

Depo of R. Emmet Kelly MONSANTO V AETNA January 27, 1993 Cr.54223.0

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CONDENSED TRANSCRIPT & CONCORDANCE
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[1] IN THE SUPERIOR COURT
 [2] OF THE STATE OF DELAWARE
 [3] IN AND FOR NEW CASTLE COUNTY
 [4] -----x
 [5] MONSANTO COMPANY, :
 [6] Plaintiff, :
 [7] : Civil Action Number
 [8] v. : 88C-JA-118-1-CV
 [9] AETNA CASUALTY & SURETY COMPANY, :

NON-ARBITRATION

[10] et al., : CASE
 [11] Defendants. :
 [12] -----x
 [13] DEPOSITION OF R. EMMET KELLY
 [14] Wilmington, Delaware
 [15] Wednesday, January 27, 1993
 [16] Deposition of R. EMMET KELLY, called for examination
 [17] pursuant to notice of deposition, at the law offices of
 [18] Duane, Morris and Heckscher, 1201 Market Street, Fifteenth
 [19] Floor, at 10:05 a.m. before JULIE BAKER, a Notary Public
 [20] within and for the District of Columbia, when were present
 [21] on behalf of the respective parties:
 [22] - continued -

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[1] APPEARANCES:
 [2] JOHN M. BRAY, ESQ.
 [3] Schwalb, Donnenfeld, Bray
 [4] & Silbert
 [5] 1025 Thomas Jefferson Street, N.W.
 [6] Suite 300
 [7] Washington, D. C. 20007
 [8] On behalf of Plaintiff Monsanto
 [9] Company.
 [10] DAVID S. FLORIG, ESQ.
 [11] Manta and Welge
 [12] One Commerce Square
 [13] Thirty-Seventh Floor
 [14] 2005 Market Street
 [15] Philadelphia, Pennsylvania 19103
 [16] On behalf of Liberty Mutual
 [17] Insurance Company.
 [18] RICHARD L. McCONNELL, JR., ESQ.
 [19] Wiley, Rein & Fielding
 [20] 1776 K Street, N.W.
 [21] Washington, D. C. 20006
 [22] On behalf of The Travelers
 Indemnity Company.

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[1] C O N T E N T S
 [2] WITNESS EXAMINATION
 [3] R. Emmet Kelly
 [4] by Mr. McConnell 4
 [5] E X H I B I T S
 [6] KELLY DEPOSITION NUMBER IDENTIFIED
 [7] Exhibit 1 - 11/11/54 Meeting minutes 26
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 [14] Exhibit 8 - March 1963 Report on cancer and
 [15] chemical structure by Jack Garrett 106
 [16] Exhibit 9 - 6/30/54 Memo 115
 [17] Exhibit 10 - Article 123
 [18] Exhibit 11 - 10/9/48 Letter 131
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 [21] Exhibit 14 - 2/25/58 Memo 144
 [22] Exhibit 15 - Excerpt 147
 [23] Exhibit 16 - 9/18/59 Letter 153
 [24] Exhibit 17 - 7/25/47 Memo 158
 [25] Exhibit 18 - 5/20/46 Memo 161
 [26] Exhibit 19 - 12/8/58 Letter 164
 [27] Exhibit 20 - 1/19/59 Memo 166

[18] Exhibit 21 - 5/29/58 Memo 169
 [19] Exhibit 22 - 6/2/58 Memo 173
 [20] Exhibit 23 - 3/4/64 Memo 179
 [21] Exhibit 24 - 3/10/64 Letter 180
 [22] Exhibit 25 - 6/11/58 Letter 183

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[1] P R O C E E D I N G S
 [2] Whereupon,
 [3] R. EMMET KELLY
 [4] was called as a witness and, having first been duly sworn.
 [5] was examined and testified as follows:
 [6] THE WITNESS: By the way, I have somewhat of a
 [7] hearing impairment so I may ask you at times to speak a
 [8] little louder.
 [9] MR. MC CONNELL: If you will do that, I'll try
 [10] to speak up and if you have any trouble hearing me, sir,
 [11] I'd appreciate it if you'd let me know.
 [12] THE WITNESS: I shall.
 [13] EXAMINATION
 [14] BY MR. MC CONNELL:
 [15] Q Would you state your full name, please.
 [16] A R., for Robert, Emmet Kelly.
 [17] Q And where do you live, sir?
 [18] A St. Louis, Missouri, 665 South Skinker,
 [19] S-k-i-n-k-e-r, 63105.
 [20] Q And how long have you lived at that address.
 [21] sir?
 [22] A 18 years, 20 years.

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[1] MR. MC CONNELL: Off the record.
 [2] (Discussion off the record.)
 [3] BY MR. MC CONNELL:
 [4] Q Dr. Kelly, my name is Dick McConnell. I'm one
 [5] of the attorneys for The Travelers Indemnity Company in
 [6] this case. I'd like to make sure we understand each other
 [7] today and so if at any time there's any confusion in your
 [8] mind about my question, please let me know and I'll be
 [9] glad to clear it up for you. Is that all right, sir?
 [10] A Thank you. Yes, sir.
 [11] Q Are you being represented by counsel in this
 [12] deposition, Dr. Kelly?
 [13] A Yes, I am.
 [14] Q And who is that counsel, sir?
 [15] A Mr. Bray.
 [16] Q Do you understand that he's one of the attorneys
 [17] for Monsanto in this case?
 [18] A Yes, I do.
 [19] Q Who is paying Mr. Bray's legal fees in
 [20] connection with this deposition, Dr. Kelly?
 [21] MR. BRAY: I object to that.
 [22] THE WITNESS: I don't know. It's not I.

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[1] though. I'm not paying it.
 [2] BY MR. MC CONNELL:
 [3] Q You're not paying any legal fees to Mr. Bray?
 [4] MR. BRAY: Same objection.
 [5] THE WITNESS: That is correct.
 [6] BY MR. MC CONNELL:
 [7] Q Do you know whether Monsanto is paying his fees.
 [8] sir?
 [9] MR. BRAY: Same objection.
 [10] THE WITNESS: I don't know.
 [11] BY MR. MC CONNELL:
 [12] Q Did you do anything to prepare for this
 [13] deposition, Dr. Kelly?
 [14] A I talked with Mr. Bray yesterday.
 [15] Q For about how long, sir?
 [16] A Five hours.
 [17] Q Where did that meeting take place?
 [18] A In Washington at their -
 [19] Q Was it Mr. Bray's office?
 [20] A Mr. Bray's office.
 [21] Q Was there anyone else present at that meeting?
 [22] A No, sir. People dropped in, secretaries dropped

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[1] in with various messages but no other legal people were

[2] there.
 [3] Q Did you review any documents in that meeting?
 [4] A I beg your pardon?
 [5] Q Did you review any documents in that meeting?
 [6] A No, sir. We discussed some. I didn't read them
 [7] or analyze them.
 [8] Q Did you have them on the table where you could
 [9] see them?
 [10] A Some, yes, sir.
 [11] Q Did you read portions of them?
 [12] A Yes, sir.
 [13] Q Did Mr. Bray direct your attention to portions
 [14] of them?
 [15] A Yes, sir.
 [16] Q Did you bring any of the documents with you or
 [17] were they provided by Mr. Bray?
 [18] A Provided by Mr. Bray. I brought none today and
 [19] none yesterday. Is that what you meant? Did I bring any
 [20] with me? I brought none this morning and I brought none
 [21] yesterday.
 [22] Q Any documents that you reviewed yesterday were

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[1] documents that Mr. Bray provided?
 [2] A That is correct.
 [3] Q Have you had any other meetings with any of
 [4] Monsanto's attorneys in connection with this case?
 [5] A Yes, with Mr. Snively.
 [6] Q And Mr. Snively is a lawyer in Monsanto's law
 [7] department?
 [8] A That's correct. I think he also represents me
 [9] in this case.
 [10] Q Mr. Snively is representing you in this case, in
 [11] connection with this case along with Mr. Bray?
 [12] A That's correct.
 [13] Q On how many occasions have you met with
 [14] Mr. Snively?
 [15] A With regard to this case?
 [16] Q Yes, sir.
 [17] A Twice.
 [18] Q When did those meetings take place, sir?
 [19] A Within the last four weeks.
 [20] Q Were those also meetings to prepare for this
 [21] deposition?
 [22] A Yes, sir.

