY
E.M. SEIDEL & R.E. SNYDER
B.B. HOLDER & OTHERS

Description Particular emphasis placed on potential chloracne hazards. Wipe Samples indicate an increase to an all time high of 38% in February and May, 1971.

Exhibit #P1010

PIN # H27741
Date 29-Jul-71
Author F STEHL
Addressee CRUMMETT, W & CHAMPLAIN, C.E
OTHERSAT DOW

Description Report of Analysis of Hercules, 2,4,5-T sample x-17394-21-5 showing .18ppmTCDD and reports 50 ppb in dow sample.

Exhibit #P1013

PIN # DOW119883-89
Date 19-Aug-71
Author V K ROWE
Addressee BATES, RICHARD DR. & LYNN, G.E.
ROWE VK

Description Summary of Toxicological information. Many graphd and diagrams.

Exhibit #P1014

PIN # H4E1-2
Date 28-Oct-71
Author DONALD D MCCOLLISTER
Addressee WEIR, DR. ROBERT & BIONETICS LABS
FRAWLEY, J.P.

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Description Dow encloses their lab reports analyzing the 245T used by Bionetics in their rat study indicating more recent studies in mice used Hercules product .18ppm TCDD

Exhibit #P1016

PIN # DOW767059-60
Date 01-Nov-71
Author DOW DOW
Addressee
Description This is directions on how to use Veon Brush Killer.

Exhibit #P1017

PIN # H4(E)0000
Date 09-Nov-71
Author E ROSS HART
Addressee MCCOLLISTER, D.D. & FALSEY, DR. J.P.
WEIR, DR. R.J.
Description Weir asked Hart of Bionetics to respond to Dow's 10-28-71 re use of Hercules 245T in continuing bionetics lab mice studies; Hart unable to comment but agrees that "caution must be exercised in statements that would appear in publication". Invites Dow to make specific suggestions re that.

Exhibit #P1018

PIN # H4(E)813
Date 09-Nov-71
Author E ROSS HART
Addressee FRAWLEY, DR. J.P. & NO OTHERS
Description Hart enclosed abstract submitted for inclusion in program of Toxicology Society in March, referencing fact that no specific results were obtained and solicits suggestions from Frawley as to how to state results obtained.

Exhibit #P1019

PIN # 538832-630

Date 09-Nov-71
Author G L SPARSCHU
Addressee DUNN, F L & ROWE, V K

Description ARTICLE WHICH IS PUBLISHED OF THE DOW STUDY AGREEING WITH BIONETICS REPORT AND COMPORTS WITH THE PREVIOUSLY SUBMITTED ABSTRACT.

Exhibit #P1020

PIN # H4(K)240
Date 15-Nov-71
Author W C KENYON
Addressee SHEARER, P.W. & TAVES, DR.M.A.
HALL, DR.R.T. & FORD, J.J.

Description Hercules cannot refute results reported, but notes ambiguity in statements of reports, which ref- erence both .18ppm and elevations corresponding to 3.8ppm TCDD.

Exhibit #P1022

PIN # DOW129635-36
Date 17-Nov-71
Author G LYNN

Addressee
Description

Exhibit #P1023

PIN # DOW026811-2
Date 04-Dec-71
Author J C WILSON
Addressee

Description the dow chemical company request for preliminary toxicological studies form on the product 2,4,5-t acid. analysis for this is on form ml-al-24-6???

Exhibit #P1028

PIN # H4(K)254-5
Date 17-Jan-72
Author D D MCCOLLISTER
Addressee HART, DR.E.ROSS & BIONETICS LABS

DUNN, C.L. & WEIR, DR. R.J.

Description USDA & FDA had published that Hercules lot of 245-T used in animal studies was "less than .05ppm"; Dow states "in our opinion there was no method available in 1970 which could be shown with adequate documentation to detect as little as .05ppm". Dow suggests bionetics ignores the differences of opinion and merely present their results as "on the order of .05ppm".

Exhibit #P1031

PIN # DOW126112-18
Date 15-May-72
Author DOW CHEMICAL
Addressee RENEGOTIATION BOARD
Description Text of presentation of Dow to May 15, 1972 meeting of statutory renegotiation board where Dow attempts to obtain renegotiation of the price that received for its Orange and gives argument and support thereof.

Exhibit #P1032

PIN # DOW053909
Date 10-Jul-72
Author B A SCHWETZ
Addressee GEHRING P J
Description Work to be done to supplement the existing information on the toxicity of the chlorinated dibenzo-p-dioxins.

Exhibit #P1033

PIN # DOW123061-68
Date 06-Oct-72
Author COMPANY DOW CHEMICAL
Addressee
Description two bibliography's - 1) determination of chlorinated dibenzo-p-dioxins and 2) analytical chemistry of herbicides

Exhibit #P1034

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PIN # DOW119557
Date 22-Nov-72
Author T YATES
Addressee DCASR DETROIT
Description Award Contract

Exhibit #P1049

PIN # DOW710839-56
Date 21-Feb-74
Author G J ROUSH
Addressee J.L. DEGEER & R.E. WINTERS
F.L. WILLIAMS & R.R. LANGER
B.B. HOLDER & OTHERS

Description Bldg. 267 of the Midland Division is slated to be ravaged. The chemicals of concern were judged to be TBC and TCBD. Tertiary Butyl dust is highly irritating to the skin and eyes. Eye contact may cause permanent loss of vision.

Exhibit #P1050

PIN # DOW 005592
Date 08-Jul-74
Author MARGUERITE LENG
Addressee MCCOLLISTER, D. D.
Description HANDWRITTEN MEMOS BETWEEN MARGUERITE LENG AND D. D. MCCOLLISTER OF DOW DATED 07-08-74.

Exhibit #P1060

PIN # DOW119974-77
Date 29-Mar-77
Author UNKNOWN WJR
Addressee DOW
Description Four page document contains Dow's capability for pro- duction of 2,4-D and 2,4,5-T and delinates herbicide contracts , Defense General Supply Center, dated March 29, 1967.

Exhibit #P1061

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PIN # NONE
Date 15-Sep-77
Author PAUL F OREFFICE
Addressee ALL DOW SUP'RS
Description President Orrefice of Dow writes all Dow U.S.A. Supervisors regarding Dow's Records Retention Policy and contains "WHEN IN DOUBT, THROW IT AWAY!!!"

Exhibit #P1066

PIN # DOW047290
Date 21-Jun-78
Author P J GEHRING
Addressee CROW DR.
Description This letter states by Mr. Gehring that he cannot support a study using doses which are likely to produce discernible effects.

Exhibit #P1091

PIN # DOW1132503
Date 03-Mar-81
Author LU LAPOINTE
Addressee RAY HOLMES
Description LETTER INDICATES THAT HOLMES REFERRED TO THE TCDD PROBLEM AS 10/5/64 WHICH ACCORDING TO THE AUTHOR WAS SOME TWO MONTHS PRIOR TO THE ANALYTICAL LABS ISOLATION OF THE CHLORAGEN. LETTER STATES THAT IT APPEARS THAT SOME "PRESSURE" WAS APLLIED TO HOLMES TO CONTINUE PLANT OPERATIONS WITH ONLY MINOR CHANGES THAT HOLMES WAS NOT IN AGREEMENT WITH.

Exhibit #P1107

PIN # NO NUMBER
Date 16-Dec-83
Author ARVIN MASKIN
Addressee WITT, GRETCHEN LEAH
Description EXCERPTS FROM DECLASSIFIED RANCH HAND DOCUMENTS PRODUCED BY THE GOVERNMENT.

Exhibit #P0009
PIN # 1079
Date 27-Dec-00
Author G P RUSSELL
Addressee MONSANTO COMPANY
Description Document requesting constant temperature control to reduce TDD.

Exhibit #P0017
PIN # 006005
Date
Author R EMMET KELLY M D
Addressee UNINTELLIGIBLE
Description Document referring to medical history of 2,4,5-T manufacturers.

Exhibit #P0018
PIN # 73256-62
Date
Author J AND K H KIMMIG SCHULTZ
Addressee UDELL, W
Description Kimmig & Schultz article translated 3/59 with copy sent to Udell. Title of said article is "Occupational Acne".

Exhibit #P0019
PIN # 1570-1577
Date
Author UNKNOWN UNKNOWN
Addressee UDELL?
Description HAND WRITTEN NOTES FROM FEBRUARY-AUGUST 1965 ENTITLED 2,4,5-T QUALITY NUMBERED 9-23-76001-2102 WITH PROBLEM AS REDUCTION OF CONCENTRATION OF CHLORACNAGENIC T.D.D. IN 2,4,5-T PRODUCT AND IMPROVEMENT OF COLOR OF PRODUCT.

15184

Exhibit #P0020

PIN # 1079,1068
Date
Author G P RUSSELL
Addressee NITRO
Description Document states in part that TDD can be reduced via the utilization of automatic temperature controls in the autoclaves. The manual controls are "very crude" and permits variations of plus and minus 4 degrees while the auto control will limit this to plus or minus 1 degree.

Exhibit #P0021

PIN # 46112-13
Date
Author UNKNOWN UNKNOWN
Addressee UNKNOWN
Description Page 3 & 4 of 16, Professional and Technical Personnel Required.

Exhibit #P0022

PIN # 73992
Date
Author JAMES M REA
Addressee SIDO, G ROBERT
Description 2,4-D/2,4,5-T Butyl Esters, USDA Reg. No. 524-150. Your application of April 8, 1970, is the subject of this document.

Exhibit #P0023

PIN # 89678-92
Date
Author JUDITH A ZACK ET AL
Addressee UNKNOWN
Description The Mortality Experience of Workers to Tetrachlorodibenzodioxin in a Trichlorophenol Process Accident. Draft of Dr. Suskinds mortality study.

Exhibit #P0024
PIN # 88248-51
Date
Author JUDITH A ZACK ET AL
Addressee UNKNOWN
Description The Mortality Exerience of Workers Exposed to Tetrachlorodibenzodioxin in a Trichlorophenol Process Accident.

Exhibit #P0044
PIN # 4872
Date 14-Sep-48
Author M C MCKONE
Addressee R L SIBLEY & W G KRUMRICH
C A HOCHWALT & D J BEAVER
SCOTT-RUABON & FILE COPY
Description Final Report on 2,4,5-T dated 9/14/48.

Exhibit #P0046
PIN # 71386
Date 23-May-49
Author C J MCKONE
Addressee W G KRUMMRICH & DR D J BEAVER
P G MARSH & H R NASON
DR R L SIBLEY & DR W P METZER
Description Interim Report on an Investigation of the 2,4,5- Trichlorophenol Process. Nitro Report No. ?107 dated May 23, 1949.

Exhibit #P0048
PIN # 042220
Date 16-Aug-49
Author LOUIS SCHWARTZ M D
Addressee (?) C. NELSON
Description Document discusses medical descriptions of individuals affected by the Nitro incident of 1949.

15186

Exhibit #P0053
PIN # 73928
Date 01-Mar-50
Author J CRESCE
Addressee 2,4,5-T EMPLOYEES
Description Hygiene requirements in 2,4,5-T plant is the subject of this document.

Exhibit #P0055
PIN # 74618-42
Date 30-Jan-51
Author G ROBERT SIDO
Addressee DEPT OF AGRICULTURE
Description Registration of 2,4,5-T with U.S.D.A. is the subject of this document.

Exhibit #P0056
PIN # 75359
Date 02-Apr-51
Author F V REAGEL
Addressee MONSANTO CHEMICAL CO
Description User of 2,4,5-T developed health condition working at Missouri State Highway Department.

Exhibit #P0057
PIN # 75360
Date 09-Apr-51
Author R EMMET KELLY M D

Addressee F V REAGEL
Description Letter indicating that injury related to 2,4,5-T use was unrelated.

15187

Exhibit #P0058

PIN # 33391
Date 03-Jan-52
Author WILLIAM F ASHE M D
Addressee DR HORACE D DAVIDSON
Description Letter requesting liver biopsy of Jessie Steele from Dr. Wallace.

Exhibit #P0059

PIN # 42047
Date 03-Mar-52
Author XYZ BOWLES
Addressee VIRGINIA WEBB
Description Document refers to list of 119 employees injured at Nitro in 1949.

Exhibit #P0060

PIN # 1771
Date 08-Aug-52
Author W H AND E A SEATON AND FIKE
Addressee L C WEGER & M C THRODAHL
W P METZNER & R L SIBLEY
OTHER EMPLOYEES
Description Nitro Progress Report regarding atmospheric pressure hydrolysis of TCB and TCP.

Exhibit #P0062

PIN # 1587-89
Date 07-Nov-52
Author E A FIKE
Addressee DR W P METZNER & DR G W STEAHLY
Description Proposal that TCP be distilled as a means of reducing toxicity.

15108

Exhibit #P0063

PIN # 1580-86
Date 17-Nov-52
Author W G CANHAM
Addressee W A GARLETTE JR & L C WEGER
H G KIRTLEY & E R HAMILTON
E G VOLZ
Description Minutes of Meeting November 11, 1952 -
Sodium Trichlorophenate Purification with
the hopes of reducing toxicity was the
subject of the document.

Exhibit #P0065

PIN # 41815
Date 03-Jun-53
Author H H SCHRENK PH D
Addressee MR. SMITH
Description Document referring to report on rabbit-ear
chloracne tests utilized prior to June
1953.

Exhibit #P0066

PIN # 4675-80
Date 13-Oct-53
Author H L HUBBARD ET AL
Addressee UNKNOWN
Description Final report on Minor Plant investigation
1952 through 1953 is the title of this
document.

Exhibit #P0068

PIN # 71194-222
Date 24-Nov-53
Author T R BOCH
Addressee NITRO INDIVIDUALS
Description Process Description For The Manufacture of
2,4,5-T in Department 57.

Exhibit #P0069

PIN # 71223-66
Date 03-Dec-53
Author L P HARICH ET AL
Addressee NUMEROUS PERSONNEL
Description Process Description for The Manufacture of Sodium 2,4,5-Trichlorophenate in Department 64 Building 51.

Exhibit #P0070

PIN # 73930
Date 07-Jan-54
Author J CRESCE
Addressee BILLY HICKS ET AL & LISTED EMPLOYEES
Description Memo notifying 32 workers that they will be layed off unless an adequate number of 2,4,5-T employees can be obtained.

Exhibit #P0072

PIN # 75409-38
Date 01-Dec-54
Author D P CLAYPOOL ET AL
Addressee J CRESCE & C M EAKER
R E HOWARD & VARIOUS OTHERS
Description Final Report On 2-(2,4,5-Trichlorophenoxy) Propionic Acid dated 12/1/54.

Exhibit #P0075

PIN # 74597-
Date 05-Jul-55
Author MONSANTO CO
Addressee UNKNOWN
Description Numerous 2,4,5-T Butyl Ester Brush Killer Labels.

15190

Exhibit #P0076
PIN # 74530-91
Date 05-Jul-55
Author COMPANY MONSANTO
Addressee UNKNOWN
Description 2,4,5-T Butyl Ester B.K. Registration No.
524-83.

Exhibit #P0082
PIN # 42170-73
Date 18-Nov-55
Author L C WEGER
Addressee SODEN, R & MCCLAIN, J R
KELLY MD, R E
Description Letter discussing in part psychoneurosis
amongst Nitro workers dated 11/18/55.

Exhibit #P0084
PIN # 21663-68
Date 13-Dec-55
Author R A MURIE
Addressee LESSLIE, T E & ROARK, J N
SOLSTEN, R T & STEAHLEY, G W
Description Method of analysis for 2,4,5-T BE Ester.

Exhibit #P0086
PIN # 22986-87
Date 16-Feb-56
Author R W WISE
Addressee GEISMAN, R A & EDWARDS, P W
LUECKE, C P & LESSLIE, T E
Description Method of analysis for the purpose of
determining sodium 2,4,5-T in 2,4,5-T acid.

15191

Exhibit #P0089

PIN # 73926
Date 13-Apr-56
Author T R BOCH
Addressee UNKNOWN
Description Document lists total number of workers and number of chloracne cases since January 1953 in the Monsanto plant.

Exhibit #P0090

PIN # 41652-42177
Date 13-Apr-56
Author NONE NONE
Addressee NONE
Description Transcript of Workmens Compensation Hearing of Louis Hallman, individual injured in the Nitro incident in 1941.

Exhibit #P0091

PIN # 5867-69
Date 12-Jun-56
Author ELMER P WHEELER
Addressee KELLY, R EMMET & NASON, H K
SODEN, R E & WEGGER, L C
Description Letter discusses meeting with German scientist, Dr. Oettel, wherein it was discussed that the Germans exposed in the 1953 Badische incident had similar symptoms as the Nitro workers, i.e., fatigue, vertigo, loss of libido, painful joints, etc.

Exhibit #P0092

PIN # 75448-73
Date 11-Sep-56
Author T E LESSLIE ET AL
Addressee NUMEROUS MON. EMP.
Description Study of prepn. of 2-butoxyethyl 2,4,5-trichlorophenoxyacetate from the reaction of sodium trichlorophenate with 2-butoxyethyl chloroacetate is described.

15192

Exhibit #P0097

PIN # 77-80
Date 03-May-57
Author J AND K H KIMMIG SCHULTZ
Addressee LUECKE & SILVERSTEIN
TRAPP & OTHER

Description Rough draft translation of the 1957 Kimmig and Schultz article.

Exhibit #P0098

PIN # 65551
Date 13-Jun-57
Author L P HARICH
Addressee MCCLAIN, J R & LUECKE, C F
CONWAY, C S & SHIFT FOREMAN

Description Document indicates in part that the 2,4,5-T Plant had a crew of 5 men.

Exhibit #P0101

PIN # 878-
Date 29-Jul-57
Author C H BOEHRINGER SOHN
Addressee DR. PRAHL

Description Partial translation of letter from C.H. Boehringer Sohn, on Hooker Electrochemical Company stationery, which identifies Dioxin in Tri-Chlorophenol. Said document further discusses the properties of Dioxin.

Exhibit #P0108

PIN # 71273-330
Date 06-Feb-58
Author L P HARICH ET AL
Addressee NUM. DEPTS. MONSANTO

Description Standard Manufacturing Process for 2,4,5-T Acid, revised 11/24/53.

Exhibit #P0114

PIN # 1836-1891
Date 30-Jul-58
Author L HARIICH
Addressee NITRO RESEARCH ET AL
Description PAPER DESCRIBES STANDARD MANUFACTURING PROCESS FOR SODIUM 2,4,5-TRICHLOROPHENATE - CONSISTS OF 56 PAGES IN DATA SHEETS, EXHIBITS AND APPENDICES. NOTED IN PAPER THAT SODIUM TCP PRODUCES A FORM OF DERMATITIS KNOWN AS CHLORACNE AND THAT CARE MUST BE TAKEN TO AVOID CONTACTING SOLUTION OR HOT VAPORS OF THE SOLUTION. ALSO NOTED AS A CORROSIVE MATERIAL.

Exhibit #P0118

PIN # 73736
Date 25-Mar-59
Author PAUL N BIVEN
Addressee NONE
Description Specifications for 2,4,5-T Acid.

Exhibit #P0119

PIN # 73065
Date 01-May-59
Author JOHN RODDY
Addressee STARRETT
Description ATTORNEY FROM WAUSAU INSURANCE COMPANY OF WISCONSIN REQUESTS INFORMATION REGARDING THE TOXICITY OF 2,4-D AND 2,4,5-T AS AN EMPLOYEE ALLEGED SPRAYING OF THESE CHEMICALS ADVERSELY AFFECTED HIM. REQUEST PERTAINS TO ANY DATA, PAMPHLETS OR OTHER REFERENCES REGARDING CHEMICALS AND THEIR EFFECTS ON HUMANS.

Exhibit #P0120

PIN # 73063
Date 06-May-59
Author J. Starrett
Addressee Kelly & Olcott
Zorsch
Description Letter requested that Dr. Kelly respond to letter of Roddy dated 01-May-59.

Exhibit #P0121

PIN # 73064
Date 08-May-59
Author Emmett Kelly
Addressee Roddy & Olcott
Zorsch & Starrett

Description Kelly responded that they had not been encountered any clinical evidence of injury to their employees. ✓

Exhibit #P0122

PIN # 5695
Date 12-May-59
Author L WEGER
Addressee WHEELER

Description Letter states that John Burton of Diamond Alkali had seen the article on chloracne by Kimming and Schultz while in Germany in Dermatologica 1957. Weger stated that a translated copy will be available upon request.

Exhibit #P0123

PIN # 0
Date 01-Jun-59
Author L WEGER
Addressee WHEELER

Description Letter confirms that Diamond Alkali is in receipt of German Article on Choracne.