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[1] Q When did the first meeting with Mr. Snively take
 [2] place, Dr. Kelly?
 [3] A Gosh, I can't tell you the exact date. I have
 [4] it in my diary at home but not with me. But it was within
 [5] the last four weeks, I think.
 [6] Q How long did you meet with Mr. Snively on that
 [7] occasion?
 [8] A About four hours one day and about five hours
 [9] the next day.
 [10] Q When was the next meeting with Mr. Snively, sir?
 [11] A About a week after the first one, so that would
 [12] be three weeks ago.
 [13] Q And how long did you meet with Mr. Snively on
 [14] that occasion?
 [15] A Again, four or five hours.
 [16] Q So you actually met with Mr. Snively on three
 [17] separate days?
 [18] A Two separate days.
 [19] Q Two separate days?
 [20] A That's correct.
 [21] Q And four to five hours on each day?
 [22] A That's correct.

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[1] Q Have you had any other meetings, Dr. Kelly, with
 [2] any of Monsanto's other attorneys in connection with this
 [3] case?
 [4] A Not that I recall.
 [5] Q When you met with Mr. Snively, did you review
 [6] any documents with him?
 [7] A No, sir, I don't think so. I think he just gave
 [8] me the details of the litigation.

[9] Q Let me ask you about your education, Dr. Kelly.
 [10] Where did you attend college, sir?
 [11] A St. Louis University.
 [12] Q What was your degree in?
 [13] A Bachelor of science in medicine in 1930 and the
 [14] MD degree from the same institution in 1932.
 [15] Q So you attended medical school at the same
 [16] university in St. Louis?
 [17] A That's correct.
 [18] Q And you received your MD degree in 1932?
 [19] A Yes, sir.
 [20] Q Did you have any other formal education after
 [21] that point?
 [22] A Yes. Well, I had three years training at

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[1] St. Louis City Hospital. I've had various short
 [2] postgraduate courses at various medical schools. They
 [3] were one or two weeks longer. If that's what you mean by
 [4] formal education.
 [5] Q The three years at the St. Louis Hospital, was
 [6] that the normal residency and internship that doctors do
 [7] after medical school?
 [8] A Yes, sir.
 [9] Q The postgraduate courses didn't lead to a
 [10] degree?
 [11] A I beg your pardon? No. It did not.
 [12] Q Where were you employed after medical school,
 [13] Dr. Kelly, after you became a fully licensed practicing
 [14] physician?
 [15] A Well, I was employed at City Hospital for three
 [16] years. After I left City Hospital, I was in private
 [17] practice for about six months, and then I became employed
 [18] by the Monsanto Company as a physician on a part-time
 [19] basis until I went in the service. And after I left the
 [20] service in 1946, I came back to Monsanto in a full-time
 [21] geographical position.
 [22] Q Let me go back to your private practice in the

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[1] six months after your internship. Did you specialize in
 [2] any particular area?
 [3] A No, sir. This was in 1932 or '35 after the
 [4] hospital - there was a depression and I don't think there
 [5] was much specialization.
 [6] Q You were a general practitioner?
 [7] A That's correct. Although I was trained as an
 [8] internist, it was very much a general type of practice.
 [9] Q Did you begin the part-time work as a plant
 [10] physician for Monsanto in 1936? Did I hear that
 [11] correctly?
 [12] A Yes, sir.
 [13] Q Did you continue to have a private practice on
 [14] the side at that time?
 [15] A Yes.
 [16] Q About how much of your time was spent as a plant
 [17] physician at that time?
 [18] A 35 to 40 percent.
 [19] Q Was there a particular plant you were assigned
 [20] to?
 [21] A Yes. The plant they called the Queeny Plant,
 [22] which was called Plant A at that time and it was changed

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[1] to the Queeny Plant. It was located in St. Louis.
 [2] Q Was that a plant owned by Monsanto?
 [3] A Yes.
 [4] Q Did you serve as a plant physician at any other
 [5] Monsanto plant at any time?
 [6] A Did I what?
 [7] Q Was the Queeny Plant the only plant at which you
 [8] served as a plant physician for Monsanto?
 [9] A On a regular basis that was the only one, but
 [10] after I had been with the company for a period of months,
 [11] I was given responsibilities to look over problems that
 [12] might have arisen or existed at other plants in the
 [13] company and it turned out that I was sort of a medical
 [14] director without portfolio. I had the job of looking over
 [15] their medical organizations or addressing myself to any of

[16] their medical problems that arose, but I didn't have any
[17] direct responsibility for it.
[18] Q What other plants did you work with in that sort
[19] of irregular capacity, if I can call it that?
[20] A Well, it all depends on what time frame you're
[21] talking about. The years from 1936 to '41, when I went in
[22] the service, '42, I saw most of the plants in the United

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[1] States. I would say we had about 10 plants around the
[2] country at that time, but I would see them on various
[3] occasions. Some plants I would see often. Some plants I
[4] would not see at all.
[5] Q During that period you're talking about, 1936 to
[6] 1942, did you have a chance to visit all of the Monsanto
[7] plants that existed at that time?
[8] A I believe so in the United States and Canada. I
[9] did not see any of the ex-U.S.A. plants outside of Canada.
[10] Q Can you remember what plants you visited during
[11] those years, Dr. Kelly?
[12] A The Carondelet, C-a-r-o-n-d-o-l-e-t, plant.
[13] Q Where is that plant?
[14] A South St. Louis. It's a suburb of St. Louis.
[15] The East St. Louis plant, which was called Plant B; Nitro,
[16] West Virginia; Norfolk, Virginia; Merrimac,
[17] M-e-r-r-i-m-a-c, Massachusetts; and Springfield,
[18] Massachusetts.
[19] Q Were there also plants in Canada that you
[20] visited?
[21] A Yes. One in Montreal, outside of Montreal and
[22] one outside of Toronto.

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[1] Q The plant that you referred to as the East
[2] St. Louis plant or Plant B, is that also known as the
[3] Krummrich plant?
[4] A Later on it was called the Krummrich plant,
[5] K-r-u-m-m-r-i-c-h.
[6] Q And can you remember any others beyond the ones
[7] you've named?
[8] MR. BRAY: Others that he visited during that
[9] period?
[10] MR. MC CONNELL: Right.
[11] THE WITNESS: We had some plants on the West
[12] Coast, small plywood glue plants and I don't know whether
[13] I saw that before the war or afterwards. I don't know
[14] when we acquired those plants. I just don't know whether
[15] that was before 1942 or the early days after 1946.
[16] BY MR. MC CONNELL:
[17] Q You visited those West Coast plants at some
[18] point, but you just can't remember whether it was before
[19] or after the war?
[20] A That's correct.
[21] Q How often did you visit the various plants we've
[22] been talking about in the time frame 1936 to 1942?