Exhibit #P0125

PIN # 5693
Date 16-Jun-59
Author ELMER WHEELER
Addressee WEGER

Description Acknowledges receipt of German Article on Chloracne and translation acknowledges translation thereof, chlorinated dibensedioxine acknowledged as an important causing agent of the disorder.

15195

Exhibit #P0127

PIN # 33394
Date 14-Aug-59
Author UNKNOWN BLAGG ET AL
Addressee STUBBS & WORK COMP

Description Letter attached to brief of Monsanto's regarding Workmen's Compensation cases of the 2,4,5-T manufacturers.

Exhibit #P0131

PIN # 2210-11
Date 14-Jan-60
Author M A TERPSTRA
Addressee BROWN, R T & CROUCH, J L
GEISMAN, R A & HUBBARD, H L

Description Document deals with what should be done with "off-quality" 2,4,5-T.

Exhibit #P0133

PIN # 19470-475
Date 23-Feb-60
Author G W OLSEN
Addressee VARIOUS INDIVIDUALS & NITRO
RESEARCH & GENERAL OFFICE
OTHER

Description Procedure to expand 2,4,5-T production capacity from 175,600 lbs. per month to 3.2 million lbs. per month.

Exhibit #P0134

PIN # 18982-87
Date 16-Mar-60
Author L C WEGER
Addressee MILLER, R L & EKBERG, J B
EDWARDS, P W & COHN, L A
OTHERS

Description Trip report to the Diamond Alkali Company for the purpose of investigating the 1960 Diamond Alkali incident.

Exhibit #P0135
PIN # 18998
Date 29-Mar-60
Author L P HARICH
Addressee EDWARDS, P W & STEAHLY, G W
WEGER, L C & HINCHCLIFF, W B
GALLOWAY, H M
Description Meeting recommendations resulting from
Weger's investigation of the Diamon Alkali
incident and what could be done to avoid a
reoccurrence.

Exhibit #P0136
PIN # 21377-79
Date 27-Apr-60
Author D L MANSFIELD
Addressee ROARK, J N & HINCHCLIFF, JR W B
Description 2,4,5-Trichlorophenol-Sodium Salt assay
procedure.

Exhibit #P0138
PIN # 23156
Date 23-May-60
Author UNKNOWN UNKNOWN
Addressee VARIOUS EMPLOYEES
Description Butyl 2,4,5-Trichlorophenoxyacetate specs.

Exhibit #P0142
PIN # 76294-76350
Date 06-Jul-60
Author L P HARICH ET AL
Addressee TECHNCL SRVCS DEPT & PLANT MANAGER
DIRECTOR OF MFG. & DEPT. SUPERVISOR
DEPT. FOREMAN & NITRO RSRCH DPT LIBR
Description Standard Manufacturing Process for Sodium
2,4,5-Trichlorophenate in Department
817.35, written July 6, 1960, supercedes
Standard Manufacturing Process Manual
prepared by L.P. Harich July 30, 1958.

15197

Exhibit #P0143

PIN # 5971
Date 22-Jul-60
Author R EMMET KELLY MD
Addressee WALLACE MD, RICH & WEGER, L C
OTHER
Description Document indicating that there was to be a meeting 8/4/60 with Dr. Oettel, Dr. Susskind, Mr. Wheeler, and Dr. Kelly for the purpose of updating Monsanto's information regarding the German experiences.

Exhibit #P0146

PIN # 05024-41
Date 12-Aug-60
Author B O SEVERSON
Addressee THRODAHL, M C & ZERBE, R O
STEAHLY, G W & EDWARDS, P W
NITRO RSRCH LAB & OTHERS
Description Report on the 245-T engineering study of continous acidification and recovery of TCP.

Exhibit #P0147

PIN # 18967
Date 13-Oct-60
Author G W OLSEN
Addressee HARICH, L P & EDWARDS, R W
COHN, L A & HINCHCLIFF, W B
OTHERS
Description The document refers to a progress report dated 10/13/60 and refers to the need for a capacity increase in the NaTCP plant within the next two years.

Exhibit #P0148

PIN # 73773-77
Date 01-Nov-60
Author UNKNOWN UNKNOWN
Addressee FOR NITRO, W. VA
Description Standard Manufacturing Process for 2,4,5-T Acid dated November 1960, Nitro, W. Va. Document includes section on current problems and refers to the "wild Sod TCP batch" incident in Building 41. Also refers to increased resistance from all plant personnel to work assignments in either the Sod. TCP or 2,4,5-T departments.

15198

Exhibit #P0149

PIN # 1407-08
Date 01-Nov-60
Author NONE MAW
Addressee UNKNOWN
Description Document sets forth the analytical procedure in which one can determine the amount of TDD in 2,4,5-T.

Exhibit #P0150

PIN # 23225-30
Date 01-Jan-61
Author WILLIAM R UDELL
Addressee BARKLEY, L B
Description Progress Report from William R. Udell stating the need to find an economical route to 2,4,5-T Acid. Said document states project was initiated with the ultimate aim of reducing cost of manufacture of 2,4,5-T acid.

Exhibit #P0153

PIN # 19530-34
Date 03-Jan-61
Author M T WHITE JR
Addressee COHN, L A & HINCHCLIFF, W B
KELLOGG, W R & OLSEN, G W
STEAHLY, G W & OTHERS
Description Progress Report 2,4,5-T Capacity Increase dated January 3, 1961.

15189

Exhibit #P0155

PIN # 75773-77
Date 28-Jun-61
Author FRED M YOUNGER
Addressee MONSANTO CHEMICAL CO
Description Study from Younger Laboratories of CP 18443-(2) - O-Ethyl O-(2,4,5-trichlorophenyl) methylphosphonothionate, requested by Monsanto Chemical Company. Said study states that product was fed to Sprague-Dawley strain albino rats, male and female. Product was applied to New Zealand white rabbits, male and female. The compound was classed as highly toxic by oral ingestion in both female and male rats. Said document also states that compound was classed as highly to extremely toxic by skin absorption in female rabbits and compound was classed as highly toxic by skin absorption in male rabbits.

Exhibit #P0156

PIN # 73908-09
Date 28-Aug-61
Author C M RUSSELL
Addressee STITES, J & ROARK, J W
BARKLEY, L B & LUECKE, C F
WEBBER, R T & OTHERS
Description Letter from Russell providing stites with 2,4,5-T acid specifications.

Exhibit #P0158

PIN # 51851-59
Date 27-Nov-61
Author RESEARCH LAB DOW CHEMICAL
Addressee UNKNOWN
Description Results of 90-day Dietary Feeding Studies of Dowanol 97B Ester 2,4,5-T in Rats.

15200

Exhibit #P0159

PIN # 21391
Date 13-Dec-61
Author C H RUSSELL
Addressee ROARK, J N
Description Separation and Identification of 2,4-D and 2,4,5-T Acid by Paper Chromatography.

Exhibit #P0160

PIN # 22268
Date 01-Jan-62
Author A J BURNS ET AL
Addressee STEPHENS, J A & LUECKE, C F
RUSSELL, C H
& COPANAS, F W
WISE, W R & KOLLOFF, R H

Description The Analysis of Sodium 2,4,5-Trichlorophenate by Gas Liquid Chromatography.

Exhibit #P0164

PIN # M0148
Date 05-Apr-62
Author R EMMET KELLY MD
Addressee EDWARDS, PAUL W
Description Document discusses the general disregard of worker hygiene. Document also discusses medical implications which might occur as a result of same.

Exhibit #P0165

PIN # 828
Date 10-May-62
Author F M CALKINS
Addressee WEBBER, R T & LUECKE, C F
HINCHCLIFF, W & HARICH, L P
STICKLEY, J F & NUMEROUS OTHERS

Description DEVELOP NEW CAPITAL REQUIREMENTS, CAPACITY, AND MANUFACTURING COST DATA FOR 2,4,5-T ESTER MANUFACTURE IN THE BUILDING 46 AVADEx EQUIPMENT.

15201

Exhibit #P0167

PIN # 73068
Date 15-May-62
Author L EDWARD GAUL MD
Addressee MONSANTO CHEMICAL CO
Description Letter dated May 15, 1962 from Dr. L. Edward Gaul to Monsanto Chemical Company. Said document states patient complained after using Brush Killer, 2,4-D, 2,4,5-T.

Exhibit #P0168

PIN # 21544
Date 29-May-62
Author C H RUSSELL
Addressee ROARK, J K & LUECKE, C F
COPON??, ? W
Description Russell's letter to Roark in which Dow's infrared method for analyzing 2,4,5-T was discussed.

Exhibit #P0169

PIN # 62976-90
Date 01-Jun-62
Author F B MATTHEWS ET AL
Addressee LUECKE, C F & KUHN, W A
MATTHEWS, F B & ST LOUIS RESEARCH
VITAL RECORDS CNTR & VARIOUS OTHERS
Description Process Description for the Manufacture of Isobutyl 2,4,5-T in Dept. 268.

Exhibit #P0170

PIN # 62926-54
Date 01-Jun-62
Author F B MATTHEWS ET AL
Addressee LUECKE, C F & KUHN, W A
RUMER, R R & MATTHEWS, F B
VITAL RCRDS CNTR & VARIOUS OTHERS
Description Process Description for the Manufacture of Butyl 2,4,5-T in Dept. 268 (894.12) (June, 1962).

Exhibit #P0172

PIN # 24598-24642
Date 26-Jun-62
Author J T PEBWORTH
Addressee UNKNOWN
Description Standard Manufacturing Process for Sodium 2,4,5-Trichlorophenate in Department 895.06. Standard Manufacturing Process Manual prepared by L/F. Harich, July 6, 1960, revised June 26, 1962 by J.T. Pebworth. Document states the Sodium TCP solution produced contains chemical compounds known as "chloracnegens."

Exhibit #P0173

PIN # 76236-41
Date 26-Jun-62
Author J T PEBWORTH
Addressee UNKNOWN
Description Standard Manufacturing Process For Sodium 2,4,5-Trichlorophenate In Department 895.06 dated June 26, 1962, revises Standard Manufacturing Process Manual prepared by L.P. Harich dated July 6, 1960.

Exhibit #P0174

PIN # 1778-1835
Date 26-Jun-62
Author J T PEBWORTH
Addressee DEPT. SUPERVISOR & DEPT. FOREMAN
TECHNICAL SRVCS LIBR & VARIOUS OTHERS
Description Standard Manufacturing Process for Sodium-2,4,5-Trichlorophenate In Department 895.06, revises Standard Manufacturing Process Manuasl prepared by L.P. Harich July 6, 1960.

15203

Exhibit #P0176

PIN # 76242-93
Date 01-Jul-62
Author J T PEBWORTH
Addressee PROD. SUPERVISOR & PRODUCTION FOREMAN
TECHNICAL SRVS DEPT. & NITRO RSRCH LIBRARY
DIRECTOR OF MFG. & OTHERS

Description Standard Manufacturing Process for 2,4,5-T
Acid Department 57. ✓

Exhibit #P0177

PIN # 24664-714
Date 01-Jul-62
Author J T PEBWORTH
Addressee UNKNOWN
Description Standard Manufacturing Process for 2,4,5-T
Acid in Nitro Dept. 57. Includes finished
product specifications, physical constants
data, and matters relating to safety and
toxicity.

Exhibit #P0179

PIN # 74217-19
Date 02-Aug-62
Author G ROBERT SIDO
Addressee LABELING FILE
Description Letter from Sido about 2,4,5-T Amine Brush
Killer labels.

Exhibit #P0192

PIN # 32308
Date 02-Jan-63
Author H E WEBB JR
Addressee BOWLES, P N
Description Employee discussed was R.E. Adkins in
regard to award being high considering the
alleged degree of disability. Webb
inclined to leave award as is.

15204

Exhibit #P0195

PIN # 24660-61
Date 14-Jan-63
Author J T PEBWORTH
Addressee EDWARDS, P. W. & COPANAS, F. W.
GORDON, R. S. & STEPHENS, J. A.
SOLSTEN, R. T. & OTHERS

Description Tentative Amendment F to Standard Manufacturing Process for 2,4,5-T Acid contains an objective permitting the use of spent acid from the TCP recovery step.

Exhibit #P0197

PIN # 24658-59
Date 23-Jan-63
Author J T PEBWORTH
Addressee EDWARDS, P. W. & COPANAS, F. W.
RUMER, R. R. & GORDON, R. S.
STEPHENS, J. A. & OTHERS

Description Tentative Amendment G to Standard Manufacturing Process for 2,4,5-T Acid with objective of permitting the use of acid filtrate to partially acidify the TCP in the recovery step. The proposal calls for a 60 day test period.

Exhibit #P0198

PIN # 73051
Date 29-Jan-63
Author R EMMET KELLY MD
Addressee BAVER DR., L D & HANNAH, L H

Description Document discusses pentachlorophenol causing chloracne in Europe and reports of acute intoxication with reports of death using pentachlorophenol in Borneo as well as France and Mexico.

Exhibit #P0200

PIN # 247-48
Date 08-Feb-63
Author C RUSSELL
Addressee ARVAN

Description Document acknowledges that Russell worked out tentative specifications for the Government. A meeting was to be held with Mr. Pearson on February 18, 1963.

15205

Exhibit #P0202

PIN # 241-43
Date 22-Feb-63
Author C H RUSSELL
Addressee HOFFMAN, DR & ARVAN DR., P G
DANIELS, S D & KUHN, W A
LUECKE, C F & MATTHEWS

Description 2/8/63 meeting, Russell & Bourland, U.S. Army Biological Laboratories. Purpose was to satisfy U.S. Army about specs & physical properties on next type of blend they will be purchasing, normal butyl D and normal butyl T.

Exhibit #P0238

PIN # 21754-55
Date 09-Jul-63
Author R KOLLOFF
Addressee ROARK, J & COPANAS
CANOBEKK & KUECKE
RUSSELL & STEPHENS, J A

Description GLC Analysis of 2,4,5-TCP & 2,4,5-T acid.

Exhibit #P0245

PIN # 63998-64076
Date 01-Aug-63
Author R A YODER
Addressee WEBBER, R. T. & YODER, R. A.
LUECKE, C. F. & PEBWORTH, J. T.
STEPHENS, J. H. & OTHERS

Description 2,4,5-T plant expansion at Nitro Bldg. 92 is the subject of this document. The document addresses the need for a major increase in production of 2,4,5-T for a month.

Exhibit #P0249

PIN # ILLEGIBLE
Date 04-Oct-63
Author UNKNOWN UNKNOWN

Addressee UNKNOWN
Description Product label registration record for 2,4-D/2,4,5-T Butyl Ester Brush Killer.

15200

Exhibit #P0250

PIN # 18782-83
Date 10-Oct-63
Author P W EDWARD
Addressee DIR OF MFG & COVERT, M. C.
EDWARDS, P. W. & RUMER, R. R.
LUECKE, C. F. & OTHERS

Description Document makes referencé to a request for agitation in NaTCP storage tank for the purpose of keeping undissolved salts in suspension, thereby eliminating problems of cleaning out accumulated salts and inaccurate inventory of NaTCP.

Exhibit #P0252

PIN # 24654-57
Date 05-Nov-63
Author F M CALKINS
Addressee STEPHENS J. A. & PEBWORTH, J. T.
COPANAS, F. W. & SPEZIALE, A. J.
EDWARDS, P. W. & UNKNOWN OTHERS

Description Tentative Amendment H to Standard Manufacturing Process for 2,4,5-T Acid with objective of exploring effect on 2,4,5-T yield, quality, and cost of the condensation reactor variables.

Exhibit #P0254

PIN # 65436
Date 25-Nov-63
Author F W COPANAS
Addressee CALKINS, F. M. & PEBWORTH, J. T.
LUECKE, C. F. & EDWARDS, P. W.
HINCHCLIFF, W. B. & OTHERS

Description Document advising that there is 200,000 lbs. of "out of spec" 2,4,5-T.

Exhibit #P0258

PIN # 004756-85
Date 10-Dec-63
Author W R UDELL
Addressee SPEZIALE, A. J. & WALDO, W. H.
STEPHENS, J. A. & CONNAUGHTON, J. M.
LUECKE, C. F. & OTHERS

Description Literature survey-review of 2,4,5-T Acid process includes physical constants data of 12/10/63 for 2,4,5-T and NaTCP.

Exhibit #P0259

PIN # 65437-38
Date 11-Dec-63
Author M T WHITE
Addressee LUECKE, C. F. & EDWARDS, P. W.
KELLOGG, W. R. & PEBWORTH, J. T.
CALKINS, F. M. & OTHERS

Description It is proposed that 200,000 lbs. of out-of-spec. 2,4,5-T be reworked in the old 2,4,5-T Dept. in Bldg. 34.

Exhibit #P0260

PIN # 74211
Date 18-Dec-63
Author G R SIDO
Addressee LABELING FILE & HOFFMAN, P. R.
RUSSELL, C. H. & SAMAHA, D.

Description Document confirming conversation with Russell and Hoffman regarding text of label for 2,4-D/2,4,5-T Amine Brush Killer (USDA Registration 524-99 dated 12/16/57).

Exhibit #P0264

PIN # ILLEGIBLE
Date 15-Jan-64
Author UNKNOWN UNKNOWN
Addressee UNKNOWN

Description Product Label Registration Record for 2,4,5-T Butyl Ester Brush Killer, consisting of 37.5% isobutyl ester of 2,4,5-T trichlorophenoxyacetic acid, 15.3 % n-Butyl ester of 2,4,5-Trichlorophenoxyacetic acid, and 47.2 % inert ingredients.

Exhibit #P0265
PIN # 054547
Date 15-Jan-64
Author UNKNOWN UNKNOWN
Addressee UNKNOWN
Description PRODUCT LABEL REGISTRATION RECORD FOR
2,4,5-T ACID REPLACES RECORD OF OCT 1963.

Exhibit #P0266
PIN # 054549
Date 15-Jan-64
Author UNKNOWN UNKNOWN
Addressee UNKNOWN
Description PRODUCT LABEL REGISTRATION RECORD FOR
2,4,5-T AMINE BRUSH KILLER REPLACES RECORD
OF OCT 1963.

Exhibit #P0267
PIN # ILLEGIBLE
Date 15-Jan-64
Author UNKNOWN UNKNOWN
Addressee UNKNOWN
Description PRODUCT LABEL REGISTRATION RECORD FOR
BRUSH-O-CIDE BRUSH KILLER REPLACES RECORD
OF OCT 1983. BRUSH-O-CIDE'S ACTIVE
INGREDIENTS INCLUDE 46.6% ISOCTYL ESTER OF
2,4-DICHLOROPHENOXYACETIC ACID AND 44.5%
ISOCTYL ESTER OF TRICHLOROPHENOXYACETIC
ACID, WITH 8.9% OF THE PRODUCT CONSISTING
OF INERT INGREDIENTS.

Exhibit #P0268
PIN # 054554
Date 15-Jan-64
Author UNKNOWN
Addressee UNKNOWN
Description PRODUCT LABEL REGISTRATION RECORD FOR
BRUSH-BLITZ BRUSH KILLER REPLACES RECORD OF
OCT 1963. 88% OF INGREDIENTS IN
BRUSH-BLITZ BRUSH-BLITZ IS AN ISOCTYL ESTER
OF 2,4,5-TRICHLORO-PHENOXYACETIC ACID AND
12% INERT INGREDIENTS.

Exhibit #P0269

PIN # 21697
Date 29-Jan-64
Author C H RUSSELL
Addressee ROARK, J. N. & LUECKE, C. F.
HOFFMAN, P. F. & CONNAUGHTON, J. M.

Description RUSSELL SENDING J.N. ROARK AT NITRO A SAMPLE OF 2,4,5-T ACID MADE BY HERCULES BECAUSE MONSANTO IS CONSIDERING PURCHASING SOME TO MAKE UP FOR DEFICIENCIES DUE TO DIFFICULTIES AT NITRO. RUSSELL ASKED THAT THE 2,4,5-T ACID BE ASSAYED USING "OUR TRADITIONAL METHODS" AND STRESSES THAT THE REQUEST IS URGENT.

Exhibit #P0270

PIN # 21695
Date 07-Feb-64
Author J N ROARK
Addressee RUSSELL, C. H. & CONNAUGHTON, J. M.
RINCHELIF, W. B. & HOFFMAN, P. F.
LUECKE, C. F.

Description ANALYSIS OF HERCULES 2,4,5-T ACID SAMPLE #B-1-12464 SHOWS LEVELS OF 1.3% TCP AND 90.3% 2,4,5-T AS COMPARED WITH .2% TCP AND 93.4% 2,4,5-T BEING TYPICAL IN MONSANTO'S PRODUCT." "THERE IS A CONSIDERABLE AMOUNT OF LUMPY MATERIAL IN THIS PRODUCT, CECIL."

Exhibit #P0283

PIN # 64955-65037
Date 01-Apr-64
Author L E DOTSON
Addressee UNKNOWN

Description SECTIONS OMITTED INCLUDE: 10) OPERATION OF T-ACID RECOVERY SYSTEMS; 2) DETAILED OPERATIONS FOR TCP RECOVERY SYSTEM; AND 3) DETAILED OPERATIONS FOR T-ACID RECOVERY SYSTEM. ALSO, PART OF SECTION ENTITLED, OPERATION OF TCP RECOVERY SYSTEM, IS OMITTED. THE AFOREMENTIONED WAS INADVERTENTLY NOT SUPPLIED TO PLAINTIFFS BY DEFENDANTS.

Exhibit #P0286
PIN # 21987
Date 14-Apr-64
Author F L RUPEL
Addressee RUSSELL, C. H. & LUECKE, C. F.
CONNAUGHTON, J. M. & ROARK, J. N.
STEPHENS, J. A.
Description Document lists an analysis of Dow's
2,4,5-T.

Exhibit #P0291
PIN # 010667
Date 01-May-64
Author CHARLES P ZORSCH
Addressee DEF FUEL SUPP CENT & FILE
Description Document describes modifications of Agent
Orange specifications.

Exhibit #P0292
PIN # 21385
Date 13-May-64
Author D L MANSFIELD
Addressee RUMER, R. R. & RUSSELL, C. H.
ROARK, J. N. & CONNAUGHTON, J. M.
KELLOGG, W. R. & OTHERS
Description Document discusses need to recover 2,4,5-T
in Nitro's production process. It is
estimated that approximately 1,000/lbs per
day was being lost.

Exhibit #P0295
PIN # 055514
Date 28-May-64
Author ILLEGIBLE ILLEGIBLE
Addressee RESEARCH NOTES
Description USEFULNESS OF RESEARCH NOTES SHOWING
ANALYSIS OF 2,4,5-T IS UNCLEAR.

15211

Exhibit #P0300

PIN # 010782-83
Date 04-Jun-64
Author C F LUECKE
Addressee PAYTON & HOFFMAN, P. F.
KAMENKO & CONNAUGHTON, J. M.

Description Document advises that Hooker does not have TCB and cannot comply with their old schedule of production.

Exhibit #P0302

PIN # 010784
Date 05-Jun-64
Author CARL SCHUMACHER
Addressee TIPPEE, H. W. & HOFFMAN, P. F.
LUECKE, C. F. & ZORSCH, C. P.
DYKSTRA, R. A. & OTHERS

Description BOB DYKSTRA CALLED SCHUMACHER AND SAID HE COULD BEGIN PRODUCING 2,4,5-T ESTERS FOR MONSANTO ON A FIVE DAY A WEEK BASIS STARTING JUNE 11.

Exhibit

Exhibit #P0307

PIN # 010683-84
Date 25-Jun-64
Author C P ZORSCH
Addressee FILE & SCHUMACHER, C. P.
LUECKE, C. F. & HOFFMAN, P. F.
MCCARVILLE, W. J. & OTHERS

Description Contract for Governmental purchase of 48,950 gallons of a product containing 50% 2,4-D N-Butyl Ester; 30% 2,4,5-T N-Butyl Ester; and 20% 2,4,5-T Iso-Butyl Ester.

Exhibit #P0315

PIN # 008255-57
Date 01-Aug-64
Author UNKNOWN UNKNOWN
Addressee UNKNOWN
Description Label for 2,4,5-T acid.

Exhibit #P0316

PIN # ILLEGIBLE
Date 12-Aug-64
Author UNKNOWN UNKNOWN
Addressee KRUMMRICH PLANT & OTHERS UNKNOWN

Description GAS-LIQUID CHROMATOGRAPHIC PROCEDURE FOR DETERMINING THE COMPOSITION OF THE ESTER ALONE OR IN A MIXTURE WITH ONE OR MORE OF THE ESTERS.

Exhibit #P0324

PIN # 046115-21
Date 01-Oct-64
Author R M DICKEY
Addressee COLLERAN, W. E. & COMERFORD, D. G.
EASLEY, K. W. & EBY, C. J.
LIXWEILER, T. G. & OTHERS

Description DEFOLIANT SYNTHESIS MODIFICATION NO.3 TO CONTRACT NO. DA18-0648.064.AMC.69(A).

Exhibit #P0327

PIN # 2623-26
Date 20-Oct-64
Author FRED YOUNGER
Addressee MONSANTO

Description Study performed by the Younger Lab regarding the toxic effects of TCP Distillation Residue. Study dealt with rabbits and it was discovered that four of the six tested died within 4-8 weeks. Jaundiced livers were noted as well as renal congestion.

Exhibit #P0329

PIN # 73242-73249
Date 22-Oct-64
Author WILLIAM H HUNT PHD
Addressee STEPHENS, J A & LUECKE, C F
UDELL, W R & NUMEROUS OTHERS

Description Circulation of study referred to in document #2700, the rabbit study done by the Younger Lab showing their death when exposed to TCP distillation residue. Document also contains a comparison chart to other compounds.

Exhibit #P0332

PIN # 460
Date 24-Nov-64
Author C H RUSSELL
Addressee CARTY, C W & ZORSCH, CP
HOFFMAN, P F

Description Document whereby Russell informs the Army that the Government specs are identical to Monsanto's "official specification".

Exhibit #P0349

PIN # 20696
Date 06-Jan-65
Author J STRUM
Addressee SPRINGGATE & KELLOGG
HAMILTON & BRICK
SOLSTEN & PRITCHARD ET AL

Description PROGRESS REPORT ON ATTEMPT TO INCREASE NITRO PLANT CAPACITY OF PRODUCTION OF 2,4,5-T FROM 400,000 LBS. PER MONTH TO 500,000 LBS. PER MONTH TO MEET SALES COMMITMENTS. RECOMMENDATION OF INSTALLATION OF A SURGE HOPPER AND A VARIABLE-SPEED FEEDER TO ELIMINATE PROCESS DOWNTIME.

Exhibit #P0350

PIN # 9815-9816
Date 08-Jan-65
Author UNKNOWN UNKNOWN
Addressee COMMANDER & DEFENSE
GENERAL & SUPPLY
CENTER

Description CONFIDENTIAL MESSAGE ON FORM TO COMMANDER
OF DEFENSE GENERAL SUPPLY CENTER IN
RICHMOND, VA. MESSAGE SETS FORTH PURITY
LEVELS FOR A 50/50 BLEND OF 2,4-D AND
2,4,5-T, DATE OF DELIVERY, AMOUNTS, PRICES.

Exhibit #P0377

PIN # 5972-73
Date 24-Feb-65
Author R EMMET KELLY MD
Addressee FILE & WHEELER E P

Description Memo of conversation between Kelly and Roe
whereby Kelly was advised that the
contaminant in 2,4,5-T was dioxin.

Exhibit #P0392

PIN # 000229
Date 11-Mar-65
Author CARL SCHUMACHER
Addressee HOSTETTER

Description COVER LETTER AND MEMO REGARDING GOVERNMENT
BIDS FOR 50/50 2,4 D AND 2,4,5 T BLENDS AND
MOSANTO'S POSITION REGARDING ACCEPTANCE OF
BIDS BASED ON SUCH VOLUME.

Exhibit #P0396

PIN # 73255
Date 17-Mar-65
Author EMMETT KELLY
Addressee STEPHENS & HOFFMAN

Description Warning letter regarding 2,3,7,8-
tetrachlorodibenzyl- dioxin received from
the DOW CHEMICAL COMPANY. Therein it is
claimed that DOW had thought it to be the
"... most toxic compound they have ever
experienced."

15215

Exhibit #P0419

PIN # 72054
Date 30-Mar-65
Author EMMETT KELLY
Addressee HOFFMAN & ARVAN
DUNLAP & RUMER

Description LETTER DESCRIBES MEETING BETWEEN DOW, HOOKER, DIAMOND, HERCULES AND OTHERS OF REGARDING THE CONTENT OF DIOXIN IN DOW'S 2,4,5-T ACID. AUTHOR AGREES THAT DIOXANE IS "... A POTENT CONTAMINANT." ALSO THAT "...IT CAN BE A POTENT CARCINOGEN." HE ALSO VOICED CONCERN ABOUT ANOTHER EPIDEMIC OCCURRING AT NITRO.

Exhibit #P0422

PIN # 5983
Date 01-Apr-65
Author E WHELLER
Addressee FRAWLEY

Description COVER LETTER ENCLOSING ARTICLE ENTITLED "OCCUPATIONAL ACNE" BY KIMMING AND SCHULTZ. AND OTHER FILES ON THE SUBJECT IN CONTROL OF AUTHOR.

Exhibit #P0439

PIN # 20824-20828
Date 07-Jun-65
Author R NULL
Addressee SPRINGGATE, ET AL

Description PROGRESS REPORT ON 2,4,5-T TO NITRO PLANT OFFICIALS AND OTHERS REGARDING RIGID QUALITY IMPROVEMENT. PROGRAM.

Exhibit #P0456

PIN # 75614-75635
Date 13-Sep-65
Author S NORBERT SIDE
Addressee ROBERT ELKINS & JACKSON
KELLY & HOLT
O'FARRELL

Description COVER LETTER REGARDING WARNING LABELS TO BE AFFIXED ON PRODUCT FOR WEED & BRUSH CONTROL THAT CONTAIN 2,4-D AND 2,4,5-T.

15216

Exhibit #P0458

PIN # 1564-1569
Date 14-Sep-65
Author W UDELL
Addressee TAKE & DUNLAP
STEPHENS & SHARP

Description MEMO FROM AGRICULTURAL RESEARCH-ST. LOUIS TO NITRO PLANT REGARDING FORMATION AND CONCENTRATION OF TDD WITH ATTACHED GRAPHS. MEMO NOTES RECENT INCREASE IN TDD FORMATION AND STATES THAT A DETAILED LABORATORY STUDY IS IN THE PLANNING STAGES AND SHOULD REVEAL REASONS FOR RECENT INCREASES IN FORMATION.

Exhibit #P0468

PIN # 8223-8226
Date 22-Dec-65
Author ROBERT BRANDON
Addressee KUHN & LANDWEHR
TRAIL & TAKE

Description MEMO REGARDING VIABILITY OF EXPANDING THE NITRO 2,4,5-T PLANT. SEEK ADDITIONAL TESTING TO BE DONE IN ORDER TO DETERMINE THE EFFECT OF PARTICLES IN AIR LEAVING THE DRYING SYSTEM.

Exhibit #P0470

PIN # 76884-76888
Date 30-Dec-65
Author L DOTSON
Addressee UNKNOWN
Description MANUFACTURING AND PROCESS DATA REGARDING TOXICITY OF 2,4,5-T WITH ATTACHED CHARTS AND GRIDS. WARNING THAT EXTREME CARE MUST BE USED IN HANDLING THE COMPOUND BECAUSE OF ITS TOXICITY AND CONTAINMENT OF CHLORO-ACNEGEN AGENTS.

Exhibit #P0471

PIN # 1402
Date 30-Dec-65
Author L DOTSON
Addressee PROCESS BRIEF
Description Document displays process of T and further indicates that the raw materials and final product are toxic.

Exhibit #P0472

PIN # 63212-66
Date 01-Jan-66
Author D R MIDDLETON
Addressee LUECKE, C F & STEPHENS, J A
ARMSTRONG, D C & LEISY, A E
ROBIRDS, W R & OTHERS
Description Standard Manufacturing Process For ISO
OCTYL 2,4-D ISO OCTYL 2,4,5-T, dated 11/69.

Exhibit #P0476

PIN # 21396
Date 04-Jan-66
Author M A WILLIAMS
Addressee ROARK, J N & DOTSON, L E
KELLOGG, W R & STRUM, J C
TAKE, E F
Description Document indicates that in 12/65 all time production record 571,220 lbs. were achieved. Previous operating conditions called for less than recent production, which may account for poor quality.

Exhibit #P0478

PIN # 5996
Date 13-Feb-66
Author CARL BOHL
Addressee FILE & MED DEPT
Description 2,4,5-T PLANT MEDICAL DEPARTMENT MEMO FROM CARL BOHL, INDUSTRIAL HYGIENIST, REGARDING REMOVAL OF TOXIC MATERIAL TDD FROM THE FINAL PRODUCT. STATES THAT MR. RHODES SUGGESTED TWO APPROACHES; ADD METHANOL SODIUM HYDROXIDE UNDER PRESSURE AND, SECONDLY, CLOSE CONTROL OF THE TEMPERATURE IN THE REACTOR.

Exhibit #P0488

PIN # 20815
Date 22-Apr-66
Author J C STRUM
Addressee FILE & SPRINGGATE, J E
RHODES, V L & TAKE, E F
OTHERS

Description Late 1965 production increase of more than 25% in the T Plant without major equipment revisions.

Exhibit #P0495

PIN # 22362
Date 23-Jun-66
Author F L RUPEL JR
Addressee RUSSELL, G H & CUTRIGHT, E A
RHODES, V L & BOLLINGER, P G

Description Document lists analysis of Dow's dried 2,4,5-T.

Exhibit #P0499

PIN # 1560
Date 11-Jul-66
Author W R UDELL
Addressee BOLLINGER, F G & BALDERSON, P B
SHARP, D B & STEPHENS, J A

Description Letter from Udell to the aforementioned addressees which enclosed GLC procedure to detect TDD in T. Document also indicates that the samples are highly toxic.

Exhibit #P0502

PIN # 1487
Date 22-Jul-66
Author F L RUPEL JR
Addressee CUTWRIGHT, E A & BALDERSON, P B
RUSSELL, C M & STEPHENS, J A
UDELL, W R

Description Analysis of 1966 2,4,5-T reaching as high as 28ppm. Document also indicates that the "typical values should range between 5 to 18ppm."

15219

Exhibit #P0507

PIN # 1179-81
Date 11-Aug-66
Author J C STRUM
Addressee SPRINGGATE, J E & CUTWRIGHT, E A
RHODES, V L & NUMEROUS OTHERS

Description Document states that TDD is a toxic material and is contained in NaTCP, recovered TCP and dry 2,4,5-T .

Exhibit #P0549

PIN # 1697-1770
Date 01-Dec-66
Author L E AND V L DOTSON RHODES
Addressee LUECKE, C F & CUTWRIGHT, E A
RHODES, V L & STEPHENS, J A
DUNLAP, W P & OTHERS

Description Standard Manufacturing for 2,4,5-Trichlorophenoxyacetic Acid, revised November 1966, issued December 1966.

Exhibit #P0586

PIN # 5993
Date 23-Feb-67
Author CARL D BOHL
Addressee WHEELER, ELMER P & KELLY, R E

Description Document discusses February 22, 1967 meeting between Stephens, Udell, Sharp and Bohl regarding Dioxin. Document also refers to contamination levels between 10 and 30ppm. The group decided that they needed animal testing so that they could gain further information. Said testing was discussed and Kelly was apprised.

15220

Exhibit #P0592

PIN # 5995
Date 01-Mar-67
Author ELMER P WHEELER
Addressee DUNLAP, W P & BOHL, C D
KELLY, R E

Description The document addresses the fact that V. K. Rowe "opened the can of worms" on the 2,4,5-T situation. Indicated further is the fact that Dow isolated tetrachlordiphenylen-dioxyd. Also, Rowe indicated that the materials were so potent that putting it on the skin of an animal regardless of location resulted in a "positive" response.

Exhibit #P0593

PIN # 5994
Date 06-Mar-67
Author CARL D BOHL
Addressee KELLY, R E & SPRINGGATE, J E
CUTRIGHT, E A & STEPHENS, J A
DUNLAP, W P

Description Report Bohl's trip to Nitro on 2/27/67 and 2/28/67. Document further indicated that TDD is created in hold cycle of TCP Process. Cutright suggested either a cutdown of hold time or a cutdown in charge time in order to significantly reduce TDD in the final product.

Exhibit #P0595

PIN # 1296
Date 09-Mar-67
Author PETER M HOWELL
Addressee SPRINGGATE, J & KELLOGG, W R
RHODES, V L & OTHERS

Description Document indicates that personnel exposed to 2,4,5-T dust constituted a serious hazard.

Exhibit #P0596

PIN # 681-84
Date 16-Mar-67
Author COMPANY DEF GEN SUP
Addressee MONSANTO
Description Production and Forecast of D and T for 1966 and 1967.

Exhibit #P0606

PIN # 1145
Date 03-Apr-67
Author UNKNOWN PMH
Addressee WRK & BFP
VLR & HAD
EAC & JES

Description AUTHORIZATION FOR EXPENDITURE FOR THE NITRO PLANT TO INSTALL 2,4,5-T AUTOCLAVE SAMPLERS AS IT IS NOTED THAT THE EXISTING SAMPLER IS CONSTITUTES A SEVERE EXPOSURE HAZARD.

Exhibit #P0631

PIN # 1495
Date 12-Jun-67
Author P B BALDERSON
Addressee RHODES, V L
Description Document indicates TDD levels as of 6/12/67 as high as 24ppm.

Exhibit #P0637

PIN # 8938-8960
Date 30-Jun-67
Author UNKNOWN UNKNOWN
Addressee
Description COVER LETTER OVER GOVERNMENT DOCUMENTS DELINIATING REQUIREMENTS FOR BIDS ON DEFOLIANT; ORANGE, ORANGE II, AND ORANGE III.

15222

Exhibit #P0639

PIN # 40421
Date 05-Jul-67
Author UNKNOWN UNKNOWN
Addressee TSD FILE & RHODES, V L

Description Document indicates that exact hold periods are necessary in order to reduce the personnel exposure problem in 2,4,5-T. Manual control varies as much as 30 minutes.

Exhibit #P0651

PIN # 73288-73307
Date 23-Aug-67
Author UNKNOWN UNKNOWN
Addressee NONE

Description List of equipment used in the manufacturer of 2,4,5-T.

Exhibit #P0652

PIN # 1451
Date 24-Aug-67
Author VERNE L RHODES
Addressee WOODS, W. C. & CUTRIGHT, E. A.
DOLIN, OWEN & MILLER, H. K.

Description ANALYSIS OF CONTROL SAMPLES FOR TDD IN NATCP.

Exhibit #P0665

PIN # 1436
Date 08-Sep-67
Author JR Q C LAB
Addressee UNKOWN

Description Analysis of T dated 09-08-67 with readings as high as 22 ppm.

15223

Exhibit #P0676

PIN # 1432
Date 06-Oct-67
Author JMS Q C LAB
Addressee UNKNOWN
Description Analysis of 2-4-5-T for TDD with readings as high as 25ppm.

Exhibit #P0679

PIN # 206-207
Date 11-Oct-67
Author C H RUSSELL
Addressee ZORCH, C.P. & CAYARD, D.B.
STEPHENS, J.A. & FISCHER, D.R.
OTHERS
Description Letter discusses a meeting in Washington which addressed the issue of what analysis of the esters was being performed. Russell also admits that it was he who wrote the n-butyl D, T, and Orange specifications.

Exhibit #P0681

PIN # 84-85
Date 13-Oct-67
Author C H RUSSELL
Addressee WISWESSER, W J & CAYARD, D E
STEPHENS, J A & ZORSCH, C P
Description Letter setting forth the fact that it was Russell who worked on writing the military specifications.

Exhibit #P0682

PIN # 86
Date 16-Oct-67
Author C H RUSSELL
Addressee WISWESSER, W J & CAYARD, D E
CONNAUGHTOU, J M & HOFF, D N
ZORSCH, C P
Description Document indicating that Monsanto was opposed to having the free acid specification reduced from 1% to .5%.

15224

Exhibit #P0689

PIN # 1426
Date 06-Nov-67
Author C R Q C LAB
Addressee UNKNOWN
Description Analysis of 2,4,5-T by C.R. dated 11/6/67
for TDD with readings at 25ppm.

Exhibit #P0690

PIN # 1485
Date 07-Nov-67
Author W C WOODS
Addressee RHODES, V L & CUTRIGHT, E A
DOLIN, O E & BALDERSON, P B
Description Analysis of TDD, 25ppm as one of the
readings.

Exhibit #P0704

PIN # 21403
Date 13-Dec-67
Author W C WOODS
Addressee DOLIN, O & CUTRIGHT, E A
RHODES, V L & KELLOG, W R
Description Document indicated that cost savings was
more important than safety of product.

Exhibit #P0709

PIN # 68
Date 28-Dec-67
Author C H RUSSELL
Addressee MIDDLETON, D R & ZORSCH, C P
CARTY, CARL W & WISWESSER, W J
Description Document requesting modification of
proposed military specification. Said
document outlines numerous requests for
change in said specification.