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[1] A Probably once a year with the exception of -
[2] Columbia, Tennessee was another plant that we had.
[3] Wherever we had problems or potential problems or we were
[4] having a new operation at one of our plants, I might visit
[5] that often or once a year. But I would say on the
[6] average, once or twice a year, but more closely to once.
[7] Q What types of problems did you encounter during
[8] those years, Dr. Kelly?
[9] A Well, at the Columbia, Tennessee, we were
[10] starting a plant making elemental phosphorus and we were
[11] using German technology and they advised about what they
[12] thought should be done on monitoring the individuals. And
[13] I would go down to see if this was a feasible option and
[14] it really wasn't a problem, it was a potential problem.
[15] And other plants, there may have been requests from some
[16] of the employees that were affected on the health, some of
[17] these products capable of causing - that I would go down
[18] and examine their exposure and talk to the groups. So
[19] that's the type of problem.
[20] Q Would it be fair to say you were concerned about
[21] the toxicity of the chemicals that were being used at the
[22] plants?

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[1] A Well, no, I wasn't concerned about the toxicity
[2] because we knew industrial chemicals have a certain amount
[3] of toxicity, but I was concerned we were not giving them
[4] any harmful exposure, give the workers any harmful
[5] exposure.
[6] Q So you knew back in the 1930s and early 1940s
[7] that many of the industrial chemicals that were being used
[8] at these plants were toxic?
[9] A Well, "toxic" is a relative term. They had a
[10] certain amount of toxicity but at the extent that the
[11] exposure was such that there was no hazards to the workers
[12] in our operation.
[13] Q It was part of your job to make sure that the
[14] workers were not exposed to amounts of those chemicals
[15] that would damage their health?
[16] A That's correct.
[17] Q And you knew at the time that these were toxic
[18] chemicals, that exposure to larger amounts would damage
[19] the workers; is that correct?
[20] MR. BRAY: Object to the generalities of that
[21] question.
[22] THE WITNESS: It all depends on what you mean by

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[1] larger amounts but it certainly was not - so in any
[2] operation, you have to balance the inherent toxicity or
[3] lack of toxicity of the product with the exposure or the
[4] lack of exposure or the amount of exposure that the worker
[5] is exposed to. In other words, no matter how toxic a
[6] compound is, if it's inside a pipe and it stays there, it
[7] isn't going to hurt them. And we had to see if there were
[8] any opportunities for escape of these products.
[9] BY MR. MC CONNELL:
[10] Q And conversely, you knew at the time if some of
[11] these materials escaped from the pipes, they could be
[12] harmful to the workers' health?
[13] A No, not necessarily. It all depends on how much
[14] escapes. If you have a small spill and got it cleaned up
[15] and it washed away, there's no hazards to the worker. But
[16] obviously if there was a very large breakdown under
[17] elevated temperatures, there might be sufficient exposure
[18] that there's a possibility that some injury may occur to
[19] the workers.
[20] Q And there were spills from time to time at the
[21] plants?
[22] A Yes, sir. That varies, of course, but there

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[1] were at times, certainly.
[2] Could I get a glass of water, please?
[3] MR. MC CONNELL: Certainly. Why don't we go off
[4] the record for a minute.
[5] (Discussion off the record.)
[6] BY MR. MC CONNELL:
[7] Q Dr. Kelly, what was your position during World
[8] War II?
[9] A Well, I was a member of the medical corps, and I
[10] was assigned to two chemical warfare installations, one at
[11] Pine Bluff, Arkansas and the other at Edgewood, Maryland.
[12] Q Would you tell us briefly what your job involved
[13] during those years, sir.
[14] A Well, it's really pretty much like the job I had
[15] at the Plant A in St. Louis. When I started, in other
[16] words, I was in charge of the medical department that
[17] watched over the health of the workers making chemicals
[18] ammunitions. They manufactured chlorine phosgene,
[19] phosphorous napalm, n-a-p-a-l-m, mustard gas.
[20] Q All of those materials were chemical warfare
[21] agents?
[22] A Yes.

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[1] Q Would it be fair to say they were highly toxic
[2] materials?
[3] A Not highly toxic in the sense that breathing one
[4] lungful of it would cause a fatality, but they were made
[5] to injure the enemy so I think you could consider them
[6] toxic.

[7] Q Did you return to Monsanto after the war?
 [8] A Yes, I did.
 [9] Q And do you recall what year you went back to
 [10] Monsanto?
 [11] A First months of 1946.
 [12] Q And what position did you hold when you went
 [13] back to Monsanto?
 [14] A Well, it was a new position. It was a central
 [15] staff department called the corporate medical department,
 [16] and I held the title of medical director.
 [17] Q Were you at that time the medical director for
 [18] the entire company, sir?
 [19] A Yes, sir.
 [20] Q You were responsible for medical operations at
 [21] all of the Monsanto plants?
 [22] A With the exception of some foreign subsidiaries,

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[1] such as Japan or Sweden and where we had less than 100
 [2] percent ownership.
 [3] Q Let's restrict it to the operations in the
 [4] United States and Canada. Were you responsible for all
 [5] the medical operations in that area?
 [6] A Yes.
 [7] Q At all of the plants?
 [8] A Yes.
 [9] Q How long did you remain in the position of
 [10] medical director, Dr. Kelly?
 [11] A Until December the 1st, 1974.
 [12] Q And what happened at that point?
 [13] A I hit 65.
 [14] Q And you retired from Monsanto?
 [15] A That's correct.
 [16] Q Did you continue to do any consulting work for
 [17] Monsanto?
 [18] A I did the first year on a regular basis. Since
 [19] then, I've done consulting work on sort of a
 [20] fee-for-service basis.
 [21] Q That has continued right up through today?
 [22] A To today, yes, sir.

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[1] Q Do you have an hourly fee that you charge
 [2] Monsanto for your consulting work?
 [3] A Yes, sir.
 [4] Q And what is that fee, sir?
 [5] A \$200 an hour.
 [6] Q Are you being compensated by Monsanto for your
 [7] time spent preparing for this deposition?
 [8] MR. BRAY: I object to that.
 [9] THE WITNESS: If by preparing, you mean my
 [10] meetings with Mr. Snively and Mr. Bray?
 [11] BY MR. MC CONNELL:
 [12] Q Yes, sir.
 [13] A I will be compensated for that.
 [14] Q At your normal hourly rate?
 [15] A That's correct.
 [16] Q And are you being compensated by Monsanto for
 [17] the time spent in the deposition?
 [18] A With the exception of travel time -
 [19] MR. BRAY: Same objection.
 [20] BY MR. MC CONNELL:
 [21] Q I'm sorry, sir?
 [22] MR. BRAY: Subject to my objection, you may

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[1] answer.
 [2] THE WITNESS: With the exception of travel
 [3] time. I do not charge for travel time.
 [4] BY MR. MC CONNELL:
 [5] Q But you're being compensated for the time you're
 [6] spending here in the deposition today?
 [7] A That's correct.
 [8] Q And whatever additional days are needed to
 [9] complete the deposition?
 [10] MR. BRAY: Same objection.
 [11] THE WITNESS: That's correct.
 [12] BY MR. MC CONNELL:
 [13] Q Have you testified for Monsanto in other cases,

[14] Dr. Kelly?
 [15] A Do you mean by testifying in a trial or in a
 [16] deposition?
 [17] Q Let's break it down. Let's talk about
 [18] depositions first.
 [19] A Yes, I have.
 [20] Q On how many occasions, sir?
 [21] A 15, give or take two or three.
 [22] Q Have you testified for Monsanto in court on

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[1] other cases?
 [2] A Well, I've testified in court. I've been called
 [3] as a witness by Monsanto, if that's what you mean
 [4] testifying for them.
 [5] Q Yes.
 [6] A I was either testifying as a fact witness or an
 [7] expert witness in various cases.
 [8] Q And how many occasions have you testified for
 [9] Monsanto in court, Dr. Kelly?
 [10] A In court?
 [11] Q On how many occasions?
 [12] A Five to 10, I guess.
 [13] Q How many of those were as an expert witness,
 [14] Dr. Kelly?
 [15] A I guess if I testified five to 10, I would say
 [16] four to eight were as an expert witness.
 [17] Q And how many as a fact witness?
 [18] A One or two.
 [19] Q In this case, has Monsanto asked you to testify
 [20] as an expert witness?
 [21] MR. BRAY: Object to that. The time for
 [22] designating expert witnesses has not arrived yet.