Exhibit #P0713

PIN # 66038
Date 01-Jan-68
Author V RHODES
Addressee CUTRIGHT & ATKINSON
DOLIN & KELLOGG

Description REQUEST TO ANALYZE AND COMPARE PURCHASED NaTCP WITH NITRO PRODUCT. SERVICE REQUEST STATES THAT NaTCP STEP IS LIMITING PRODUCTION OF 2,4,5-T ACID AND DOWNTIME RESULTS IN LOST PRODUCTIVITY.

Exhibit #P0726

PIN # 53636
Date 25-Jan-68
Author UNKNOWN UNKNOWN
Addressee UNKNOWN

Description DOCUMENT INDICATES THAT WELDON SPRINGS PROBABLY COULD PROBABLY NOT FUNCTION AFTER THE WAR IF MONSANTO WERE TO BUILD A NEW PLANT. MONSANTO MUST IMPROVE COSTS OR WELDON SPRINGS COULD "RUN THEM OUT". WELDON SPRINGS PROBABLY CAN'T RUN AFTER WAR IF MONSANTO BUILDS NEW D PLANT. MONSANTO MUST IMPROVE COST OR WELSON SPRINGS COULD RUN THEM OUT.

Exhibit #P0732

PIN # 11112-11114
Date 30-Jan-68
Author GEORGE KEMPSON
Addressee BARTLETT

Description DISCUSSION OF MONSANTO'S OBJECTION TO SPECIFICATIONS REGARDING THE CONTENT OF ORANGE FSC 684Q.

15226

Exhibit #P0741

PIN # 11165-11168
Date 23-Feb-68
Author UNKNOWN
Addressee
Description DOCUMENT CONTAINS INFRARED METHOD FOR ANALYZING ORANGE HERBICIDE.

Exhibit #P0742

PIN # 8893-8948
Date 23-Feb-68
Author UNKNOWN UNKNOWN
Addressee UNKNOWN
Description PURCHASE DESCRIPTION FOR HERBICIDE-ORANGE WHICH SETS FORTH REQUIREMENTS AND DELINIATES QUALITY ASSURANCE PROVISIONS.

Exhibit #P0750

PIN # 53773-53781
Date 01-Mar-68
Author CHARLES ZORSCH
Addressee ROY MEYERS
Description DOCUMENT IS A NINE PAGE PERFORMANCE SUMMARY FOR DEFENSE CONTRACT FOR ORANGE BEGINNING 6/1/67 THROUGH 2/29/68 PREPARED BY MONSANTO.

Exhibit #P0763

PIN # 74220-74221
Date 23-Apr-68
Author LARITA IVES
Addressee VIRGINIA KOENIG & J J JURKIEWICZ
Description MEMO CONCERNING LISTED LABELS AND NOTATION OF WHERE STOCK IS LOCATED AND QUANTITY OF KNOWN STOCK.

Exhibit #P0769

PIN # 160-65
Date 10-May-68
Author C P ZORSCH
Addressee NUMEROUS EMPLOYEES
Description Document addresses meeting held with the General Supply Division of Government whereby supply and demand was discussed.

Exhibit #P0771

PIN # 53742
Date 17-May-68
Author JANE LEWIS
Addressee ZORSCH
Description LEWIS NOTIFIED ZORSCH THAT THEIR MILITARY DEFOLIANT CONTRACT HAD BEEN SIGNED.

Exhibit #P0785

PIN # 66601-747
Date 11-Jul-68
Author CARL BOHL
Addressee MCGUIRE, B. G. & WEBB, H.R.
STRATMEYER, R.J. & MEDICAL DEPT.
Description Document is a Comprehensive Survey of the entire Nitro Plant operation. The document exhibits in part that there is a chloracne problem resulting from an impurity in the final product. It was hoped that at the end of two years, this contaminant would be eliminated.

Exhibit #P0797

PIN # 53744-46
Date 16-Sep-68
Author T R B
Addressee KRUMMRICH LAB & OTHERS UNKNOWN

Description Document discusses some of the risks associated with use of a product containing 2,4,5-T.

Exhibit #P0801

PIN # 004073
Date 25-Sep-68
Author V L RHODES
Addressee NITRO TECH SERV & CUTRIGHT, E. A.
DOTSON, L. E. & RHODES, V. L.
RUSSELL, G. P.

Description TEMP CONTROL IS = PLUS OR MINUS 4 DEGREES CENT FROM TARGET. "WE NOW HAVE INFORMATION LEAKED FROM HERCULES THAT PRECISE TEMPERATURE CONTROL MAY BE THE KEY TO CHLORACNE REEDUCTION. FOR THIS REASON WE NOW REQUEST INSTALLATION OF INSTRUMENT HARDWARE TO ALLOW US TO REMOVE THE HUMAN ELEMENT AND CONTROL AUTOCLAVE TEMPERATURES AT PLUS OR MINUS 1 DEGREE CENT."

Exhibit #P0803

PIN # 001344-57
Date 01-Oct-68
Author R A ATKINSON
Addressee UNKNOWN
Description 2,4,5-T PROCESS IMPROVEMENT PLAN.

Exhibit #P0811

PIN # 000692-704
Date 29-Oct-68
Author JOHN D CONNER
Addressee MORRIS, THOMAS D. & WELD

Description LAW FIRM SELLERS, CONNOR & CUNEO WRITING ON BEHALF OF DIAMOND SHAMROCK, HERCULES, MONSANTO, T.H. AND CHIPMAN REGARDING THEIR OPPOSITION TO THE BUILDING OF THE WELDON SPRING PLANT. ON BEHALF OF CONCERN OF D.S., HERC., MONSANTO, T.H., AND CHIPMAN OF IMPLICATIONS OF WELDON SPRING PLANT ON THESE PHENOXY HERBICIDE PRODUCERS.

15229

Exhibit #P0813

PIN # 000690-91
Date 31-Oct-68
Author JOHN D CONNER
Addressee HOWARD, HAROLD H. & WILKERSON, M. F.
GIVENS, KENNETH T. & MATTISON, S. A.
RUMER, ROBERT & OTHERS

Description ACKNOWLEDGEMENT THAT LETTER TO ASST SEC'Y
DEFENSE THOMAS D. MORRIS WAS FILED ON OCT
30, 1968 WITH DEPT OF COMMERCE AND DEPT OF
DEFENSE, AND WAS HAND DELIVERED TO MR .
KOSTER AND MISS LEWIS, REGARDING THE WELDON
SPRING PROJECT.

Exhibit #P0814

PIN # 001407-08
Date 01-Nov-68
Author M A W
Addressee NITRO ORGAN CHEM DIV & OTHERS UNKNOWN

Description DETERMINATION OF TDD IN 2,4,5-T ACID FROM
SOLID SAMPLE, INCLUDING METHOD FOR
CALCULATING PPM OF TDD.

Exhibit #P0815

PIN # 75645-73
Date 08-Nov-68
Author G R SIDO
Addressee ARK POIS LABEL FILE & LITTEKEN, M. F.

Description MEMO CONFIRMS DISCUSSION WITH HENRY DE
SALVO REGARDING ALLOWABLE COLORS OF LABELS
FOR 2,4,5-T & 2,4-D IN ARKANSAS.

Exhibit #P0821

PIN # 001521-48
Date 12-Dec-68
Author J C STRUM
Addressee NITRO TECH SERV DEPT
Description PLAN TO IMPROVE PERFORMANCE OF 2,4,5-T
PROCESS IN THE AREAS OF RATE, RAW MATERIAL
USAGE, QUALITY, SAFETY, POLLUTION,
MECHANICAL RELIABILITY, AND MANUFACTURING
TECHNOLOGY.

15230

Exhibit #P0822

PIN # 000704
Date 19-Dec-68
Author JOHN D CONNER
Addressee WILKERSON, M. F. & GIVENS, KENNETH T.
HOFF, DOUGLAS N. & MCCOY, W. G.
THOMPSON, R. S. & OTHERS

Description Document indicating that Government contract for Agent Orange had been cancelled.

Exhibit #P0826

PIN # 76062-81
Date 01-Jan-69
Author W R KELLOG
Addressee NITRO & MONTHLY REPORT
TECH SERVICE DEPT.

Description Nitro Tech Service Monthly report dated 1/69, indicating that a trial run of the autoclaves is planned with the intention of reducing the TDD content in NatCP from 40-50 ppm to 5-6 ppm.

Exhibit #P0827

PIN # 4800-47
Date 01-Jan-69
Author J L W R SIMS UDELL
Addressee LUECKE, C. F. & RUSSELL, C.F.
CUTRIGHT, E. A. & KELLY, R. E.
RHODES, V. L. & OTHERS

Description Final report #150 regarding attempts to reduce TDD in 245-T. The report addresses the acute toxicity of TDD as well as the process of production and analysis.

15231

Exhibit #P0833

PIN # 1063
Date 09-Jan-69
Author J C STRUM
Addressee RHODES, V & EAC
STRUM, J C & DOLIN,

Description January, 1969 document which discusses plan to reduce the level of TDD in NaTCP from 50 to 5 ppm. Document also discusses the belief that TDD is produced in the NaTCP autoclaves.

Exhibit #P0834

PIN # 1062
Date 09-Jan-69
Author J C STRUM
Addressee CUTRIGHT, E A & RHODES, V L
HELMER, F J & STRUM, J C
DOLIN, O E

Description Jan. 9, 1969 plan to reduce TDD in NaTCP from 50 ppm to 5 ppm.

Exhibit #P0835

PIN # 1452-54
Date 15-Jan-69
Author J C STRUM ET AL
Addressee RESEARCH DEPT. & RHODES, VL
CUTRIGHT, E A & STEPHENS, J A
OTHERS

Description Formal tentative amendment to reduce TDD in NaTCP from 40-50ppm to 5-6ppm. Lists present NaTCP reaction conditions and the newly proposed plan.

Exhibit #P0836

PIN # 1517-1520
Date 19-Jan-69
Author UNKNOWN
Addressee UDELL, W R & CUTRIGHT, E A
RHODES, V L & STRUM, J C
PATRICK, C E & OTHERS

Description "Minutes of Meeting With W R Udell".
Document indicates that he believes that approximately 35 ppm is being produced in the autoclaves consistently. It states that TDD is highly sensitive to temperature , with slight increases resulting in significant increases in TDD.

Exhibit #P0844

PIN # 1502-04
Date 21-Feb-69
Author J C STRUM
Addressee CUTRGHT, E A & DOTSON, L E
BALDERSON, P B & UDELL, W R
LEUCKE, C F & OTHERS

Description Progress report for plan to reduce TDD level from 40 ppm as in 1968 experience to 5 - 7 ppm. Present trial run showed reduction to 3.05 ppm. A 30-day plant trial run will begin on February 24 to complete the demonstration.

Exhibit #P0846

PIN # 76101-19
Date 01-Mar-69
Author W R KELLOG
Addressee NONE

Description Document speaks of a problem with the GLC analysis which appears to be resolved with the flame detection method.

15239

Exhibit #P0847

PIN # 6002
Date 16-Apr-69
Author R EMMET KELLY
Addressee EAKIN, FRANK & BOHL, C.D.

Description Letter from Dr. Kelly indicating that even less than 1 ppm could cause chloracne.

Exhibit #P0849

PIN # 76138-155
Date 01-May-69
Author W R KELLOG
Addressee JACKSON, D W & SAVAGE, J R
LEUCKE, C F & WEBBER, R T
EDWARDS, P W & OTHERS

Description Tech. Service monthly report indicating a significant reduction of TDD in NaTCP, an average of 4ppm.

Exhibit #P0850

PIN # 1500
Date 08-May-69
Author J C STRUM
Addressee BAKIN, F. A. & DOLIN, C. B.
HELMER, F.J. & BALDERSON, P
WOODS, W. C.

Description May 1969 document which states that Curt Woods was to set up a program for routine analysis for the TDD in 245-T finished goods. Routine is indicated to mean between 2-4 per week.

Exhibit #P0851

PIN # 6000
Date 14-Jun-69
Author R EMMETT KELLY MD
Addressee WEBB, H B

Description Memo of Dr. Kelly asking "I don't want to be cynical, but are there any employees in the department who don't have chloracne already?"

15234

Exhibit #P0852

PIN # 76171-82
Date 01-Jul-69
Author W R KELLOGG
Addressee LUECKE, C F & WEBBER, R T
SAVAGE, J R & SEPULVEDA, C H
DODD, H A & OTHERS

Description Document indicating that TDD is highly toxic.

Exhibit #P0853

PIN # 11227
Date 14-Jul-69
Author C H RUSSELL
Addressee MIDDLETON, D R & ZORSCH C P
ROBIRDS, W R & LEISY, A E

Description The document indicates they were discontinuing their investigation of VPC analysis procedures of Orange when their contract was cancelled.

Exhibit #P0855

PIN # 76183-94
Date 01-Aug-69
Author W R KELLOGG
Addressee NITRO & GENERAL OFFICES
KRUMMRICH & QUEENY
ANNISTON & OTHER PLANTS

Description August, 1969, monthly report of Nitro's technical service dept. It is noted that approval was received on Tentative Amendment No. N which permits control of the condensation reaction pH with 34% NaTCP solution instead of 25% NaOH--a trial run on August 19-23 showed no adverse effects on quality or yield.

15235

Exhibit #P0858

PIN # 22929-34
Date 29-Aug-69
Author J C STRUM
Addressee SAFETY DEPT. & PLANT MANAGER
OTHERS

Description Document is entitled "Process Safety Audit" and addresses, in question and answer form, safety questions regarding: raw materials, process, finished goods and equipment and layout. Document also indicates that the finished goods may be somewhat toxic and that the containers are properly labelled for toxicity.

Exhibit #P0859

PIN # 76195-205
Date 01-Sep-69
Author W R KELLOGG
Addressee NITRO & GENERAL OFFICES
KRUMMRICH & ANNISTON
QUEENY & OTHER PLANTS

Description SEPTEMBER, 1969, MONTHLY REPORT FOR THE TECHNICAL SERVICES DEPARTMENT OF THE NITRO PLANT.

Exhibit #P0860

PIN # 29050-144
Date 15-Sep-69
Author E M EMERY ET AL
Addressee SHARP, D B & DOLIN, O
EMERY E M & MEADE, FRANK
NUMEROUS OTHERS

Description Monsanto Organic Chemicals Division Research Report -3598;"Final Report on Gas Chromatography Method Development - L968.

15236

Exhibit #P0872

PIN # 1693-96
Date 05-Dec-69
Author R L DILLON ET AL
Addressee ROBIRDS, W R & STRUM, J C
PAYNE, R L & EAKIN, F A
RESEARCH DEPT. & OTHERS
Description Official tentative amendment to the
manufacturing process for 2,4,5-T acid.
Amendment requires in part reduction of the
TCB feed time from 2 1/2 hrs to 1 hr.

Exhibit #P0876

PIN # 68292
Date 16-Dec-69
Author WILLIAM H HUNT
Addressee SPEZIALE, A. J. & SHARP, D. B.
Description Reference to preliminary mutagenic report
of NCI. Hunt says Medical Dept. has report
but feels data is meaningless and that
mutagenic activity in bacteria cannot be
extrapolated to mammals until mammalian
data are available.

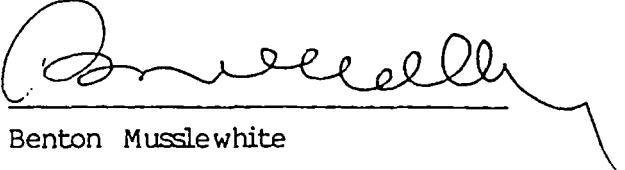
Exhibit #P0877

PIN # 73231-41
Date 19-Dec-69
Author A J SPEZIALE
Addressee BALDESCHWEILER, J D & BURGER DR.
STEPHENS J A & UDELL W R
KELLY, R E & OTHERS
Description Letter indicating Monsanto's knowledge of
TDD as well as levels of contamination from
1953, methods of analysis for TDD in
autoclave and technical 2,4,5-T, sample
chromatograms, and numerous forms of
correspondence.

15237

CERTIFICATE OF SERVICE

The undersigned Benton Musslewhite, Esq. does hereby certify that on the 11th day of April, 1984 he served the enclosed Pre-trial Order on all those shown on the attached service list by hand delivery through a Delivery Service.


Benton Musslewhite

15238

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Exhibit #P0878

PIN # 73727-29
Date 19-Dec-69
Author C H RUSSELL
Addressee UNKNOWN
Description Product specification for 2,4-D/2,4,5-T
Butyl Ester Brush Killer.

Exhibit #P0879

PIN # 73730-31
Date 19-Dec-69
Author C H RUSSELL
Addressee UNKNOWN
Description Product specification for 2,4-D/2,4,5-T
Low Volatile Brush Killer.

Exhibit #P0880

PIN # 73732-33
Date 19-Dec-69
Author C H RUSSELL
Addressee UNKNOWN
Description Product specification for Brush-O-Cide
Brush Killer.

Exhibit #P0881

PIN # 73734-35
Date 19-Dec-69
Author C H RUSSELL
Addressee UNKNOWN
Description Product specification for 2,4-D/2,4,5-T
Amine Brush Killer.

Exhibit #P0896

PIN # 1894-1949
Date 01-Feb-70
Author J C STRUM
Addressee STEPHENS, J A & ROBIRDS, W R
LEUKE, C F & OTHERS

Description Standard Manufacturer Process for 2,4,5-Trichlorophenoxyacetic Acid Department 895.01 supersedes Standard Manufacturing Process for 2,4,5-T dated January, 1966, by L.E. Dotson, revised November, 1966 by V.L. Rhodes.

Exhibit #P0897

PIN # 1894-1949
Date 01-Feb-70
Author J C STRUM
Addressee STEPHENS, J A & ROBIRDS, W R
LEUKE, C F & NUMEROUS OTHERS

Description Standard Manufacturing Process For 2,4,5-Trichlorophenoxyacetic Acid Department 895.01. Supercedes Standard Manufacturing Process for 2,4,5-T dated January, 1966, by L.E. Dotson, revised November, 1966 by V.L. Rhodes. TDD 1968 as high as 50ppm. Good process description.

Exhibit #P0900

PIN # 040807-70
Date 07-Feb-70
Author L G SILVERSTEIN
Addressee UNKNOWN
Description Report on safe handling of tetrachlorodibenzo-p-dioxin points out TCBD's extreme toxicity and necessary safety procedures.

15242

Exhibit #P0910

PIN # 1444-45
Date 22-Feb-70
Author C H RUSSELL
Addressee EAKEN, D A & ELLIOTT
UDELL & DOLIN
STEPHENS
Description Nitro needs extra equipment for analysis of each lot.

Exhibit #P0915

PIN # 15613-17
Date 11-Mar-70
Author JACK FARLY
Addressee MCCARVILLE DR, WM J & SPEZIALE DR, A J
Description Present were, J. Mason, J. Early, (Monsanto); George Lynn, Dr. Blair (Dow); Harris Miller, Jerome Wildenfeld, Al Schlumberger (Hooker); Charles Dunn, A.E. Sidwell (Hercules). All in agreement that 2,3,7,8-tetrachlorodibenzo-p-dioxin is contaminant causing high level teratogenicity, possibly less than 1ppm will cause harm.

Exhibit #P0922

PIN # 76005-15
Date 19-Mar-70
Author JACK D EARLY
Addressee SPEZIALE DR, A J & SHARP, D B
Description Dow Teratology Studies. Note in Monsanto possession.
2,3,7,8-Tetrachlorodibenzo-p-Dioxin highly toxic to embryos of pregnant rats.

Exhibit #P0925

PIN # 73896
Date 24-Mar-70
Author MATHEW HUDSON
Addressee BOCK, EDWARD J.
Description Letter from shareholder to President/Monsanto re: findings in Bionetics study.

15243

Exhibit #P0931

PIN # 52983
Date 01-Apr-70
Author J L SIMS
Addressee EMERY, E M & LIPPMAN, A E
CONKIN, R A
Description Ascertain low limits, of detection,
descriptions of analysis.

Exhibit #P0933

PIN # 73897-98
Date 02-Apr-70
Author R EMMET KELLY MD
Addressee HUDSON, MATHEW
Description Kelly responds to the letter of Hudson in
which he states in part that there are no
teratological effects and does not know
where Agent Orange was used.

Exhibit #P0944

PIN # 7825
Date 17-Apr-70
Author DON R FISCHER
Addressee DISTRICT MGRS. & REGIONAL SALES DIR.
PROD.MGRS.&SUPRVSR & MRKT DVLPMNT MGRS
MRKT DVLPMNT SPRVSR
Description Document pushes for sales of all 2,4,5-T
Acid, ester and formulation products or
else substantial financial loss will occur
if government bans product.