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[1] THE WITNESS: I don't know in what capacity I
 [2] will be testifying.
 [3] BY MR. MC CONNELL:
 [4] Q Monsanto hasn't asked you to testify as an
 [5] expert?
 [6] MR. BRAY: Objection. Asked and answered.
 [7] THE WITNESS: No, they haven't really spelled
 [8] out what my position in this trial is going to be.
 [9] BY MR. MC CONNELL:
 [10] Q Do you own stock in Monsanto, Dr. Kelly?
 [11] A Yes, sir.
 [12] Q Do you recall that Monsanto had a stock option
 [13] program for its top officers and key employees?
 [14] A Yes, sir.
 [15] Q And were you one of the key employees who
 [16] received stock options?
 [17] A I did receive stock options in 1972 and '73. I
 [18] obviously have not received any options since, because I
 [19] retired in '74.
 [20] Q While you were employed by Monsanto as medical
 [21] director, you did receive stock options?
 [22] A Yes, sir.

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[1] Q And was that true in the 1950s as well as in the
 [2] 1970s?
 [3] A I don't think I received any in the '50s. In
 [4] fact, I'm not sure whether they had stock option plans at
 [5] that time.
 [6] MR. MC CONNELL: Let me show you a document,
 [7] sir, which we will mark as Kelly Exhibit 1.
 [8] (Kelly Exhibit 1 identified.)
 [9] BY MR. MC CONNELL:
 [10] Q You see, Dr. Kelly, this is a document which
 [11] consists of the minutes of a meeting of Monsanto's board
 [12] of directors on November 11, 1954?
 [13] A Yes, sir.
 [14] Q I'd like you to turn, sir, to the page - you'll
 [15] see there's some page numbers in the upper right-hand
 [16] corner on each page. I'd like to ask you to turn to page
 [17] 219. Would you tell me when you have that.
 [18] A Yes, sir.
 [19] Q And in the first full paragraph on that page,
 [20] the minutes read "The Chairman stated that the stock

- [21] option committee appointed by this board at its April 24,
 [22] 1951 meeting has recommended the granting of additional

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- [1] options to purchase a total of 49,500 shares of this
 [2] company's unissued common stock to 37 other officers and
 [3] key employees of the company."
 [4] Do you see that, sir?
 [5] A Yes, sir.
 [6] Q And does that refresh your recollection that
 [7] there was a stock option program at Monsanto in the 1950s?
 [8] A Yes, sir.
 [9] Q And I'd like you to look down near the bottom of
 [10] the list of names in this paragraph. Do you find your
 [11] name there?
 [12] A Yes, I do.
 [13] Q Do you see that you had options that year for
 [14] 750 shares?
 [15] A Yes, sir.
 [16] Q Does that refresh your recollection that you did
 [17] receive stock options back in the 1950s?
 [18] A Yes, sir, it does.
 [19] Q And was that on an annual basis? Did you
 [20] receive other stock options in other years?
 [21] A Later on I did. I had forgotten all about
 [22] this. That was not a very big number. Yes, I did. There

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- [1] was a second considerably later. I thought that was 10
 [2] years or so after that that I received a larger amount of
 [3] shares.
 [4] Q So from time to time, starting at least in the
 [5] 1950s, you did receive stock options -
 [6] A Not from time to time. I can only recall two
 [7] times that I ever received it.
 [8] MR. BRAY: I'm late at getting this in. I
 [9] object to the question, the distorting and
 [10] mischaracterizing the witness' testimony, but he's already
 [11] answered.
 [12] MR. MC CONNELL: Yes, he has.
 [13] BY MR. MC CONNELL:
 [14] Q You still own Monsanto stock?
 [15] A I beg your pardon?
 [16] Q Do you still own Monsanto stock?
 [17] A Yes, I do.
 [18] Q How many shares, Dr. Kelly?
 [19] A Oh, 1500 or something.
 [20] Q Dr. Kelly, I'd like to go back to the time when
 [21] you were serving as the plant physician at the Queeny
 [22] Plant. We've talked a little bit about the work that you

Page 29

- [1] did in that job. I'd like for you to tell me whether
 [2] there were any other job responsibilities that you had at
 [3] that time in connection with your job as plant physician?
 [4] A Well, I don't really believe that I mentioned
 [5] what responsibilities I had as a plant physician.
 [6] Q Why don't we go back to that, then, and tell me
 [7] what your job responsibilities were.
 [8] A It was to carry out a preventive medical program
 [9] by examining, by monitoring the health of the employees to
 [10] see if they had any incipient diseases which were not
 [11] occupational in scope, such as diabetes or high blood
 [12] pressure.
 [13] MR. MC CONNELL: Why don't we go off the record
 [14] for just a minute.
 [15] (Discussion off the record.)
 [16] (Recess.)
 [17] BY MR. MC CONNELL:
 [18] Q Dr. Kelly, we were interrupted by the window
 [19] washer and clanging against the window outside the room
 [20] and I think in fairness to you, I'd like to go back and
 [21] get you to restart your answer to this question. Is that
 [22] all right with you?

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- [1] A Certainly.
 [2] MR. MC CONNELL: Why don't we have you read back
 [3] the question, if you would.
 [4] (The reporter read the record as requested.)

- [5] THE WITNESS: It was to carry out a preventive
 [6] medical program for the employees, which consisted mainly
 [7] of monitoring their health through periodic examinations,
 [8] and that was to find out any incipient diseases which are
 [9] common to all mankind, such as diabetes, hypertension,
 [10] et cetera, under the theory that if you caught these in
 [11] their incipient stage, you would be able to forestall more
 [12] serious illnesses down the road. Obviously, if there were
 [13] any illnesses that could be produced by their work
 [14] situation, you would endeavor to pick up anything abnormal
 [15] if that had occurred.

- [16] It also meant that I was supposed to visit their
 [17] workplace to see if I was able to ascertain whether there
 [18] was any undue exposure to the chemicals which they were
 [19] manufacturing or using. It was also my responsibility to
 [20] find out what was known or needed to be known about the
 [21] toxic characteristics of our raw materials as well as our
 [22] finished products.