Exhibit #P0953

PIN # 7658-61
Date 24-May-70
Author C P ZORSCH
Addressee FISCHER, D R
Description Summarization of current situation relating
to federal restrictions for the use of
2,4,5-T.

15244

Exhibit #P0976

PIN # 1012
Date 28-Sep-70
Author LOWELL E MILLER
Addressee MANUFACTURERS OF & ECONOMIC POISONS

Description Notice to Manufacturers, Formulators, Distributors and Registrants of Economic Poisons. Can't use chlorodioxin products.

Exhibit #P0977

PIN # 72953
Date 06-Oct-70
Author R EMMET KELLY
Addressee GILLESPIE, JOSEPH
Description Regarding rework of 2,4,5-T to get rid of the dioxin - document states should be meeting with Garrett or Wheeler of industrial hygiene group to avoid epidemic of chloracne in workers handling the impurity during stages of removal and cleanup.

Exhibit #P0983

PIN # 146
Date 08-Dec-70
Author V G PRITCHARD
Addressee HABERMOHL, D E
Description No method of analysis available for 2,4,5-T ester formulations in order to determine chlorodioxin content.

Exhibit #P0991

PIN # 96-97
Date 15-Jan-71
Author CHARLES P ZORSCH
Addressee GEORGIA-PACIFIC CORP & BLACK, REX
HARRIS, WERNER
Description Working to reduce TDD to less than .5ppm for sale since Monsanto claims that said level is not detectable, and thus implicitly safe.

15245

Exhibit #P0992

PIN # 74229-33
Date 25-Jan-71
Author UNKNOWN UNKNOWN
Addressee DUNLOP, R H & BURKE, B J
WESSELS, R G & BAILEY, R E
BONHAM, F S & NUMEROUS OTHERS

Description Monthly Report - Labeling - Registration
and Transportation Claims January 1971.

Exhibit #P1002

PIN # 74223-26
Date 30-Apr-71
Author T E ADAMCZYK
Addressee LETTEKEN, MARK F & MONSANTO COMPANY

Description Will not grant continuous registration -
must petition for renewals every 5 years,
responded the U.S.D.A. to Monsanto's
request.

Exhibit #P1003

PIN # 40890-93
Date 07-May-71
Author JAMES G WILSON
Addressee UNKNOWN

Description Mr. Wilson in this document indicated that
TDD was not rapidly degradable in the
environment and that the data available
substantiates embryotoxicity. He further
believes that all species would have the
same results if doses of 2,4,5-T were high
enough.

15246

Exhibit #P1004

PIN # 6426-27
Date 07-May-71
Author GLYNN DAVIS
Addressee ROBIRDS, W R & UDELL, W R
WILLIAMS, H L & BRATSCHE, G L
JACKSON, D W & NUMEROUS OTHERS

Description Document contains history of process used to reduce dioxin levels in Isooctyl T Ester of 2,4,5-Trichlorophenoxyacetic Acid.

Exhibit #P1030

PIN # 74600-17
Date 23-Mar-72
Author G ROBERT SIDO
Addressee USDA

Description Various applications for registration renewals for: 2,4,5-T Isopropyl Ester, dated 3/22/72; 2,4,5-T Isopropyl Ester dated 4/1/66; 2,4,5-T Isopropyl Ester, dated 3/15/51.

Exhibit #P1072

PIN # 5665-66
Date 05-Feb-79
Author UNKNOWN UNKNOWN
Addressee UNKNOWN

Description Document includes, in part, key dates with regard to Monsanto's manufacture of 2,4,5-T.

Exhibit #P1073

PIN # 90000-01
Date 19-Feb-79
Author UNKNOWN UNKNOWN
Addressee UNKNOWN

Description Accident in plant involving spillage of 2,4,5-trichlorophenol which generates the highly carcinogenic dioxins. One hundred and fourteen employees with chloracne have been identified as being involved in the operation in which accident the occurred.

15247

Exhibit #P1074

PIN # 88721-24
Date 26-Jun-79
Author G EDWARD PAGET
Addressee UNKNOWN
Description Document entitled "Chlorinated Dibenzo
Dioxins" - A Position Paper For
Consideration By M.C. Throdahl.

Exhibit #P1075

PIN # 91348-50
Date 20-Aug-79
Author F J HOLZAPFEL
Addressee BISHOP, D R & CALLIS, C F
GAFFEY, W R & MCCARVILLE, W J
MEYER, F C & NUMEROUS OTHERS
Description Nitro Health Study Task Force Minutes of
Meeting of 8/17. Dr. Sudking suggested
changes in Monsanto draft of "Mortality
Study".

Exhibit #P1076

PIN # 87695-96
Date 24-Aug-79
Author F J HOLZAPFEL
Addressee GAFFEY, W R & MCCARVILLE, W J
MEYER, C & PARK, P S
WANDER, B J & OTHERS
Description Nitro Health Study Task Force Minutes of
Meeting 8/24/79. Dr. Suskind has not yet
approved draft of Monsanto "Mortality
Study". Study involved 121 people involved
in 1949 Nitro incident who had chloracne.
Carbide/University of Pittsburgh study -
higher incidences of 3 types of cancer in
819 deceased workers.

15248

Exhibit #P1077

PIN # 90240-50
Date 24-Oct-79
Author UNKNOWN UNKNOWN
Addressee UNKNOWN
Description Dioxins - Dibenzofuranes/Status Summary.
Contains all incidents worldwide of human exposure.

Exhibit #P1085

PIN # 91563-66
Date 01-Mar-80
Author UNKNOWN UNKNOWN
Addressee UNKNOWN
Description Agent Orange...What are the facts?
Monsanto article in its own publication
addresses AO lawsuit - highly emotional
issue. Didn't produce TCB as raw material
of 2,4,5-T.

Exhibit #P1086

PIN # 91517-18
Date 17-Mar-80
Author COMPANY MONSANTO
Addressee UNKNOWN
Description Monsanto News Backgrounder. Publication by
Monsanto entitled "Agent Orange...What are
the facts?" Monsanto Company Perspective.

Exhibit #P1087

PIN # 91514-16
Date 07-Apr-80
Author R M SCOTT
Addressee NITRO PLANT & EMPLOYEE
RETIREE & AND FAMILY

Description Letter in response to an inquiry regarding
Agent Orange in which articles published by
Monsanto were enclosed.

15249

Exhibit #P1092

PIN # 90035-36
Date 27-Apr-81
Author WILLIAM R GAFFEY
Addressee ROUSH, G. & MCCARVILLE, W. J.
LEVINSKAS, G. J. & COLEMAN. D. L.
PARK, P. S. & OTHERS

Description Report on Selikoff study criticizes presentation of chloracne cases as not surprising.

Exhibit #P1096

PIN # 94391-95
Date 16-Dec-81
Author UNKNOWN UNKNOWN
Addressee UNKNOWN

Description Monsanto Company Response to Nitro W. VA Lawsuit Allegations. Press release re Nitro W. VA lawsuit. pg. 4 - 121 employees developed symptoms including skin rash known as chloracne, eye & respiratory tract irritation, headache, dizziness, nausea and liver disorders.

Exhibit #P1098

PIN # 90157-59
Date 16-Dec-82
Author JAMES H SPRAUL MD
Addressee UNKNOWN

Description Draft by James H. Spraul, M.D., document states that TCDD is highly toxic.

Exhibit #P1099

PIN # 94334-38
Date 21-Dec-82
Author UNKNOWN UNKNOWN
Addressee UNKNOWN

Description Article which discusses the effects of 2,4,5-T.

Exhibit #P0163

PIN # 01912-45
Date 04-Apr-62
Author J E WILDER
Addressee EAGAN, J.M. & DELLINGER, R.
ABORN, H.F. & SIDWELL, A.E.

Description Wilder to Egan memo re: facts concerning Jacksonville, Arkane, Arkansas plant; plant manual - prohibits temperature in excess of 180 degrees c.

Exhibit #P0236

PIN # 26114-5
Date 03-Jul-63
Author JOHN F FRAWLEY
Addressee ROWE, V.K. & HUNT, W.H.

Description Frawley relates clinical reports of neuropathy. . . " On the basis of these reports Leary feels that the hazards associated with the use of 2,4-D and 2,4,5-T should be understood more thoroughly" - suggests Dow and Hercules conduct a study.

Exhibit #P0237

PIN # 26116
Date 03-Jul-63
Author JOHN FRAWLEY
Addressee

Description Note re: letter of 07/03/63 from Rowe to Frawley. Note reads in reference to anti-trust laws.

Exhibit #P0294

PIN # 00000
Date 20-May-64
Author W A SMITH
Addressee TURK, E. & BELLINGER, E.
EAGAN, J.M. & BECKROTH, M.F.
DISWELL, A.E.

Description Progress Report - discusses recognition of an "unknown" constituent in the 2,4,5-T of

15251

approximately 8% by volume.

Exhibit #P0305

PIN # 28118
Date 17-Jun-64
Author WILD RICE ELECTRIC
Addressee LYON CHEMICAL
Description Letter from Wild Rice Electric Cooperative, Inc. to Lyon Chemical, Inc. re: report of person becoming ill after eating berries from an area sprayed with a 2,4-D and 2,4,5-T brush spray.

Exhibit #P0333

PIN # 00000
Date 30-Nov-64
Author DOW CHEMICAL
Addressee
Description Dow Analytical Method - Dow report provided to Hercules recognizing existence of dioxin and that it causes chloracne - includes example of gas chromatogram for dioxin.

Exhibit #P0368

PIN # 28122
Date 16-Feb-65
Author H F PIERCE
Addressee FRAWLEY, J. & NEAL, J.
YATES, R. & SPELTZ, D.
FEDDERMAN, M. & KUNTHOLM, J.
Description Letter from Pierce to Frawley re: relates a claim regarding injuries to powerline construction employees.

Exhibit #P0373

PIN # 28123
Date 22-Feb-65
Author JOHN F FRAWLEY
Addressee WYMAN & OTHER DOW EMPLOYEES

Description Letter from Frawley to Wyman - relates a

15252

claim re: injuries to powerline
construction employees.

Exhibit #P0406

PIN # 01282-3
Date 19-Mar-65
Author V K ROWE
Addressee KELLY, MONSANTO & WILKENFELD, HOOKER
VERHOEZE, HOOKER & KENNEDY, DIAMOND
CHANDLER, DIAMOND & FRAWLEY, HERCULES

Description Rowe to each chemical company inviting
manufacturers to Midland meeting ". . . to
discuss the toxicological problems caused
by the presence of certain highly toxic
impurities in certain samples of 2,4,5-TLP.
. . ."

Exhibit #P0408

PIN # 01297-304
Date 24-Mar-65
Author C L DUNN
Addressee HERCULES FILE
Description Dunn's handwritten minutes and notes
relating to Dow's discovery of employee
chloracne; 2,4,5-T; TCP; fatigue and that
chloracne may be systemic; cases 25 years
before; rabbit tests and damaged livers.

Exhibit #P0409

PIN # 01290
Date 24-Mar-65
Author C L DUNN
Addressee HERCULES FILE
Description Detailed Notes on Dow Visit of 03/24/65 re:
toxic materials in 2,4,5-TCP.

Exhibit #P0410

PIN # 706001-3
Date 25-Mar-65
Author E L CHANDLER
Addressee KENNEDY, F.R. & KING, J.O.

15253

WILKERSON, M.F.
Description Chandler reports on meeting of 03/24/65 at Dow; employees listless, fatigued; Dow concluded 1 ppm with repeat exposure can create problem; purpose of meeting to help solve "problem before outsiders confuse issue."

Exhibit #P0412

PIN # 01347
Date 26-Mar-65
Author HERCULES CORP
Addressee HERCULES FILE
Description Hercules Animal Study PPM - test results of positive response to exposure to as little as 0.4 ppm.

Exhibit #P0413

PIN # 32466-7
Date 26-Mar-65
Author JOHN P FRAWLEY
Addressee COPELAN, JOHN G. & MAYFIELD, PAUL
MADDOCK, CHARLES & MCGEE, LEMUEL
RENO, P.J. & 6 OTHERS AT HERCULES
Description Frawley report of 03/24/65 meeting with Dow - chloracne a systemic disease, a potent liver toxicant, lethal to rabbits; discusses constant monitoring of TCP and 2,4,5-T production for protection against illegitimate claims.

Exhibit #P0414

PIN # 032489-90
Date 26-Mar-65
Author C L DUNN
Addressee COPELAND, J.G. & GEORGE, R.S.
SCOTT, R.B. & BELLINGER, E.S.
EAGAN, J.M. & 5 OTHERS AT HERCULES
Description Memo from Dunn to Copeland re: "Highly Toxic Impurities in 2,4,5-TCP."

15254

Exhibit #P0418

PIN # 32488
Date 29-Mar-65
Author J M EAGAN
Addressee WILDER, H.E.
Description Letter from Eagan to Wilder re: toxic impurities in 2,4,5-TCP; operation of Hercules' TCP process; reactions and recommendations.

Exhibit #P0420

PIN # 32514-5
Date 30-Mar-65
Author A E SIDWELL
Addressee FRAWLEY, JOHN F. & WILDER
EAGAN, J.M. & DUNN, C.L.
TECH. FILE
Description Memo from Sidwell to Frawley "confidential" report of Dow meeting will be held in confidence.

Exhibit #P0423

PIN # 32464-87
Date 01-Apr-65
Author C L DUNN
Addressee HALL, R.T. & COPELAND, J.G.
GEORGE, R.S. & YATES, R.T.
SCOTT, R.B. & 11 OTHERS
Description Memo from Dunn to Hall re: Toxic Impurities in 2,4,5-T; establish periodic examination of further production.

Exhibit #P0425

PIN # 01348
Date 09-Apr-65
Author JOHN F FRAWLEY
Addressee DUNN, C.L. & EAGAN, J.M.
SIDWELL, A.D.
Description Memo from Frawley to Dunn re: Frawley aware of Monsanto and Badische history of problems which ". . . confirm the high degree of toxicity of the chloracnogens. .
."

15255

Exhibit #P0426

PIN # 01348
Date 14-Apr-65
Author JOHN P FRAWLEY
Addressee JACKSONVILLE FILE & DUNN, C.L.
EAGAN, JOHN
Description Frawley note to Jacksonville plant file re:
2,4,5-T; Dow test results on Hercules
2,4,5-T acid shipments; some Dow rejections
because a third in increasing amounts of
acnegens was indicated.

Exhibit #P0432

PIN # HERC0484
Date 13-May-65
Author V K ROWE
Addressee FRAWLEY, JOHN P. & WHEELER, E.P.
Description Letter from Rowe to Frawley relates problem
in analyzing for dioxin.

Exhibit #P0435

PIN # HERC0486-7
Date 27-May-65
Author P A TIFFANY
Addressee FORD, JOHN
Description Letter from Tiffany at Dow to Ford re:
retesting 2,4,5-T acid; higher ppm than
before.

Exhibit #P0437

PIN # 00000
Date 01-Jun-65
Author FRED HAGER
Addressee SIDWELL, A.E.
Description Letter from Hager at Naugatuck to Sidwell
relates 1 ppm "have induced serious
industrial hygiene problems."

15256

Exhibit #P0444

PIN # 32952
Date 30-Jun-65
Author HERCULES CORP
Addressee HERCULES FILE
Description Notes re: samples.

Exhibit #P0448

PIN # 01384
Date 12-Jul-65
Author JOHN P FRAWLEY
Addressee JACKSONVILLE FILE & COPELAND, JACK
EAGAN, JOHN & DUNN, C.L.
WILDER, H.E. & 2 OTHERS

Description Memo to Jacksonville plant reports Dow's and Hercules' awareness that no one else has done anything to clean up their 2,4,5-T. Fears Congressional investigation and restrictive legislation.

Exhibit #P0450

PIN # 00000
Date 19-Jul-65
Author HERCULES CORP
Addressee DEFENSE SUPPLY
Description Contract between Defense Supply Agency and Hercules Power Co. date 07/19/65 to supply 638,400 lbs. of, and more at a sale price of \$1,501,200; all supplies free from defects.

Exhibit #P0453

PIN # 32512-3
Date 26-Aug-65
Author J FORD
Addressee TAVES, M.
Description Memo from Ford to Taves re: summary of analytical data showing dioxin content of current production of 2,4,5-T highest single value = 4.8 ppm and lowest being 1.1 ppm.

15257

Exhibit #P0463

PIN # 32497-8
Date 21-Oct-65
Author JOHN P FRAWLEY
Addressee COPELAND, JACK & GEORGE, R.S.
EAGAN, JOHN & DUNN, C.L.
WILDER, H.E. & 2 OTHERS

Description Memo from Frawley to Copeland relates Frawley trip to Badische (BASF) and learning details of 1953 epidemic at plant and learned of their bio assay evaluation techniques.

Exhibit #P0464

PIN # 32509-10
Date 27-Oct-65
Author J J FORD
Addressee GILL & DUNN, G.L.
FRAWLEY, J.F. & CHRISTOFANO, K.E.
TAVES, M. & 2 OTHERS

Description Letter from Ford to Gill demonstrates that Dow and Hercules test results are inconsistent with Dow's analysis of a given product being substantially lower.

Exhibit #P0465

PIN # 03892-3
Date 18-Nov-65
Author E E CHRISTOFANO
Addressee DUNN, C.L. & EAGAN, J.M.
TAVES, M.A. & FORD, J.J.
CONNER, A.Z. & SIDWELL, A.D.

Description Memo from Christofano to Dunn relates investigations contemplated in future and indicates still not accomplished as of 6/1/66.

Exhibit #P0467

PIN # 28124
Date 21-Nov-65

15258

Author J HARVEY
Addressee PIERCE, HENRY F.
Description Letter from Lyon to Pierce relating that a Visko-Rhap employee had chronic complaint resulting in surgery at Mayo Clinic; how to respond to questions on the herbicide's toxicity.

Exhibit #P0469
PIN # 28125
Date 22-Dec-65
Author JOHN F FRAWLEY
Addressee HARVEY, JOE
Description Letter from Frawley to Harvey at Lyon re: Pierce letter of 11/21/65.

Exhibit #P0473
PIN # 00000
Date 01-Jan-66
Author HERCULES CORP
Addressee HERCULES FILE
Description Clinical Studies - Occupational Acne (1966)
- Translated by Z.B. Blums May 4, 1967.

Exhibit #P0479
PIN # 03896
Date 24-Feb-66
Author E E CHRISTOFANO
Addressee WILDER & SIDWELL, A.D.
FORD, J.J. & EAGAN, J.M.

Description Memo from Christofano to Wilder re:
possible NAL study of Jacksonville plant.

Exhibit #P0493
PIN # 01466
Date 20-Jun-66
Author J J FORD
Addressee CHRISTOFANO & DUNN, C.L.
TAVES, N.A. & CONNER, A.Z.
WILMINGTON FILE

15259

Description Memo from Ford to Christofano re: Samples for acute oral toxicity studies.

Exhibit #P0503

PIN # 01450-1
Date 28-Jul-66
Author JOHN P FRAWLEY
Addressee OETTEL & DIELEMAN, RLEN
PHILLIPS, R.C. & CHRISTOFANO, E.E.
TAVES, N.A. & 3 OTHERS

Description Cover letter from Frawley to Oettel for samples sent to BASF for analysis of dioxin content as discussed in September of 1965.

Exhibit #P0508

PIN # 06346-51
Date 23-Aug-66
Author J A NOONE
Addressee HERCULES EMPLOYEES
Description Minutes of NACA meeting on August 23, 1966.

Exhibit #P0509

PIN # 06339-44
Date 23-Aug-66
Author C L DUNN
Addressee FILE
Description Handwritten notes of Dunn of NACA meeting of August 23, 1966.

Exhibit #P0510

PIN # 01246 29-37
Date 26-Aug-66
Author R DIELEMAN
Addressee FRAWLEY, J.P. & PHILLIPS, H.C.

Description Letter from Diehlman to Frawley reports on visit of Oettel at BASF and attaches the 1955 report by Oettel re: 1953 exposure; report has evidence compelling punitive

15260

damages: no summary possible.

Exhibit #P0511

PIN # 13970-86
Date 01-Sep-66
Author HERCULES CORP
Addressee GOVERNMENT
Description Contract between Government and Hercules, Inc. (DSA-400-67-C-1633), effective date September 1, 1966. 437,000 gal. AO for \$2,923,530 from 10/1/66 to 6/1/67; free from defects.

Exhibit #P0516

PIN # 06362-5
Date 27-Sep-66
Author C L DUNN
Addressee FILE
Description Minutes of NACA meeting of 09/27/66.

Exhibit #P0517

PIN # 01985-6
Date 01-Oct-66
Author HERCULES CORP
Addressee HERCULES
Description Dechlorination Manual - "CAUTION!!! Do not let temperature get above 170 degrees and do not let pressure get above 315 pounds."

Exhibit #P0525

PIN # 00000
Date 19-Oct-66
Author JOHN P FRAWLEY
Addressee OETTEL & SCOTT, R.B.
PHILLIPS, R.C. & DIELEMAN, R.
TAVES, M.A. & FORD, J.J.

Description Letter from Frawley to Oettel of BASF re: bioassay for dioxin and Hercules rejecting new efforts to determine a new method; (Dow) reports positive results with samples of 2,4,5-T acid containing 1 ppm dioxin.

15261

Exhibit #P0526
PIN # 06366-70
Date 25-Oct-66
Author C L DUNN
Addressee
Description Minutes of NACA meeting on October 25,
1966.

Exhibit #P0527
PIN # 06366-70
Date 25-Oct-66
Author C L DUNN
Addressee
Description Handwritten notes of Dunn on NACA meeting
of October 25, 1966.

Exhibit #P0532
PIN # 31639-50
Date 03-Nov-66
Author BIOTEST LABORATORIES
Addressee HERCULES
Description Biotest Laboratories report to Hercules,
Inc. on acute oral toxicity studies on
three materials.

Exhibit #P0534
PIN # 00000
Date 04-Nov-66
Author INC HERCULES
Addressee
Description Esterification manual; essential materials;
formulas.

Exhibit #P0563
PIN # 06399-401
Date 18-Jan-67
Author C L DUNN
Addressee

15262

Description Minutes of NACA meeting of January 18, 1967.

Exhibit #P0567

PIN # 15034-44
Date 27-Jan-67
Author K WILDER
Addressee EAGAN, J. & GIVENS, K.T. ✓

Description Memo from Wilder to Eagan re: visit to U.S. Army phosphate development works, Muscle Shaols, Alabama; describes usage in VN, 2-4 applications, 30 days apart.

Exhibit #P0587

PIN # 17060-1
Date 23-Feb-67
Author K T GIVENS
Addressee TRAUB, JOHN L. & COPELAN, J.G.
EAGAN, J.M. & YATES, R.T.
RENO, P.J. & 2 OTHERS

Description Letter from Givens to Traube re: Hercules' proposal of building a new plant.

Exhibit #P0601

PIN # 08406-10
Date 28-Mar-67
Author G E LYNN
Addressee USDA
Description Lynn speech to USDA re: collect data on toxicity pertinent to use of phenoxy herbicides.

Exhibit #P0604

PIN # 01247
Date 29-Mar-67
Author P OETTEL
Addressee FRAWLEY, JOHN P.
Description Letter from Oettel to Frawley re: photographs of people with acne.

15263

Exhibit #P0607

PIN # 017052-4
Date 03-Apr-67
Author K T GIVENS
Addressee YATES, R.T. & RENO, P.J.
EAGAN, J.M. & MILLER, J.
COPELAN, J.G. & 4 OTHERS

Description Letter from Givens re: Orange Production,
Edgewood Arsenal.

Exhibit #P0612

PIN # 06411-15
Date 20-Apr-67
Author C L DUNN
Addressee

Description Minutes of NACA meeting of April 20, 1967.

Exhibit #P0619

PIN # 06422-3
Date 11-May-67
Author G E LYNN
Addressee HAZLETON LAB.

Description Letter from Lynn to Hazleton Lab., Inc. re:
verbal arrangement of 04/20/67 between Lynn
and Hazleton to prepare petitions for
negligible tolerances for use on crops for
phenoxy herbicides.

Exhibit #P0620

PIN # 06420-1
Date 12-May-67
Author G E LYNN
Addressee MEMBERS NACA & NOONE, J.A.
HALEY, DENIS

Description Memo from Lynn re: NACA and Hazleton
meeting of May 11, 1967.

Exhibit #P0630

15264

PIN # 32493-4
Date 08-Jun-67
Author EMIL E CHRISTOFANO
Addressee FANCHER, OTIS & SIDWELL, A.E.
DUNN, C.L. & SCOTT, R.B.

Description Letter from Christofano to Fancher re: Hercules Project No. 67-13; liver damage studies; toxicity of three materials to rabbits.

Exhibit #P0635

PIN # 03904-5
Date 29-Jun-67
Author JOHN P FRAWLEY
Addressee OETTEL, PROF. H. & DIELEMAN, R.
PHILLIPS, H.C. & SCOTT, R.B.
DUNN, C.L. & SIDWELL, A.E.

Description Letter from Frawley to Oettel re: Columbian study. "I agree with you that this report is very disturbing." States that 2,4,5-T acid and ester are significantly more toxic than TCP.

Exhibit #P0638

PIN # 32452-62
Date 30-Jun-67
Author J M EAGAN
Addressee WILDER, H.E. & FRAWLEY, J.P.

Description Memo from Eagan to Wilder re: chloracne cases in Columbia, South America.

Exhibit #P0640

PIN # 14692-704
Date 06-Jul-67
Author C W CARTY
Addressee HERCULES
Description Letter from Carty to Hercules Powder Co., Inc. demonstrates private industry's input in reviewing commentary and affecting redrafting of government specs. at government's request.

15265

Exhibit #P0641

PIN # 15600-13
Date 11-Jul-67
Author W W RAYNOLDS
Addressee WILDER, H.E.
Description Memo re: July 6, 1967 letter of Carty's to Hercules Powder Co., Inc.

Exhibit #P0644

PIN # 32149
Date 18-Jul-67
Author MITCHELL R ZAVON
Addressee CHRISTOFANO, E.E.
Description Letter of Zavon to Christofano re: his request for a meeting regarding comparative industry study of employees.

Exhibit #P0646

PIN # 32148
Date 28-Jul-67
Author EMIL E CHRISTOFANO
Addressee ZAVON, M. & EAGAN, J.M.
SIDWELL, R.
Description Letter from Christofano to Zavon rejecting proposed study.

Exhibit #P0649

PIN # 15392-94
Date 11-Aug-67
Author A E SIDWELL
Addressee EAGAN, J.M. & SCOTT, R.
WILDER
Description Memo from Sidwell to Eagan re: "Orange quality problem - recites that Hercules has produced nearly 15,000,000 pounds of Agent Orange since November 15, 1964.

Exhibit #P0650

PIN # 06436-7

15266

Date 17-Aug-67
Author G E LYNN
Addressee NACA MEMBERS
Description Memo from Lynn to Members of Industry Task Force on Phenoxy Herbicide Tolerances re: 2,4,5-T formulations.

Exhibit #P0653

PIN # 31918
Date 28-Aug-67
Author A E SIDWELL
Addressee
Description Appropriation Request signed by A.E. Sidwell re: infrared spectrophotometer.

Exhibit #P0657

PIN # 15468-9
Date 02-Sep-67
Author A L TREISBACK
Addressee WILDER
Description Handwritten notes from Treisback to Wilder re: "quality, purity, and chemistry of our operation."

Exhibit #P0660

PIN # 15454-6
Date 05-Sep-67
Author M A TAVES
Addressee EAGAN, J.M. & RENO, P.J.
TURK, E. & SCOTT, R.B.
GIVENS, K.T. & 3 OTHERS

Description Memo from Taves to Eagan re: "Orange" Analysis; Govt. does not know components in products which are known to Hercules; before advising Govt., Hercules will study.

Exhibit #P0663

PIN # 15443-6
Date 07-Sep-67
Author R B SCOTT

15267

Addressee TAVES, M.A. & CLARK, W.H.
GIVENS, K.T. & EAGAN, J.M.
TURK, E. & 2 OTHERS

Description Memo from Scott to Taves re: Orange;
testing September 5, 1967.

Exhibit #P0664

PIN # 15449-50
Date 07-Sep-67
Author E T GIVENS
Addressee EAGAN, J.M. & YATES, R.T.
RENO, F.J. & 3 OTHERS

Description Memo from Givens to Eagan re: NACA's
proposed guidelines.

Exhibit #P0666

PIN # 15903-4 101
Date 12-Sep-67
Author J M EAGAN
Addressee

Description Notes of Eagan re: Synthetics Dept.
Proposed Meeting, etc.

Exhibit #P0669

PIN # 14716
Date 19-Sep-67
Author UNKNOWN
Addressee
Description Notes.

Exhibit #P0671

PIN # 13903-4
Date 26-Sep-67
Author K T GIVENS
Addressee EAGAN, J.M. & SCOTT
COPELAND, J.G. & TURK, E.
YATES & 2 OTHERS

Description MEMO RE: "ORANGE QUALITY"

15268

Exhibit #P0677

PIN # 32150
Date 10-Oct-67
Author E E CHRISTOFANO
Addressee DUNN, C.L. & EAGAN, J.W.
WILDER, H.E. & SIDWELL, A.E.

Description Memo from Christofano to Dunn re: Dr. Zavon at Kettering Lab doing a prospective study of 15 - 20 year duration.

Exhibit #P0683

PIN # 06475-9
Date 17-Oct-67
Author C L DUNN
Addressee

Description Minutes of meeting of October 17, 1967 - NACA

Exhibit #P0685

PIN # 02986PLUS
Date 25-Oct-67
Author R B SCOTT
Addressee VANDOVENIER, W. & COPELAND, J.C.
CRITTENDEN, K.D. & EAGAN, J.M.
GIVENS, K.T. & 2 OTHERS

Description Letter from Scott to Vandovenier and copy of proposed specifications for herbicide Orange; cover letter for 10/24, proposed specs as drafted by Hercules.

Exhibit #P0698

PIN # 06549
Date 27-Nov-67
Author C L DUNN
Addressee MEMBERS NACA

Description Letter from Dunn to members of NACA re: conference with USDA.

Exhibit #P0699

PIN # 06547-8
Date 27-Nov-67
Author C L DUNN
Addressee HAYS, HARRY & IRVING, ARS
ANDERSON, USDA & DANIELSON, ARS

Description Letter from Dunn to Hays requesting
Extension for 1 year beyond 12/31/67 for
cancellation date at registrations of 2,4-D
and 2,4,5-T and others.

Exhibit #P0702

PIN # 06554-56
Date 08-Dec-67
Author C L DUNN
Addressee FDA & USDA

Description Letter from Dunn to FDA on behalf of NACA
Industry Task Force on phenoxy herbicide
tolerance.

Exhibit #P0703

PIN # 06580-1
Date 12-Dec-67
Author C L DUNN
Addressee FDA & USDA

Description Letter from Dunn to FDA similar to letter
of 12/8/67.

Exhibit #P0708

PIN # 15514
Date 27-Dec-67
Author A E SIDWELL
Addressee LOWE, L.E.

Description Memo from Sidwell to Lowe re: Factor "X"
unknown, still at 8.5%.

Exhibit #P0710

PIN # 06584

15270

Date 29-Dec-67
Author HAROLD G ALFORD
Addressee HERCULES
Description Letter from Alford at USDA to Dunn at Hercules re: 11/27 request granted until 1/1/69.

Exhibit #P0715

PIN # 14671-8
Date 02-Jan-68
Author K T GIVENS
Addressee WILDER & K.E.
CRITTENDEN, E.D. & RENO, P.J.
EAGAN, J.M.
& SCOTT, R.B.

Description Memo from Given to Wilder re: New contract - Herbicide Orange; Hercules participation in reviewing and redrafting proposed government specs with portions of contract attached.

Exhibit #P0716

PIN # 06592-98
Date 04-Jan-68
Author UNKNOWN
Addressee
Description Minutes of meeting of NACA meeting of January 4, 1968.

Exhibit #P0718

PIN # 14664-70
Date 10-Jan-68
Author A E SIDWELL
Addressee EAGAN, J.M. & CRITTENDEN, E.D.
GIVENS, K.T. & RENO, D.J.
SCOTT & WILDER

Description Memo from Sidwell to Eagan re: "New Contract, Orange" detailing critiques and suggested changes - "you will remember that we have the unsolved problem of compound 'x' in the butyl and ester. . ."

Exhibit #P0721

PIN # 15478-9
Date 11-Jan-68
Author K T GIVENS
Addressee WILDER, H.E. & CRITTENDEN, E.D.
EAGAN, J.M. & RENO, P.J.

Description Memo and attachment from Givens to Wilder re: use of imported 2,4,5-T; refers to authority to use imported 2,4,5-T for Agent Orange production.

Exhibit #P0724

PIN # 17041
Date 20-Jan-68
Author A E SIDWELL
Addressee TAVES, M.A. & EAGAN, J.M.
SCOTT, R.B. & WILDER, H.E.
FISHER, J.R. & TECH. FILE

Description Memo re: Compound "X" in Production n-Butyl-T.

Exhibit #P0727

PIN # 15474-6
Date 25-Jan-68
Author K T GIVENS
Addressee COLLNS, G.F. & CRITTENDEN, E.D.
EAGAN, J. & SCOTT, K.
WILDER, N.E.

Description Letter from Givens to Collins demonstrating Hercules' role in preparation and drafting of specs.

Exhibit #P0730

PIN # 17050
Date 29-Jan-68
Author K T GIVENS
Addressee WILDER
Description Memo from Givens to Wilder re: Herbicide Samples; use of foreign 2,4,5-T acids.

15272

Exhibit #P0731

PIN # 15400
Date 29-Jan-68
Author A L TREISBECK
Addressee GIVENS, K.T. & EAGAN, J.W.
SCOTT, R.B. & SIDWELL, A.E.

Description Memo re: Orange Analyses; Contract
DSA-400-67-C-8314; changing specs.

Exhibit #P0739

PIN # 13706
Date 20-Feb-68
Author R W HUSTON
Addressee TREISBACK, A.L.
Description Note from Huston to Treisback re: being
below specs.

Exhibit #P0748

PIN # 15344-55
Date 27-Feb-68
Author GEORGE F COLLINS
Addressee HERCULES POWDER
Description Letter from Collins of Defense Supply to
Hercules; enclosing copies of a review
purchase description for herbicide orange;
requesting Hercules' comments.

Exhibit #P0749

PIN # 06669
Date 29-Feb-68
Author CHIPMAN BALES
Addressee MCCOLLISER, RON
Description Letter from Bales at Chipman Chemical Co.
to McCollister re: subacute toxicity data
requested by FDA.

Exhibit #P0753

PIN # 15343-53
Date 04-Mar-68

15273

Author K T GIVENS
Addressee SCOTT, R. & TREISBACK, A.L.

Description Memo from Givens to Scott and Treisback re:
demonstrating Govt's acceptance of
Hercules' changes in specs.

Exhibit #P0754

PIN # 06670
Date 04-Mar-68
Author C L DUNN
Addressee BAKER & HEW

Description Letter from Dunn to Baker at HEW re:
Pesticide Petition 8F0676 for negligible
residues of the herbicide.

Exhibit #P0759

PIN # 06691-2
Date 08-Apr-68
Author HEW BAKER
Addressee DUNN, C.L. & ARS
USDA

Description Letter from Baker at HEW to Dunn re:
Hercules' inability to establish tolerances
as requested; Hercules may amend or
withdraw petition.

Exhibit #P0761

PIN # 06701
Date 15-Apr-68
Author C L DUNN
Addressee NACA MEMBERS & KRAUSCHE, K
CANKIN, R.A.

Description Memo from Dunn to NACA members re: 2,4,5-T
petition; re: 4/8/68 letter.

Exhibit #P0762

PIN # 06700
Date 15-Apr-68
Author C L DUNN
Addressee BAKER, HEW & MCCOLLISTER, D.D.

15274

BALES, I.W. & KRAUSCHE, K.
HOLSING, G. CARL & NACA

Description Letter from Dunn to Baker at HEW request
NACA's pesticide petitions for negligible
residue of herbicide MCPA be withdrawn
without prejudice.

Exhibit #P0765

PIN # 15389
Date 09-May-68
Author A L TREISBACK
Addressee EAGAN, J.W. & GIVENS, K.T.
SCOTT, R.B. & SIDWELL, A.E.
BENNETT, T.

Description Memo from Treisback to Eagan re: Recovered
Acids - Addenda; government rewriting specs
as requested by Hercules.

Exhibit #P0766

PIN # 15342
Date 09-May-68
Author GOVT
Addressee GIVENS, K.T.

Description Teletype message from Government on
Hercules letterhead for Givens re: changes
in tolerances (for percentage of 2,4-D and
2,4,5-T in Agent Orange); 810,000 gal. @
7.25 per gal. for \$5,872,500 offer;
delivery at 90,000 gal. per month from
6/68-2/69.

Exhibit #P0767

PIN # 15390-4
Date 09-May-68
Author A L TREISBACK
Addressee EAGAN, J. & GIVENS, E.
SCOTT, R. & SIDWELL, A.
BENNETT, T.

Description Memo from Treisback to Eagan re: Recovered
Acids; Orange quality problems and
reference to attached letter of August 11,
1967.

15275

Exhibit #P0768

PIN # 15395
Date 09-May-68
Author A L TREISBACK
Addressee GIVENS & EAGAN, J.
BENNET, T.
Description Memo from Treisback to Givens re: Orange;
imported 2,4,5-T.

Exhibit #P0774

PIN # 15288-319
Date 05-Jun-68
Author K T GIVENS
Addressee TREISBACK, A.L. & CRITTENDEN, E.D.
EAGAN, J.M. & RENO, P.J.
Description Memo from Givens to Treisback re: "Orange"
Contract; attached new contract; 90,000
gal. per month from 6/30/68-2/28/69 for
\$5,872,500; free from defects; attached
copies of 2/23/68 specs and amendment of
4/11/68.

Exhibit #P0776

PIN # 13664
Date 11-Jun-68
Author A S SIDWELL
Addressee TREISBACK, A.L.
Description Memo from Sidwell to Treisback re:
Conference on Contract DSA-400-68-C-6093;
conference with government.

Exhibit #P0778

PIN # 13662-3
Date 12-Jun-68
Author K W HUSTON
Addressee TREISBACK, A.L. & BUMP, R.A.
BENNETT, T. & RAY, F.H.
PENNOCK, J.G. & FISHER, J.R.
Description Memo from Huston to Hercules employees re:
DSA Contract DSA-400-68-C-6093; meeting

15276

with government to discuss and agree on contract.

Exhibit #P0799

PIN # 15245
Date 18-Sep-68
Author R W HUSTON
Addressee BUMP, R.A. & PAMRY, S.A.
GIVENS, K.T. & TREISBACK, A.L.
SIDWELL, A.E. & 2 OTHERS

Description Memo from Huston to Bump re: Documents - "Orange" Contract.

Exhibit #P0808

PIN # 04030-1
Date 16-Oct-68
Author EMIL E CHRISTOFANO
Addressee ROWE, V.K.
Description Letter from Christofano to Rowe re: bioassay methods inconsistent and usefulness as a test for dioxin is questionable.

Exhibit #P0816

PIN # 18121
Date 08-Nov-68
Author TREGLIA
Addressee HERCULES
Description Memo from Treglia at Dept. of Army to Hercules re: invitation to comment on proposed specs - suggestions that may result in a savings to Govt.

Exhibit #P0818

PIN # 06888
Date 03-Dec-68
Author ALFORD
Addressee DUNN, C.L.
Description Letter from Alford at USDA to Dunn re: Extension of Registrations for 2,4,5-T acid; Dunn's letter of 10/29/68; extends

15277

date for finite tolerances to 1/1/70.

Exhibit #P0824

PIN # 25992-4
Date 30-Dec-68
Author J CHRISTOFANO
Addressee DUNN, C.L. & OTHERS

Description Memo from Christofano to Dunn re: Dioxin studies; biotest lab report on dioxin studies; studies inconsistent and inconclusive.

Exhibit #P0870

PIN # DOW754889
Date 25-Nov-69
Author J E JOHNSON
Addressee
Description Page two of Johnson report.

Exhibit #P0890

PIN # 01540-2
Date 16-Jan-70
Author J J FORD
Addressee TAVES, M.A. & SCOTT, R.B.
DUNN, CL.L & WALKER, J.
CONNER, A.

Description Memo from Ford to Taves re: analysis of 2,4,5-T Acid for "Dioxin" Content; further development indicated; 4-6 weeks to evaluate proposed modifications.

Exhibit #P0911

PIN # 26964
Date 24-Feb-70
Author J P FRAWLEY
Addressee

Description Notes of Frawley re: findings of cleft palate.

15278

Exhibit #P0923

PIN # 01588-9
Date 19-Mar-70
Author J J FORD
Addressee TAVES, M.A. & SCOTT, R.B.
DUNN, C.L. & WALKER, J.F.
CONNER, A.Z. & SIDWELL, A.E.