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- [1] BY MR. MC CONNELL:
 [2] Q Was there anything else that was part of your
 [3] job responsibilities, Dr. Kelly, during the time frame
 [4] 1936 to 1942?
 [5] A Well, later on, in the years closer to 1942, I
 [6] would answer inquiries from our various customers and/or
 [7] doctors as to what the effects of our finished material
 [8] might or might not have on their workers, on the
 [9] customers' workers. I think that's about the extent of
 [10] that.
 [11] Q Did that involve answering questions about the
 [12] toxicity of particular chemicals?
 [13] A Yes, sir.
 [14] Q Did you have any responsibility for pollution
 [15] abatement or waste disposal in those days?
 [16] A No, sir.
 [17] Q When you went back to Monsanto in 1946 as the
 [18] medical director, Dr. Kelly, what were your job
 [19] responsibilities?
 [20] A Well, there I had direct responsibility to see
 [21] that we had adequate medical installations in all our
 [22] various plants and laboratories, that we had a system for

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- [1] informing our customers through inclusion in our various
 [2] technical bulletins, our sales bulletins, our application
 [3] bulletins concerning the safe handling and toxicity
 [4] evaluation of our products. We - then, of course, it was
 [5] almost a moving target. We then developed the industrial
 [6] hygiene department that allowed us to be more
 [7] sophisticated in analyzing the working environment of our
 [8] factories. We also had a more formal program for
 [9] evaluating the toxicity of our products.
 [10] Q What do you mean by that, sir?
 [11] A Well, we later developed a program in which when
 [12] any of our compounds reached a certain stage, for example,
 [13] if they were advertised in a bulletin, if they were sent
 [14] out to several different times, sample quantities, that we
 [15] would have a particular department that was handling this
 [16] or manufactured this product, that they had to submit what
 [17] we called a 201 or 202 file that had to give us the
 [18] information about the use of the product, the physical
 [19] characteristics of the product, so that we would decide
 [20] whether there was any toxicity information available for
 [21] this product and also whether or not, in our opinion, more
 [22] information or information would have to be obtained on

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- [1] that particular product.
 [2] Q Was it important to have toxicity information
 [3] about the chemicals that Monsanto was using at its plants?
 [4] A I beg your pardon?
 [5] Q Was it important to have toxicity information
 [6] about the chemicals that Monsanto was using at its plants?
 [7] A Yes, sir.
 [8] Q And why was that, sir?
 [9] A Because you wanted to protect the worker. If
 [10] you didn't know if the product were toxic or not and the
 [11] degree of toxicity, you'd do a pretty poor job of

(12) protecting them.

(13) *Q And it was important to know about the toxicity*
(14) *of the products that Monsanto was making at its plants?*

(15) A Yes, sir.

(16) *Q And why was that?*

(17) A We were selling it to the customers that we had
(18) to give them safe handling instructions as far as using
(19) the product was concerned.

(20) *Q Did you have any responsibilities for pollution*
(21) *abatement or waste disposal when you went back to Monsanto*
(22) *as the medical director in 1946?*

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(1) A Not in 1946 but in 195 - the early 1950s, we
(2) were authorized by the executive committee to review all
(3) new plants, new processes and assure ourselves and report
(4) to the central executive committee that the adequate
(5) concern was given to the disposal of waste material. We
(6) were not engineers, but we were - our industrial hygiene
(7) group were knowledgeable about waste disposal, and they
(8) would be able to tell whether or not the information given
(9) in the flow sheets was sufficient to have our waste
(10) disposal program keep up with the state of the art of
(11) waste management at that particular time. Obviously, that
(12) varied from the 1950s to the 1970s.

(13) *Q Do you believe that Monsanto did keep up with*
(14) *the state of the art on waste disposal?*

(15) A Yes, I do.

(16) *Q Do you believe that Monsanto was knowledgeable*
(17) *about the ongoing scientific developments in waste*
(18) *disposal technology during the time you were the medical*
(19) *director for the company?*

(20) A Yes, I do.

(21) *Q And that was true from 1946 through your*
(22) *retirement in 1974?*

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(1) A Well, I would say that we were more knowledge -
(2) I was more knowledgeable from the 1950s to the 1974 -
(3) early 1950s where the medical department was given - 1952
(4) or '53 we were given the responsibility for reviewing the
(5) waste disposal methods and reporting to the executive
(6) committee if we did not believe that they were taken care
(7) of in an adequate fashion.

(8) *Q Were there other people who reported to you in*
(9) *the medical department? And maybe we should start in 1946*
(10) *when you started out as the medical director.*

(11) A When I started out, I had a secretary. Then the
(12) next thing, I engaged a part-time physician who was a
(13) member of the faculty of Washington University. Then we
(14) engaged an industrial hygienist in 1947, I believe -

(15) *Q Let me stop you there and back up for a moment.*
(16) *When you started in the medical department as medical*
(17) *director in 1946, were there plant doctors at some of the*
(18) *Monsanto plants across the country?*

(19) A Oh, yes, I was just talking of the corporate
(20) medical department. Yes, we had doctors at our various
(21) plants. They were usually part-time doctors. We may have
(22) had one full-time doctor in one of our plants and I'm just

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(1) trying to think - we had mostly part-time physicians, but
(2) in the central medical department we hired first a
(3) part-time associate physician.

(4) *Q And who was that, sir?*

(5) A George Saunders, who is dead. We hired an
(6) industrial hygienist, Elmer Wheeler, in '47, who is also
(7) dead, and that was followed by Jack Garrett, and I think
(8) he came in '52 or '53. By the time I retired, we had four
(9) industrial hygienists, four or five. I'm not sure.
(10) Eventually, we hired several toxicologists and eventually
(11) also we hired another full-time physician as my
(12) associate.

(13) (Pause.)

(14) BY MR. MC CONNELL:

(15) *Q When you became the medical director in 1946,*
(16) *Dr. Kelly, who did you report to in Monsanto?*

(17) A Gee, I don't know if it was vice president for
(18) administration or vice president for - once I reported

(19) directly to the executive committee. It varied. I think
(20) eventually, I report to the vice president for
(21) engineering. I reported to the vice president for
(22) administration. I think I would go through a shuffle

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(1) about every seven years at Monsanto and shuffle around the
(2) chart, so I don't really know who was the first one I
(3) reported to.

(4) *Q At times, did you report directly to the*
(5) *president of the company?*

(6) A Well, the executive committee was - as far as
(7) reporting to the president, we were very close to him. We
(8) were on a first-name basis and I had ample opportunity to
(9) talk to him about anything that came up; whether I
(10) reported to him or not, I could walk right in and talk to
(11) him and say here's the problem I've got.

(12) *Q Was that true throughout the time you were the*
(13) *medical director at the company from 1946 to 1974?*

(14) A Well, not right away in '46, but as it got - we
(15) were relatively small at that time and it was true, yes.

(16) *Q All the way through to the time that you retired*
(17) *in 1974?*

(18) A That's correct.

(19) *Q You mentioned that Monsanto grew. Did Monsanto*
(20) *buy or build additional plants as you went along?*

(21) A Did they?

(22) Q Yes.

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(1) A Oh, sure. They built them or acquired them. I
(2) think we had 55 when I left.

(3) *Q That was in 1974?*

(4) A That's correct.

(5) *Q Was that 55 plants in the United States?*

(6) A Oh, probably 10 of those were ex-U.S.A. We had
(7) two in Mexico, three in Canada, two in England, one in
(8) Luxembourg, one in Germany. I guess there were 10
(9) ex-U.S.A. ones.

(10) *Q Would it be fair to say, then, that you had*
(11) *about 45 plants around the United States?*

(12) A That's correct.

(13) *Q And how many states were those in, do you know,*
(14) *sir?*

(15) A How many states?

(16) *Q How many different states?*

(17) A 15.