Description Memo from Ford to Taves re: Analysis of 2,4,5-T Acid for "Dioxin" Content; retesting of old samples produced in 1965; attached chart shows dioxin content as high as 3.5 ppm in 1965.

Exhibit #P0938

PIN # 03877
Date 10-Apr-70
Author J G COPELAND
Addressee
Description Synthetics Dept. R&D Newsletter of Copeland; ". . . dioxin, which is highly toxic, a severe skin irritant, and a suspected teratogen."

Exhibit #P0942

PIN # 04032
Date 15-Apr-70
Author R B SCOTT
Addressee DUNN, C.L. & PIERCE, H.F.
LEMONS, E.W. & GIVENS, K.T.
FRAWLEY, J.P. & 2 OTHERS

Description Memo from Scott to Dunn reL: 2,4,5-T Analyses.

Exhibit #P0959

PIN # 04034-5
Date 10-Jun-70
Author JOHN J FORD
Addressee PETERSON, R. & KOPKINS
SCOTT, R. & TAVES, M.A.

Description Memo from Ford to Peterson re: Separation of the Toxic Contaminant 2,3,7,8-TCP from

2,4,5-TCP acid; dioxin is a highly toxic contaminant; teratogenic effects recently attributed to 2,4,5-T may be due to dioxin contaminant.

Exhibit #P0980

PIN # 27817-18
Date 23-Nov-70
Author JOHN P FRAWLEY
Addressee HIGGIN, JOHN C.
Description Memo from Frawley to Higgin discussion whether teratology was associated with dioxin; government agency sponsoring study not familiar with toxicity of dioxin; Surgeon General declared 2,4,5-T hazard to health; 2,4,5-T banned.

Exhibit #P0981

PIN # 27349
Date 24-Nov-70
Author J P FRAWLEY
Addressee DUNN, C.L.
Description Memo from Frawley to Dunn re: completed Bionetics study on 2,4,5-T.

Exhibit #P0993

PIN # 27396-402
Date 26-Jan-71
Author JOHN P FRAWLEY
Addressee WILSON
Description Letter from Frawley to Wilson, Advisory Committee on 2,4,5-T; lack of hazard presented; Hercules acknowledges past history of U.S. and Germany.

Exhibit #P0994

PIN # 27462
Date 17-Feb-71
Author J P FRAWLEY
Addressee DUNN, C.L. & COPELAND, J.G.
PIERCE, H.F. & GIVENS, K.T.
OTHERS

15280

Description Memo from Frawley to Dunn re: Dosing Error in Bionetics Study on 2,4,5-T; mistake in bionetics report and what they should do.

Exhibit #P0999

PIN # 27656
Date 30-Mar-71
Author JOHN P FRAWLEY
Addressee WILSON, JAMES G. & MEMBERS
ADVISORY COMMITTEE & ON 2,4,5-T

Description Letter from Frawley to Wilson on Advisory Committee on 2,4,5-T suggesting the restriction of dioxin content ". . . to a safe level."

Exhibit #P1006

PIN # 03579
Date 01-Jun-71
Author GEORGE H HOPKINS
Addressee SIDWELL, A.E. & FORD, J.J.
SCOTT & GIVENS, K.T.
DUNN, C.L.

Description Memo from Hopkins to Sidwell and Ford re: Removal of "Dioxin" from Silvex and removal of "Dioxin" from 2,4,5-T; patent in removal process.

Exhibit #P1007

PIN # 03576-8
Date 03-Jun-71
Author A E SIDWELL
Addressee HOPKINS, GEORGE H. & SCOTT, R.B.
GIVENS, K.T. & DUNN, C.L.
TREISBACK, A.L. & 2 OTHERS

Description Memo from Sidwell to Hopkins re: Removal of "Dioxin" from Silvex.

Exhibit #P1011

PIN # 27741
Date 29-Jul-71

15281

Author R STEHL
Addressee DOW
Description Analytical Laboratories report of July 29, 1971; 4/4/71 sample tested and Hercules rated it 0.18 ppm and Dow rated it less than 5 ppb.

Exhibit #P1015
PIN # 27788-9
Date 28-Oct-71
Author D D MCCOLLISTER
Addressee WEIR, ROBERT J.
Description Letter from McCollister to Weir re: importance of not publishing difference and how to describe difference of 0.18 ppm v. 0.005 ppm.

Exhibit #P1021
PIN # 01740
Date 15-Nov-71
Author W C KENYON
Addressee TAVES, M.A. & HALL, R.T.
FORD, J.J.
Description Memo from Kenyon and Shearer to Taves re: reports of Dow on 2,4,5-T from Hercules; attempted explanation.

Exhibit #P1029
PIN # 01754-5
Date 17-Jan-72
Author D D MCCOLLISTER
Addressee HART, E. ROSS
Description Deposition of A.E. Sidwell taken on April 18, 1980;

Exhibit #P1089
PIN # 00000
Date 28-Apr-80
Author UNKNOWN
Addressee
Description Trial testimony of A.E. Sidwell.

Exhibit #P1105

PIN # 00000

Date 02-May-83

Author UNKNOWN

Addressee

Description Affidavit of Charles L. Dunn, date 05/02/83.

Exhibit #P0025

PIN # DS00017892
Date
Author F R KENNEDY
Addressee SAVAGE & CORT

Description Memorandum dated March 20 [year illegible] from F. R. Kennedy to S. Savage, New York Sales, stating that the suspect batch samples from the suspect batches have been segregated and put aside for safekeeping. He also reports that Dr. Bleiberg said that he had been contacted, had asked for follow-up materials, and had not done anything more when these materials (photographs of the affected personnel) were not forthcoming.

Exhibit #P0026

PIN # DS00001061
Date
Author F GORDON STEWARD
Addressee

Description Staff memorandum of unclear date from F. Gordon Steward reporting on technical operations for the month of April, 1967. The report notes that the use of porosities to filter dioxins was not very encouraging, but that the carbon filter seemed to be effective. Plugging seemed to be a continuing problem.

Exhibit #P0027

PIN # DS 22713
Date
Author UNKNOWN
Addressee

Description SCRATCH PAD NOTES REGARDING LETTER OF 10/9/64.

Exhibit #P0028

PIN # 24673
Date
Author UNKNOWN
Addressee

15284

Description OPERATING COMMENTS PLANT TECHNICAL JUNE,
1969.

Exhibit #P0029

PIN # 27928
Date
Author PAUL GROSS, MD
Addressee DIAMOND ALKALI CO
Description JANUARY, 1960, SEVENTH REPORT ON EVALUATION
OF CHLORACNE.

Exhibit #P0074

PIN # DS00022493
Date 290655
Author J M YORK
Addressee SCOVILLE & INGLEY
BURTON & KIRP

Description Memorandum dated June 29, 1955 from J. M. York, MD, to L. P. Scoville concerning chloracne at the Newark plant. Recites visit by the author to the plant, where fumes were noxious but of unknown toxicity. Describes chloracne and its mechanisms, stating that there is really no cure, and further stating that a case has to be seen to appreciate how socially debilitating it can be. Recommends sending some of the worst cases to a Dr. Marion B. Sulzberger in New York city, but further recommends that this be deferred until the plant is cleaned up or it will be an illusory remedy. Also recommends that better physical examinations be given to employees so that blood and liver damage can be assessed.

Exhibit #P0080

PIN # DS00008854
Date 30-Aug-55
Author GEORGE H BURRIS
Addressee ROSENFELD & BURTON
FROWNE & PORTER
TOWLE & OTHERS

15285

Description Technical Memorandum dated August 30, 1955, from G. H. Burris and M. Rosenfeld to Mr.

J. Burton describing the methods used to establish absorption curves to identify the impurities in 2,4,5-T by means of chromatography. Suggests that the curve is close to the curve established for dichlorosorcinol, but allows that a polychlorinated diphenyl ether compound may also be indicated in small amounts.

Exhibit #P0081

PIN # DS00024253
Date 23-Sep-55
Author J BURTON
Addressee GLEISSNER & BROWNE
TOWLE

Description Memorandum dated September 23, 1955, from J. Burton to Dr. B. D. Gleissner reporting on toxicology tests run on rabbits by the Industrial Toxicological Laboratories. The tests on crude TCP showed that reactions to the August production samples existed but were less serious than reactions to May production samples. This indicated that they were on the right track in lower autoclave temperatures, according to the author, but that that alone would not solve the problem.

Exhibit #P0093

PIN # DS00019554
Date 20-Oct-56
Author JACOB BLEIBERG
Addressee J BURTON

Description Letter dated October 20, 1956, from Dr. Jacob Bleiberg to Mr. J. Burton summarizing his recommendations concerning chloracne at the Newark plant. He notes that the probable chloracnogen is a chlorinated di-phenyl. For Prophylaxis purposes, he recommends cleanliness and special soaps. For treatment he recommends using creams, but suggests looking for systemic disorders as well. The report contains numerous recommendations concerning diet, etc.

15286

Exhibit #P0100

PIN # DS00008217
Date 21-Jun-57
Author J BURTON
Addressee GUIDI & BROWNE

Description Memorandum dated June 21, 1957, from J. Burton to R. Guidi and referenced to a file, 2,4,5-TCP Process Development. Memo outlines the need to double TCP production and to eliminate chloracne impurities. Also wants to run at a lower pressure as a safety matter. Explores various suggestions for accomplishing these objectives from an engineering point of view.

Exhibit #P0103

PIN # DS00017415
Date 18-Sep-57
Author D J PORTER
Addressee BURTON & LUKES
SUTTER & CLEVELAND

Description Memorandum dated September 18, 1957 from D. J. Porter at Painesville to J. Burton at Newark reporting on meeting with Dr. Kudesus of Boehringer to discuss acquisition of know-how for production of penta-chlorophenol. Told Kudesus that since the work of Al Hirsch and Irving Rosen "several years ago" and the more recent work of Jack Jenney and Al Lewis, they had no indication of chloracne trouble. Dr. Kudesus said he would send them a copy of his report on the problem which had caused them to shut down one of their plants and, in the meantime, he identified the culprit with a diagram which is reported in the memorandum. It was said that the material is not formed if the triTCP autoclave temperature is kept below 155 degrees C, and if the caustic mixture is not more than 120 C. Writer suggests trying this in the TCP plant in view of the problems there.

Exhibit #P0105

PIN # DS00022024

15287

Date 11-Oct-57
Author D J PORTER
Addressee GUIDI & BURTON
LUKEE
Description Memorandum dated October 11, 1957 from D. J. Porter to R. A. Guidi reporting the forwarding of a translation of a memo from C. H. Boehringer Sohn, Ingelheim, reiterating comments previously made "some time back" by Dr. Kudesus of Boehringer. Cover letter suggests that if there are problems running a syline at Newark, a test could be done at the autoclave at Painesville. The attachment advises of the steps in the reaction where acnegen can be seen to be formed, and of the further steps (principally temperature control) that can be used to minimize that risk.

Exhibit #P0106

PIN # DS 27915
Date 19-Dec-57
Author MARIAN L WESTRICK, PHD
Addressee J. BURTON
Description SIXTH REPORT ON EVALUATION OF CHLORACNE - NOV 1957

Exhibit #P0115

PIN # 000000
Date 19-Sep-58
Author DONALD M PURDY
Addressee DIAMOND ALKALI & MANK EDWARD

Description Agreement dated September 10, 1958 by employee, Donald M. Purdy, to assign any patent for work done for Diamond to Diamond.

Exhibit #P0128

PIN # DS00017413
Date 30-Sep-59
Author THORNTON HOLDER
Addressee BURTON & BRUMBAUGH
BORROR & EVERSON
PORTER & GOYB

15288

Description Internal Diamond Memorandum dated September 30, 1959 reporting information from Boehringer that they had not had a chloracne case for several years by reason of changes in process and a major overhaul of their factory. The memo notes that Boehringer continued to have liver cases several years after clearing up their chloracne problems.

Exhibit #P0137

PIN # DS00010807
Date 20-May-60
Author THORNTON HOLDER
Addressee SCOVILLE & HONOUR

Description Memorandum dated May 20, 1960 from Thornton F. Holder to L. P. Scoville referring to differences in accidents at Newark and at Ingelheim and stating that he would be willing to use his offices to have a meeting with Boehringer (Cela) if that was desirable.

Exhibit #P0140

PIN # DS00008450
Date 21-Jun-60
Author J BURTON
Addressee BORROR & GUIDI
LINDEMANN & SCOVILLE
WEINER

Description Confidential Memorandum dated June 21, 1960 from J. Burton to J. A. Borrer reporting on laboratory work concerning the 2,4,5-T process. The memo suggests that yields are satisfactory at a 2:2 mol ratio. Identifies information on Newark that chlorinated diphenyl ethers are the probable cause of chloracne. Suggests that if lab results cannot be duplicated at the plant, then the recommendation is to increase the caustic ratio rather than the heat of reaction because higher temperatures promote chloracnegen (chlorinated diphenyl ethers) formation. The memo suggests that a diluent might be used to moderate the reaction also.

15289

Exhibit #P0141

PIN # DS00022022
Date 23-Jun-60
Author J J BURTON
Addressee CONRAD & DELL
CELA

Description Copy of a letter dated June 23, 1960 from J. Burton to Herr. Conrad and Dell of Cela describing in some detail Diamond's process, experience, their attempts to understand how to avoid future explosions and their request for a similar exchange of information from Cela.

Exhibit #P0145

PIN # DS00021951
Date 10-Aug-60
Author NONE BOEHRINGER SOHN
Addressee BORROY

Description Letter from illegible person at Boehringer Sohn to J. A. Borrer, Diamond Alkali Company dated August 10, 1960 describing in detail their process [CELA] for processing TCP to avoid chloracnogens. Asks for confidential exchange of information on the subject. Refers to September 20, 1957 letter addressed to Plainsville, Ohio.

Exhibit #P0161

PIN # DS00011518
Date 06-Mar-62
Author R L ANNIS
Addressee EVERSON & CROSS
DUNNING & ENTEMANN
HIRSCH & OTHERS

Description Memorandum dated March 6, 1962 from R. L. Annis to H. E. Everson with a wide distribution list reporting on progress of 2,4-D and 2,4,5-T Process Studies. The studies look toward expansion of production outputs. The report states a revised 2,4-D process has been virtually completed, and that it is hoped that a 2,4,5-T process can

15290

be developed from that process, but notes that this will require higher temperatures and higher pressures. The report is emphatic that the plant will require updating at some expense for the new processes. No mention is made of health considerations.

Exhibit #P0166

PIN # 24256
Date 11-May-62
Author W GOODLOE
Addressee R. A. GUIDI & R. F. LINDEMANN

Description UNSIGNED MEMO BY W.GOODLOE TO R. A. GUIDI DATED 11 MAY 1962 ADVISING ALL CHLORACNE SAMPLES (14) PREPARED AS REQUESTED & READY FOR SHIPMENT TO MELLON INSTITUTE. DESCRIPTION OF EACH SAMPLE ATTACHED.

Exhibit #P0171

PIN # DS 27937
Date 07-Jun-62
Author JAMES M MC NERNEY
Addressee DR. GUIDI
Description 8TH REPORT ON EVALUATION OF CHLORACNE.

Exhibit #P0178

PIN # DS00017412
Date 09-Jul-62
Author K L CHANDLER
Addressee GUIDI & WEINER

Description Memo dated July 9, 1962 from Chandler to Guidi reporting that Riverdale Chemical and Quaker City Tree had serious complaints about chloracne associated with Diamond's product and asking whether there is a likelihood that these incidents will recur.

Exhibit #P0185

15291

PIN # DS00019539
Date 06-Nov-62
Author H C BAISALO
Addressee HILL W C & BAISALO H C
GUIDI R A
Description Confidential Memorandum re Chloracne containing what appears to be the outline of a speech concerning the chloracne problem and which is dated November 6, 1962. Document is incomplete as we have it.

Exhibit #P0186

PIN # DS0000715
Date 10-Nov-62
Author EUGENE BAK
Addressee BRAUN & GOODLOE
WEINER & GUIDI
HILL & OTHERS

Description Detailed report concerning existing processes for 2,4-D and 2,4,5-T and making recommendations for changing processes for economy. Report is prepared by Eugene Bak with the assistance of Daniel Braun and William Goodloe, and is signed by Hill and Guidi.

Exhibit #P0193

PIN # DS00008832
Date 07-Jan-63
Author RF LINDEMANN
Addressee HILL
Description Memorandum dated January 7, 1963 from R. F. Lindemann to W. E. Hill, Jr. reporting on his effort to identify the impurities in 2,4,5-T and TCP. States that the chromatograph of the impurity is close to the basic chemical, but with a slightly higher boiling point.

Exhibit #P0201

PIN # DS00017405
Date 15-Feb-63
Author R A GUIDI

15292

Addressee WEINER
Description Memorandum dated February 15, 1963 from R. A. Guidi to H. S. Weiner re: forwarding an article given to him by Dr. Bleiberg suggesting the development of porphyria from the ingestion of hexachlorobenzene. Memo notes presence of porphyrins in urine samples collected from workers and at a level indicating liver disturbance. Says the article will set off the health authorities and that Bleiberg is already in contact with Dr. Birmingham for advice.

Exhibit #P0206

PIN # DS00017400
Date 25-Mar-63
Author H S WEINER
Addressee GUIDI & WILKERSON

Description Confidential Memorandum from H. S. Weiner to R. A. Guidi dated March 25, 1963 re: "Chloracne." The memo refers to a March 20 memo and states that USPH should not be allowed to visit the plant unless a full program concerning the visit is developed with Diamond's medical advisor and Marty Wilkerson. The memo suggests that thought be given to the possibility that the visit might be used as a sensational event in the news- papers.

Exhibit #P0208

PIN # DS00024455
Date 27-Mar-63
Author RICHARD W MCBURNEY
Addressee JARVIS & BROWN
OCIDI

Description Memorandum dated March 27, 1963 from Richard W. McBurney, MD, to Frank W. Jarvis in Cleveland. It notes the history with chloracne and states that recent articles have convinced Dr. Bleiberg that they may also be dealing with a liver problem. The letter states that the only way to begin to solve the problem was to renovate the old plant, subject to available financing.

15293

Exhibit #P0211

PIN # DS00017963
Date 09-Apr-63
Author GUILLERMO
Addressee CECIL
Description Translation of a letter written in Spanish on April 9, 1963 by Leon R. Guillermo of Quimor to L. L. Cecil, Jr. re: "Problem in the Application of Weed Killers". The communication informs Mr. Cecil that workers in the Bucaramanga area have suffered severe reactions after using Diamond's 2,4-D and 2,4,5-T products.

Exhibit #P0212

PIN # DS00019524
Date 11-Apr-63
Author R A GUIDI
Addressee WILKERSON & BROWN
MCBURNEY
Description Memo dated April 11, 1963 from R. A. Guidi to M. F. Wilkerson reporting on a visit of Drs. Key and Birmingham to Newark. Memo encloses a copy of a report from McBurney to Jarvis previously prepared. Guidi reports that two men are to be admitted to Beth Israel Hospital for further tests, "with specific emphasis on the kidneys and liver."

Exhibit #P0222

PIN # DS00017940
Date 02-May-63
Author R J MARRESE
Addressee GUIDI R A & KING, J. O.
CHANDLER E. L. & L L CECIL
Description Confidential Memorandum dated May 2, 1963 from R. J. Marrese to Larry L. Cecil arguing that the Quimor incident did not involve a product quality question as much as a personal hygiene factor.

Exhibit #P0223

PIN # DS00017939
Date 08-May-63
Author L L CECIL
Addressee CLAGHORN & CREAMER
KNOBLOCK & CLAIR

Description Memorandum dated May 8, 1963 from L. L. Cecil to D. A . Claghorn, Herbicides, Columbia, forwarding materials for confidential consideration.

Exhibit #P0227

PIN # DS00019506
Date 20-May-63
Author JACOB BLEIBERG
Addressee GUIDI & DIAMOND
NEWARK

Description Letter from Dr. Jacob Bleiberg to Guidi at Shamrock reporting findings of liver damage among plant workers in Newark. The letter suggests the source of the problem is the old factory building.

Exhibit #P0229

PIN # DS00019523
Date 31-May-63
Author R A GUIDI
Addressee MC BURNEY & BROWN
CORT

Description MEMO OF FINAL HOSPITAL REPORT RE: 2 CASES

Exhibit #P0230

PIN # DS00019518
Date 07-Jun-63
Author R W MCBURNEY
Addressee GUIDI & BROWN
CORT

Description Memorandum dated June 7, 1963 from Dr. McBurney to Mr. Guidi advising that workers affected by plant contamination no longer should be hospitalized since there is no treatment that can really help them, apart from removal from the contamination. Dr. McBurney opinions that the company's

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decision to renovate the old building will go far toward solving this problem.