(18) *Q Did you continue to visit the plant sites,*

(19) *Dr. Kelly?*

(20) A Yes. Not as much after we had industrial
(21) hygienists. They went there somewhat oftener and we had
(22) the one full-time associate, one part-time associate, and

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(1) they took over some of the plant visits, but I still got
(2) around to certainly all the larger plants once a year, and
(3) in some cases more than once a year. And in some cases
(4) once every two years. And the small bottling plants where
(5) we blew plastic bottles, we had 15 people that might go
(6) there every two years or so.

(7) *Q Did you ever visit the Texas City plant?*

(8) A Yes, I did.

(9) *Q On how many occasions?*

(10) A Well, of course, we had that explosion on the
(11) ship next to the plant, so at that time I was there about,
(12) oh, 10 times at that particular episode.

(13) *Q That was in 1947?*

(14) A '46 or '47 - '47, I guess. I'd say I was there
(15) an average of twice every - three times every two years or
(16) so on the average, about every - not twice a year all the
(17) time but twice one year, once the next.

(18) *Q And that continued throughout the time you were*
(19) *the medical director up through your retirement?*

(20) A That's correct.

(21) *Q When you were there, you talked with the plant*
(22) *chemists and engineers?*

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(1) A Well, I talked with the plant manager, the plant
(2) manufacturing superintendent, the physician, the safety

[3] manager, the nurse at the dispensary.
 [4] Q Then you communicated in writing with these
 [5] people at other times?
 [6] A Yes, sir.
 [7] Q So you have some knowledge of the chemicals that
 [8] were used at the Texas City plant?
 [9] A Oh, yes, sir.
 [10] Q And would that be true also with respect to
 [11] Monsanto's other plants?
 [12] A Yes, sir.
 [13] Q And you have some knowledge of the products that
 [14] Monsanto made at the various plants?
 [15] A Yes, sir.
 [16] Q And also the waste streams that were produced at
 [17] those plants?
 [18] A Well, that might vary. I do know in some plants
 [19] where we had treatment plants, I would know what the waste
 [20] streams were going into the treatment plants. But mostly,
 [21] the knowledge about the waste disposal, both air and water
 [22] and solids, that knowledge rested with Jack Garrett and

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[1] Elmer Wheeler. Wheeler was knowledgeable about the air
 [2] emissions, whereas Garrett was knowledgeable about the
 [3] water and the solid waste disposal.
 [4] Q Both Mr. Wheeler and Mr. Garrett reported to you
 [5] in the medical department?
 [6] A Yes, they did.
 [7] Q Let's talk a little bit about Mr. Wheeler's
 [8] responsibilities. Did he join the medical department in
 [9] 1947? Am I right about that?
 [10] A Yes, sir.
 [11] Q Do you recall what his job title was at that
 [12] time?
 [13] A Yes. It was an industrial hygienist. He was
 [14] the sole one we had. Eventually, he became director of
 [15] industrial hygiene, but we had more than one industrial
 [16] hygienist. He also was - eventually he was called
 [17] assistant. He did not have a medical degree, so he was
 [18] called the assistant director of the department, but he
 [19] was not called assistant medical director because he
 [20] didn't have an MD degree. But he administered, supervised
 [21] the toxicologists and the other industrial hygienists that
 [22] we hired.

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[1] Q Mr. Wheeler was responsible, you said, for air
 [2] pollution matters?
 [3] A Well, I know that's a little all-encompassing
 [4] term, "air pollution matters." He was responsible for the
 [5] checking of the new plants and the major remodeling. He
 [6] was responsible for seeing that the air pollution
 [7] streams - that the streams were taken care of, either by
 [8] flaring or by scrubbing, but he was not responsible for
 [9] the day-to-day operation of a plant to see whether there
 [10] was any undue emissions.
 [11] Q From the standpoint of the medical department,
 [12] he was the air pollution man? Would that be fair?
 [13] A Yes, sir.
 [14] Q What were his other job responsibilities?
 [15] A Well, he supervised, from an administrative
 [16] point of view, our toxicological work. He also supervised
 [17] the industrial hygienists' schedules and their work. He
 [18] answered quite a bit of correspondence about the safe
 [19] handling data - safe handling methods to be used as far as
 [20] the plant environment was concerned in our customers'
 [21] plants, as well as our own plants, obviously.
 [22] Our customers' plants were only on request. We

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[1] didn't routinely go out to the customers' plants. They
 [2] would let us in. It wasn't our responsibility. But on
 [3] requests - there were requests that would come in for
 [4] toxicological information of a medical nature; I would
 [5] answer it. If it were of an engineering nature or an
 [6] industrial hygiene nature, Wheeler would answer. But we
 [7] both were familiar with each other's correspondence.
 [8] Q Could you tell me the difference, Dr. Kelly,
 [9] between things you're describing of a medical nature and

[10] things that were of an industrial hygiene nature?
 [11] A Yes. Suppose a doctor or customer would write
 [12] in and say we're using one of your insecticides, how
 [13] should we handle it as far as protective garments for our
 [14] workers? How should we monitor it as far as our
 [15] manufacturing or blending operation would be concerned?
 [16] That would be Wheeler's. If somebody would write in and
 [17] say we've got two people who said they got heart attacks
 [18] and they believe that it's due to working with your
 [19] parathion, that would come to me because that would be
 [20] purely medical rather than engineeringwise.
 [21] Q So Mr. Wheeler reported to you, but his role in
 [22] the medical department was somewhat different than yours.

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[1] Is that fair?
 [2] A Yes, sir. He was an expert in his field. I was
 [3] an expert in my field.
 [4] Q Would you say that Mr. Wheeler was highly
 [5] competent in his field?
 [6] A Oh, yes. He had been an industrial hygienist
 [7] for the Army laboratory. He was in charge of the state
 [8] bureau of industrial hygiene for one of the New England
 [9] states. I don't know if it was New Hampshire or Vermont.
 [10] It was not Massachusetts, but it was one of the other
 [11] ones. So he was very well thought of. He was eventually
 [12] president of the Industrial Hygiene Association of
 [13] America, so he was quite a well-known authority in
 [14] industrial hygiene.
 [15] Q And did you rely on Mr. Wheeler for industrial
 [16] hygiene matters?
 [17] A Yes, sir.
 [18] Q Would you describe yourself as an expert on
 [19] industrial hygiene matters?
 [20] A I got more familiarity with it than most
 [21] physicians, but I'm not an expert on industrial hygiene.
 [22] Q And do you consider yourself an expert on air

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[1] pollution?
 [2] A No, I'm not an expert on air pollution.
 [3] Q Let's talk about Mr. Garrett. You said he
 [4] joined the medical department in 1952 or 1953?
 [5] A Yes, sir.
 [6] Q Where was he before that, sir?
 [7] A Texas City.
 [8] Q He was a Monsanto employee at Texas City?
 [9] A That's correct.
 [10] Q What's the last time you talked with
 [11] Mr. Garrett?
 [12] A Oh, two weeks ago.
 [13] Q Did you talk about his deposition in this case?
 [14] A No. I talked to him about a different case.
 [15] Q Another Monsanto case?
 [16] A That's correct.
 [17] Q Have you ever discussed this case with
 [18] Mr. Garrett?
 [19] A I may have. I really don't recollect much of
 [20] any discussion with him about it.
 [21] Q By the way, is Mr. Wheeler still alive?
 [22] A No, he's dead.

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[1] Q When Mr. Garrett came to work in the medical
 [2] department in St. Louis, did he report directly to you?
 [3] A No, to Wheeler.
 [4] Q So Garrett reported to Wheeler and Wheeler
 [5] reported to you?
 [6] A That's correct.
 [7] Q How much direct contact did you personally have
 [8] with Mr. Garrett?
 [9] A Oh, gosh, I saw him every day. I ate lunch with
 [10] him every day. We were in an office around an open area
 [11] about the size of this table, and Wheeler's office opened
 [12] into it and mine opened into it and Garrett's opened into
 [13] it, and I saw him - we had lots and lots of contact.
 [14] Q What were Mr. Garrett's job responsibilities in
 [15] connection with water pollution and solid waste disposal?
 [16] A I didn't hear the last phrase, "job

[17] responsibilities" -
 [18] Q Let me rephrase it for you. What were
 [19] Mr. Garrett's job responsibilities in connection with
 [20] water pollution and solid waste disposal?
 [21] A They varied. He was of assistance to the plants
 [22] in dealing with the various regulatory state and federal

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[1] bodies. He was responsible for seeing and reporting to
 [2] the executive committee that the matter of water and solid
 [3] waste disposal was taken care of adequately and all new
 [4] manufacturing facilities and major changes. He was not
 [5] responsible for the day-to-day operation of the plants of
 [6] their water pollution abatement programs. That was a
 [7] plant function of the plant engineering and plant
 [8] manufacturing groups.

[9] Q There would be people at each of the different
 [10] plant locations responsible for that?

[11] A Yes, sir.

[12] Q But in terms of the medical department,
 [13] Mr. Garrett was the water pollution and solid waste
 [14] disposal man?

[15] A He was the point man for that, yes.

[16] Q And he reported directly to Monsanto's executive
 [17] committee?

[18] A He did?

[19] Q Yes, sir.

[20] A Garrett? No. I mean - well, he reported
 [21] through Wheeler and through me. I'm sure Garrett
 [22] reported - not reported, but was called in by members of

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[1] the executive committee on an ad hoc situation. He had
 [2] pretty close access to the executive group of Monsanto.

[3] Q Who was on the executive committee that you
 [4] referred to?

[5] A The president, chairman of the board, the
 [6] general counsel and the vice president for manufacturing
 [7] and the vice president for research and the vice
 [8] president, I guess, for marketing.

[9] Q Anybody else you can think of?

[10] A There may have been some - there were about five
 [11] or six others. They had two committees, one corporate
 [12] development committee and one executive committee, and
 [13] they were really - the personnel were the same in both and
 [14] I don't really know what the difference was in their
 [15] duties, but that's about the - it was the top brass of the
 [16] company, though.

[17] Q Did you serve on that committee, sir?

[18] A No, I didn't, unfortunately.

[19] Q What job responsibilities did Mr. Garrett have
 [20] other than those that you've mentioned?

[21] A Well, I did mention that he was called upon by
 [22] the various plants for interpretation of various

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[1] government edicts and he was also called upon sometimes to
 [2] appear with them before state or federal bodies. I don't
 [3] know what some other responsibilities may come to my
 [4] mind. I'm not sure what other -

[5] Q Was he responsible for any industrial hygiene
 [6] matters like those that Mr. Wheeler handled?

[7] A Yes, but then after a while, we got other
 [8] industrial hygienists, and he spent more of his time with
 [9] waste abatement programs.

[10] Q Was Mr. Garrett highly competent at his job?

[11] A Very much so.

[12] Q Did you rely on him in the water pollution and
 [13] waste disposal areas?

[14] A Yes, I did.

[15] Q You trusted his judgment on those matters?

[16] A Yes, sir.

[17] Q Do you consider yourself to have any expertise
 [18] in the area of pollution abatement or waste disposal?

[19] A Well, I have some but nothing compared to
 [20] Garrett, nothing compared to a man who is a geologist or
 [21] hydrologist. I'd say as far as a physician is concerned,
 [22] I'm fairly knowledgeable in it but nothing approaching the

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[1] expert status.

[2] Q Would it be fair to say throughout the time you
 [3] were working at Monsanto, Mr. Garrett was the one who was
 [4] responsible for water pollution abatement and waste
 [5] disposal matters in the medical department?

[6] A Well, wait. You've said responsible for water
 [7] pollution abatement in the medical department. What he
 [8] was responsible for was to assure the corporate management
 [9] through the medical department that the plants were giving
 [10] adequate and sufficient attention to seeing that their
 [11] waste disposal matters were state of the art, that they
 [12] were up to - that he was not - now, that was in new
 [13] installations. He was not responsible for checking the
 [14] Mississippi River to find out if the different plants
 [15] along the Mississippi River were putting anything in there
 [16] that they shouldn't have. That wasn't his
 [17] responsibility. That's the plant management's
 [18] responsibility.

[19] But he would certainly talk with these people
 [20] and find out what they were doing. So from the medical
 [21] department, he was our conduit of information that could
 [22] convince us that the plants were up to scratch.

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[1] Q From the standpoint of the medical department,
 [2] he was the man on water pollution and waste disposal?

[3] A That's correct.

[4] Q And that was true up until your retirement in
 [5] 1974?

[6] A That's correct.

[7] Q Dr. Kelly, we've been going for a while. Why
 [8] don't we take a real short break.

[9] A Okay. Fine.

[10] (Recess.)

[11] BY MR. MC CONNELL:

[12] Q Dr. Kelly, I think you told me earlier it was
 [13] part of your responsibility as the medical director to
 [14] answer questions about the toxicity of chemicals used at
 [15] the Monsanto plants in Monsanto products?

[16] A Yes, sir.

[17] Q Did you keep up with the medical literature
 [18] about the toxicity of those chemicals?

[19] A Following my retirement?

[20] Q No, sir. I'm talking about the time when you
 [21] were actively working as the medical director for the
 [22] company.

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[1] A Yes, sir.

[2] Q And you followed the scientific studies that
 [3] were being done on the toxicity of those chemicals?

[4] A Yes, sir.

[5] Q And did Monsanto sometimes conduct its own
 [6] toxicology tests?

[7] A Yes, sir.

[8] Q I believe you've told me that there were some
 [9] toxicologists, at least in the later years, on Monsanto's
 [10] staff in the medical department?

[11] A Yes, sir. We ended up with four, I think.

[12] Q By the time you retired?

[13] A Yes, sir.

[14] Q Did you also have toxicology tests conducted by
 [15] outside laboratories?

[16] A Yes, sir.

[17] Q And did you get information about the toxicity
 [18] of chemicals from other chemical companies?

[19] A Other chemical -

[20] Q Other chemical companies.

[21] A Oh, yes, there was a pretty free exchange. In
 [22] other words, if we had a product that was a me-too

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[1] product, that means that du Pont would manufacture it
 [2] before, I would call up the medical area in du Pont and
 [3] say what do you know about this? Do you have any trouble
 [4] with it? Do you have any published data on it? And he
 [5] would tell me the same thing we would do for him, so we'd
 [6] get that information. And then there were the various
 [7] bodies like the Manufacturing Chemists Association that

[8] had medical committees that disseminated information.
 [9] Q Can you tell me some of the major chemical
 [10] companies that you dealt with exchanging information about
 [11] toxicity?
 [12] A Dow, du Pont, Carbide. There may be one or two
 [13] others. Those are the ones that ring a bell.
 [14] Q Those are the major ones that you dealt with?
 [15] A Well, I was on their medical committee of the
 [16] Manufacturing Chemists Association for quite a number of
 [17] years. I was chairman for about three or four years and
 [18] so the personnel of that committee would vary - would
 [19] change from over the years, so I was pretty close to all
 [20] the medical directors of that group.
 [21] Q What is the Manufacturing Chemists Association,
 [22] sir?