Exhibit #P0231

PIN # DS 19520
Date 10-Jun-63
Author R A GUIDI
Addressee DR. R. MC BURNEY & C.R. BROWN
J. S. CORT, JR. & F. R. KENNEDY

Description I-O MEMO SUBJECT CHLORACNE - MEDICAL REPTS ON AN UNK.

Exhibit #P0247

PIN # DS00017393
Date 14-Aug-63
Author R W MCBURNEY
Addressee GUIDI & BROWN
JARVIS

Description Letter from Richard W. McBurney MD dated August 14, 1963 to Raymond A. Guidi recommending a urine test for persons affected by chloracne.

Exhibit #P0248

PIN # DS00017392
Date 01-Oct-63
Author J CORT
Addressee KENNEDY

Description Memo from J. S. Cort, Jr. to F. R. Kennedy, dated October 1, 1963 asking if urine tests had been started.

Exhibit #P0255

PIN # DS00017390
Date 25-Nov-63
Author F R KENNEDY
Addressee CORT

Description Memorandum dated November 25, 1963 from F. R. Kennedy to J. S. Cort, Jr. in Cleveland sending a copy of the notice that was posted telling the employees they were all

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going to be given urine checks.

Exhibit #P0272

PIN # DS00019479
Date 05-Mar-64
Author J S JR CORT
Addressee MCBURNEY RICHARD & MASEK E J

Description Memorandum dated March 5, 1964 from J.S. Cort, Jr. to Dr. Richard McBurney (cc. to Masek-legal) asking whether a purchaser of raw TCP should be warned of health hazards.

Exhibit #P0273

PIN # DS00019480
Date 06-Mar-64
Author RICHARD W MCBURNEY
Addressee CORT & MASEK

Description Internal Memorandum dated March 6, 1964 from Dr. Richard W. McBurney, M.D. to J. S. Cort, Jr., stating that TCP is a definite chloracne hazard to workers. It states that the customer may or may not be aware of this, and defers to the legal department (Mr. Masek) the issue of what duty there is to tell them. 1, 11, but suggests that the obligation exists anyway. Responds to a memorandum of March 65, 1964

Exhibit #P0275

PIN # DS00017895
Date 17-Mar-64
Author S B HONOUR
Addressee QUIMOR LTDS & CORT
GILES & PURDY

Description Letter dated March March 17, 1964 from S. B. Honour to Guillermo Leon R. at Quimor acknowledging receipt of his letter of March 2d and saying that tests show that the samples of the product being questioned are identical to other batches of Diamond's product. Nonetheless, the letter

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says that the matter has been turned over to Diamond's insurance representative and that it has also agreed to take back all questioned product provided its drums are in marketable condition.

Exhibit #P0276

PIN # DS00017893
Date 18-Mar-64
Author LEX CREAMER
Addressee DIAMOND ALKALI & NEW YORK

Description Memorandum dated March 18, 1964 from Lex Creamer to "New York" reporting on 2,4,5-T outbreaks in Bucaramangea, Cali and Medellin, and describing the severity of those outbreaks. States that distributor, Quimor, is in joeopardy because of bad publicity.

Exhibit #P0277

PIN # DS L7890
Date 20-Mar-64
Author S B HONOUR
Addressee JOHN BINGHAM, V P & QUIMOR LTDA

Description LETTER RECOMMENDING BINGHAM ACT AS CONSULTANT & CONTACT DR. DIAZ.

Exhibit #P0278

PIN # DS00017888
Date 23-Mar-64
Author UNKNOWN
Addressee CECIL

Description Letter dated March 23, 1964 (incomplete) from Alexander & Alexander, insurance brokers, to Lawrence Cecil, Jr., Sales Manager, Agricultural Chemicals, Diamond Alkali Company, advising that American Foreign Insurance Association had given assurances to their Bogota representative that matters were in hand, and assuring Diamond that instructions had been given to keep the identity of the American manufacturer a secret.

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Exhibit #P0279

PIN # 17888
Date 23-Mar-64
Author C W GILES
Addressee LAWRENCE L. CECIL & D. M. PURDY
DIAMOND ALKALI
Description LETTER REGARDING DIAMOND'S PRODUCT LIAB.
INSURANCE

Exhibit #P0280

PIN # 19474
Date 23-Mar-64
Author J S JR CORT
Addressee J.A. FLOBECK & F.R. KENNEDY
R. W. MC BURNEY & E. J. MASEK
Description REGULATIONS RE HANDLING TRICHLOROPHENOL OR
ITS SODIUM SALT.

Exhibit #P0281

PIN # DS00017865
Date 25-Mar-64
Author C W GILES
Addressee CECIL LAWRENCE & PURDY D M
DIAMOND ALKALI
Description Letter dated March 25, 1964 from C. W. Giles, Asst. Vice President, Alexander & Alexander, to Lawrence L. Cecil, Jr., Sales Manager for Agricultural chemicals at Diamond Alkali reporting a request from American Foreign's Mr. George W. Arenas that the sample from "assurd's distributor" be tested by an independent laboratory.

Exhibit #P0282

PIN # 117865
Date 25-Mar-64
Author C W GILES
Addressee LAWRENCE L. CECIL & SALES MANAGER
AGRICULTURAL CHEM. & DIAMOND ALKALI

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Description SIGNED COPY OF LTR 3/25/64 RE PROD LIAB
INS8

Exhibit #P0284

PIN # DS00017885
Date 08-Apr-64
Author L L CECIL
Addressee CORT & KENNEDY ✓

Description Confidential Memorandum dated April 8, 1964 from L. L. Cecil, Jr., to J. Cort in Cleveland and referring to Mr. Kennedy's letter of March 31. The Memo states that the Kennedy letter is possibly incorrect because no "formal" complaints were ever filed and investigated. States, however, that "we feel obligated" to tell you that Lex Creamer has advised "by way of conversation" that there are more problems, especially in El Salvador.

Exhibit #P0285

PIN # DS17885Y
Date 08-Apr-64
Author L L CECIL, JR
Addressee J. CORT & F R KENNEDY

Description UNSIGNED COPY OF MEMO DATED 4/8/64 BY CECIL TO CORT.

Exhibit #P0287

PIN # DS00017881
Date 20-Apr-64
Author L L CECIL
Addressee QUIMOR LTDA & CORT
ALEXANDER & A

Description Letter dated April 20, 1964 from L. L. Cecil, Manager, Agricultural Chemicals, to Quimor, Ltda. [Attn: Guillermo] authorizing return of 1,725 gallons of weedkiller from Columbia and \$907.12. Requests expedited handling.

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UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

-----x
In re :
"AGENT ORANGE" :
Product Liability Litigation :
-----x

FILED
IN CLERK'S OFFICE
U. S. DISTRICT COURT E.D.
381
MAY 11 1984
TIME A.M. P.M.
123
[Signature]

DEFENDANT DIAMOND SHAMROCK
CHEMICALS COMPANY'S SUPPLEMENTAL
LISTING OF FACT WITNESSES

Pursuant to Magistrate's Pretrial Order No. 16 and to Magistrate's directions at the March 7, 1984 pretrial conference, defendant Diamond Shamrock Chemicals Company ("Diamond Shamrock") sets forth below its list of fact witnesses who may give testimony at trial in support of Diamond Shamrock's claims and defenses. Diamond Shamrock also joins in Defendants' List of Fact Witnesses dated March 26, 1984, which is being served and filed under separate cover.

Diamond Shamrock reserves the right to supplement and amend this list based on information developed in continuing discovery proceedings or other trial preparations, and to call as a live witness or use the deposition testimony of any person listed by any other party. Diamond Shamrock also reserves the right to supplement and amend this list in the "witness lists" section of the pretrial order following receipt and review of plaintiffs' final fact witness list, now due on March 27, 1984.

15301
223/

Name and
Present Address

Description of General
Nature of Testimony

Louis Anderson
220 E. 17th Street
Chicago Heights, Illinois 60411

Testimony concerning purchases by Riverdale Chemical Company of 2,4,5-T acids and esters supplied by Diamond Shamrock.

Eugene Bak *

Dr. Donald J. Birmingham*
19811 Wedgewood Drive
Gross Point Woods, Michigan

Testimony concerning research and investigation of chloracne by U.S. Public Health Service in the 1950's and 1960's, including visits to Diamond Shamrock's former Newark plant.

Jack A. Borrer *

Dr. Roger H. Brodtkin
769 Northfield Avenue
West Orange, New Jersey 07052

Testimony concerning medical conditions at the Newark plant, including: communications with and investigations by the U.S. Public Health Service; and preparation and publication of the article by Bleiberg, et al. (1964).

Lawrence L. Cecil, Jr.
12825 S.W. 69 Court
Miami, Florida 33156

Testimony concerning foreign sales of Diamond Shamrock's 2,4,5-T products, including sales in Colombia.

Edward L. Chandler *

Robert L. Chonoles*
Diamond Shamrock Chemicals
Company
Berry Avenue at Route 17 North
Carlstadt, New Jersey 07072

Testimony concerning manufacturing operations at Diamond Shamrock's former Newark plant, including: the removal of dioxin from trichlorophenol; and the U.S. Public Health Service study of the Newark workers in 1968-69.

Howard E. Everson *

Raymond A. Guidi *

Alfred M. Hauser
Diamond Shamrock Chemicals
Company
Berry Avenue at Route 17 North
Carlstadt, New Jersey 07072

Testimony concerning Diamond Shamrock's contractual arrangements with the United States for the sale of Agent Orange.

* Witnesses designated by an asterisk (*) have been deposed in MDL No. 381.

Name and
Present Address

Description of General
Nature of Testimony

Melvin Hochberg*

Stanley B. Honour*
829 Eggleston
Fort Collins, Colorado 80524

Testimony concerning foreign sales of Diamond Shamrock's 2,4,5-T products, including sales in Colombia.

Francis R. Kennedy*
2711 Bernadette Lane
Houston, Texas 77043

Testimony concerning manufacturing operations at Diamond Shamrock's former Newark plant, including: the development, installation and operation of a method for removing dioxin from trichlorophenol; visits to the Newark plant by the U.S. Public Health Service in the 1960's; and the production and shipment of Agent Orange pursuant to contracts with the United States.

Dr. Marcus M. Key*
University of Texas Health
Science Center
P.O. Box 20186
Houston, Texas 77025

Testimony concerning research and investigation of chloracne by U.S. Public Health Service in the 1960's, including visit to Diamond Shamrock's former Newark plant.

James O. King*
P.O. Box 900
Alpharetta, Georgia

Testimony concerning domestic and foreign sales of Diamond Shamrock's 2,4,5-T products, including sales of Agent Orange pursuant to contracts with the United States.

Jane Lewis*
5125 Temple Hills Road
Temple Hills, Maryland 20748

Testimony concerning the procurement and production of Agent Orange pursuant to the Defense Production Act, including directives and priority ratings issued by the United States.

Richard J. Marrese*

Dr. Richard W. McBurney
315 Steeple Chase Drive
Irving, Texas 75062

Testimony concerning medical conditions at the Newark plant, including communications with U.S. Public Health Service and with treating physicians at Newark.

Name and
Present Address

Dr. Alan P. Poland*
2918 Nottingham Way
Madison, Wisconsin

Dr. Paul A. Possick*
46 Winding Way
Woodcliff Lake, New Jersey

Donald M. Purdy*

F. Gordon Steward*
Diamond Shamrock Agricultural
Chemicals Inc.
P.O. Box H
Tuscaloosa, Alabama 35404

Description of General
Nature of Testimony

Testimony concerning medical study of the workers at Diamond Shamrock's former Newark plant in 1968-69, and research and investigation of trichlorophenol, 2,4,5-T and dioxin at National Communicable Disease Center in the 1960's.

Testimony concerning medical study of the workers at Diamond Shamrock's former Newark plant in 1968-69.

Testimony concerning manufacturing operations at Diamond Shamrock's former Newark plant, including: the development, installation and operation of a method for removing dioxin from trichlorophenol; the U.S. Public Health Service study of the Newark workers in 1968-69; and the production and shipment of Agent Orange pursuant to contracts with the United States.

Dated: New York, New York
March 26, 1984

Respectfully submitted,

CADWALADER, WICKERSHAM & TAFT

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A Member of the Firm *Wendell B. Alcorn, Jr.*
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Arvin Maskin
Department of Justice
(for THIRD PARTY DEFENDANT USA)
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L. Kevin Sheridan
Executive Assistant
U.S. Attorney
Eastern District of New York
United States Courthouse
225 Cadman Plaza East
Brooklyn, New York 11201

COPIES OF ALL DOCUMENTS MUST
BE SENT TO:

Clerk of the Panel
Judicial Panel on Multidistrict
Litigation
1120 Vermont Avenue, N.W.
Suite 1002
Washington, D.C. 20005

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Agent Orange Plaintiffs'
Management Committee
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Brooklyn, N.Y. 11242

15306

Original

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

-----X
IN RE :
"AGENT ORANGE" :
PRODUCT LIABILITY LITIGATION :
-----X

MDL No. 381
(All Cases)

FILED
IN CLERK'S OFFICE
U. S. DISTRICT COURT E.D. N.Y.
JUL 7 1984
TIME AM. PM.
UP

SECOND LIST OF MONSANTO FACT WITNESSES

TOWNLEY & UPDIKE

CHRYSLER BUILDING
405 LEXINGTON AVENUE
NEW YORK, N. Y. 10174

TELEPHONE

15307

2247

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

-----X
IN RE : MDL No. 381
 : (All Cases)
 "AGENT ORANGE" :
 PRODUCT LIABILITY LITIGATION :
-----X

SECOND LIST OF MONSANTO FACT WITNESSES

Defendant Monsanto Company ("Monsanto"), pursuant to the schedule established by Magistrate Scheindlin, hereby submits a second list of fact witnesses who might give testimony at trial in support of Monsanto's claims. This list supplements the First List of Monsanto Fact Witnesses Identified Pursuant to Order of the Court Dated January 10, 1984, which was served on February 29, 1984.

Monsanto reserves the right to amend the descriptions that follow of the general nature of the testimony to be given, should Monsanto's continuing trial preparation indicate any such amendment is appropriate.

1. Richard A. Atkinson.

4242 Kanawha Turnpike
South Charleston, West Virginia

Monsanto's production of 2,4,5-T in the 1960's;
Monsanto's efforts to reduce worker exposure to its
2,4,5-T process; Monsanto's efforts to reduce or to
remove dioxin in its 2,4,5-T process; the health
experience of Monsanto workers involved in the 2,4,5-T
process.

2. Philip B. Balderson.

101 Stewart Park
Cross Lanes, West Virginia

Monsanto's analytic efforts to detect and to measure the presence of dioxin in its 2,4,5-T.

3. Robert Baynard.

231 Jeffrey Lane
Newton Square, Pennsylvania

The marketing and sale of herbicides containing Monsanto-manufactured 2,4,5-T, both to the United States Government and to commercial customers; the health experience of persons who used or were otherwise exposed to herbicides containing 2,4,5-T.

4. Stanley C. Beach.

760 Sotano Drive
Sacramento, California 95833

The methods and procedures used to aerially disseminate herbicides in Vietnam; the duties and responsibilities of a flight mechanic of a C-123 airplane during herbicide operations in Vietnam; the health experience of persons in Vietnam who used or were otherwise exposed to herbicides containing 2,4,5-T.

5. Donald J. Birmingham.

19811 Wedgewood Drive
Gross Point Woods, Michigan

The United States Government's investigation of the health experience of Monsanto workers involved in the 2,4,5-T process in the 1950's and/or exposed to the materials formed during a runaway reaction in the manufacture of sodium trichlorophenate at Monsanto's Nitro, West Virginia plant in 1949.

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6. Russell Bishop.

Ambler, Pennsylvania

The health experience of commercial formulators of 2,4,5-T produced by Monsanto.

7. Carl D. Bohl.

455 Wildwood Parkway
Ballwin, Missouri

The historical knowledge of the toxicity of herbicides containing 2,4,5-T and the toxicity of dioxin; the health experience of Monsanto workers involved in the 2,4,5-T process; Monsanto's efforts to reduce or to remove dioxin from its 2,4,5-T process and to reduce worker exposure to that process.

8. John S. Bush, Jr.

2232 North Military Road
Arlington, Virginia

Monsanto's contracts with the United States Government for the production of Agent Orange and other military herbicides; the Government's plan to build and to operate an Agent Orange plant at Weldon Spring, Missouri.

9. Robert E. Cox.

203 East Belerest Road
Bel Air, Maryland

Visit to Monsanto's Nitro plant in connection with the proposed manufacture of Agent Orange by the United States Government.

10. Eugene A. Cutright.

1474 Maplewood Drive
Macon, Georgia

Monsanto's production of 2,4,5-T in the 1960's; Monsanto's efforts to reduce worker exposure to its

2,4,5-T process; Monsanto's efforts to reduce or to remove dioxin in its 2,4,5-T process; the health experience of Monsanto workers involved in the 2,4,5-T process.

11. Burnie R. Dallas, Jr.

1775 East 20th Street
Apt. D-8
San Bernardino, California

The methods and procedures used to aeri-ally disseminate herbicides in Vietnam; the duties and responsibilities of a flight engineer of a C-123 airplane during herbicide operations in Vietnam; the health experience of persons in Vietnam who used or were otherwise exposed to herbicides containing 2,4,5-T.

12. Stewart D. Daniels.

Monsanto Singapore Co. PTE Ltd.
2601-2606 Clifford Center
Raffles Place
Singapore

The manufacture, marketing, and sale of herbicides containing 2,4,5-T, both to the United States Government and to commercial customers; the health experience of persons who used or were otherwise exposed to those herbicides.

13. Robert A. Darrow.

7613 Baltimore National Pike
Frederick, Maryland

The United States Government's development, testing, and use of Agent Orange; the Government's specifications for Agent Orange.

14. Robert Dennis.

Route 6, Box 302
Yakima, Washington

The methods and procedures used to aeri-ally disseminate herbicides in Vietnam; the duties and

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responsibilities of a pilot of a C-123 airplane during herbicide operations in Vietnam; the health experience of persons in Vietnam who used or were otherwise exposed to herbicides containing 2,4,5-T.

15. Jon R. Dudenhoeffer.

5639 King Road
Erie, Pennsylvania

The methods and procedures used to aerially disseminate herbicides in Vietnam; the duties and responsibilities of a navigator of a C-123 airplane during herbicide operations in Vietnam; the duties and responsibilities of a targeting officer for herbicide operations in Vietnam; the health experience of persons in Vietnam who used or were otherwise exposed to herbicides containing 2,4,5-T.

16. Jack D. Early.

8024 Lakenheath Way
Potomac, Maryland

Monsanto's contacts with the United States Government in the 1960's regarding pesticide regulation; the activities of the National Agricultural Chemicals Association.

17. Henry Good.

The methods and procedures used to aerially disseminate herbicides in Vietnam; the duties and responsibilities of a pilot of a C-123 airplane during herbicide operations in Vietnam; the duties and responsibilities of a targeting officer for herbicide operations in Vietnam; the health experience of persons in Vietnam who used or were otherwise exposed to herbicides containing 2,4,5-T.

18. Paul D. Halley.

The involvement of the West Virginia occupational health authorities in an investigation of the runaway reaction that occurred in 1949 during the manufacture

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of sodium trichlorophenate at Monsanto's Nitro, West Virginia plant, including efforts to identify and to determine the toxicity of materials formed during that reaction; the health experience of Monsanto workers exposed to those materials and/or the 2,4,5-T process in the 1950's.

19. Frank Helmer.

2825 Flammwood Drive
St. Louis, Missouri

Monsanto's manufacture of 2,4,5-T at its Nitro, West Virginia plant; improvements in Monsanto's manufacturing process for 2,4,5-T.

20. Paul F. Hoffman.

1202 Lakeshore Drive North
Barrington, Illinois

Monsanto's marketing and sale of herbicides containing 2,4,5-T in the 1960's, both to commercial customers and to the United States Government; the health experience of persons who used or were otherwise exposed to herbicides containing 2,4,5-T.

21. Charlie Hubbs.

Camp Springs, Maryland

The methods and procedures used to aeriually disseminate herbicides in Vietnam; the duties and responsibilities of a pilot of a C-123 airplane during herbicide operations in Vietnam; the health experience of persons in Vietnam who used or were otherwise exposed to herbicides containing 2,4,5-T.

22. Allan M. Jokela.

1511 North Rock 38th Road
Rock, Michigan

The methods and procedures used to aeriually disseminate herbicides in Vietnam; the duties and

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