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[1] A It's a different name now, but it was a group of
 [2] all the major and submajor chemical companies. There are
 [3] about 50 members, I believe, and they have an office in
 [4] Washington, and they put out safety bulletins and they put
 [5] out - they have all sorts of legal committees. They've
 [6] got traffic committees. They've got labeling committees.
 [7] They've got all sorts of committees and medical
 [8] committees.
 [9] Q During what years were you on the medical
 [10] committee for Manufacturing Chemists Association?
 [11] A '50s and '60s, I guess.
 [12] Q Was that organization referred to as the MCA in
 [13] those days?
 [14] A That's right.
 [15] Q It's now known as the Chemical Manufacturers
 [16] Association?
 [17] A Yes.
 [18] Q Would it be fair to say, Dr. Kelly, that during
 [19] the '50s and '60s, you kept up with the state of the art
 [20] on toxicity?
 [21] A Also the '70s, yes, sir.
 [22] Q I didn't mean to exclude the '70s. Throughout

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[1] that time period.
 [2] A Yes, sir.
 [3] Q Did Mr. Garrett keep up with the scientific
 [4] literature during the '50s and '60s on water pollution and
 [5] waste disposal?
 [6] A Oh, yes, he was a voracious reader. He came up
 [7] with them. He was very active in any number of regional
 [8] water pollution activities like the Ohio River, ORSANCO.
 [9] I don't know what the initials spelled but it was the Ohio
 [10] River Sanitary Water Commission or something like that.
 [11] Q Did you personally keep up with the scientific
 [12] literature during those years on water pollution and waste
 [13] disposal, or did you leave that to Mr. Garrett?
 [14] A I left it to Garrett.
 [15] Q Was Mr. Garrett active in the Manufacturing
 [16] Chemists Association in their activities?
 [17] A Yes, on their water pollution committee. He was
 [18] a good joiner of it. He was on most of the committees.
 [19] Q So during those years, would it be fair to say
 [20] that Mr. Garrett was familiar with the state of the art on
 [21] water pollution and waste disposal?
 [22] A No question about it.

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[1] Q Did Mr. Garrett write published scientific
 [2] articles from time to time?
 [3] A Yes, he did.
 [4] Q And he presented papers at scientific meetings?
 [5] A Yes, he did.
 [6] Q Was there a policy at Monsanto that required him
 [7] to get approval from you or from Mr. Wheeler before
 [8] publishing an article?
 [9] A No. I don't know if there was a policy, but he
 [10] never asked me. I mean, I never even knew he was going to
 [11] write one. So I don't know if there's any other policy in
 [12] any other departments but if he was going to write
 [13] something, he wrote it.
 [14] Q Do you know whether Mr. Wheeler would have

[15] reviewed those before publication?
 [16] A I don't know.
 [17] MR. MC CONNELL: Dr. Kelly, let me show you a
 [18] document which we will mark as Kelly Exhibit 2.
 [19] (Kelly Exhibit 2 identified.)
 [20] BY MR. MC CONNELL:
 [21] Q Do you have that in front of you now, Dr. Kelly?
 [22] A Yes, I do.

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[1] Q Is this an organizational chart for Monsanto's
 [2] medical department from April 1962?
 [3] A Yes, it is.
 [4] Q And you see you're in the very top box listed as
 [5] the director?
 [6] A Yes, sir.
 [7] Q And there's an assistant director in the box
 [8] right below your box. Who is that, sir?
 [9] A Maurice Johnson. He left us in 1971, I believe,
 [10] to go with B.F. Goodrich. He's retired from B.F. Goodrich
 [11] now and lives in Ohio, and he is living.
 [12] Q Was he a medical doctor, sir?
 [13] A Yes, he was.
 [14] Q What were the nature of his responsibilities at
 [15] that point in time?
 [16] A Well, he came to us from Chemstrand, which was
 [17] our fiber division, and he really - he was our medical
 [18] director and he continued that supervision over those
 [19] plants. There were about five or six plants that they
 [20] had, two in Europe and five in the United States, and then
 [21] he - most of my activities, I mean. When I was out of
 [22] town, he was the acting director. He did a lot of work

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[1] similar to me.
 [2] Q Did he have any responsibility for water
 [3] pollution or waste disposal matters?
 [4] A I don't know if it was that defined. I would
 [5] say, by and large, no.
 [6] Q His job was more similar to your job?
 [7] A That's correct.
 [8] Q And I want to make sure I understood you
 [9] correctly. The name you gave for the seven plants that he
 [10] was directly responsible for was Chemstrand?
 [11] A Chemstrand. Chemstrand was a company that was
 [12] formed by Monsanto and American Viscose and eventually we
 [13] bought out American Viscose. And he was their medical
 [14] director and he came with us, I think, in 1956, I believe,
 [15] or around the late '50s.
 [16] Q Did the Chemstrand plants have anything to do
 [17] with the operations at Monsanto's Texas City plant?
 [18] A I'm sorry, I didn't hear you.
 [19] Q Did the Chemstrand plants have anything to do
 [20] with the operations at Monsanto's Texas City plant?
 [21] A Well, we used their acrylonitrile.
 [22] Q The acrylonitrile was made at the Texas City

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[1] plant?
 [2] A That's correct.
 [3] Q And it was shipped to the Chemstrand plants?
 [4] A Spun it to acrilan, a-c-r-i-l-a-n.
 [5] Q Were there any other products made by
 [6] Chemstrand?
 [7] A Nylon.
 [8] Q Nylon didn't have anything to do with the Texas
 [9] City plant?
 [10] A No.
 [11] Q Were there any other Chemstrand products you
 [12] recall?
 [13] A I don't remember. I don't think so.
 [14] Q Let's go back to the chart, Dr. Kelly. Do you
 [15] see on the chart that Elmer Wheeler is listed as the
 [16] manager of environmental health; is that right?
 [17] A Yes, sir.
 [18] Q And below him, Mr. Garrett is listed as the
 [19] manager of industrial hygiene and pollution abatement; is
 [20] that correct, sir?
 [21] A Yes, sir.

[22] Q And were there other people at this point in

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[1] time, 1962, who reported to Mr. Garrett?
 [2] A I think we had a Dr. Carl Bohl, B-o-h-l. He was
 [3] a doctor of science. He was not an MD. I don't know when
 [4] he came on board, but it was around that time. These
 [5] charts - as I said, there was an upheaval every seven
 [6] years or so, and the titles would vary. First of all,
 [7] they would say we're not going to have anybody - a
 [8] director that - there'd be all managers and seven years
 [9] later they'd say well, we're going to have some directors
 [10] reporting to directors. So Wheeler was also - one of the
 [11] charts would break it down to - they all reported in the
 [12] same fashion here but they had different titles. Wheeler
 [13] was an assistant director of the department and Johnson
 [14] was called assistant medical director.

[15] Q And when you say the titles changed, it was true
 [16] that Mr. Wheeler remained in the medical department. He
 [17] might have had a different title, but his job function
 [18] remained essentially the same?

[19] A Yes, his reporting position was the same, also.

[20] Q And the same would be true of Mr. Garrett?

[21] A Yes, sir.

[22] Q In the box next to Mr. Garrett, there's another

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[1] box with the name W.H. Hunt, and he's listed as
 [2] toxicologist. When did he join the company?

[3] A I beg your pardon?

[4] Q When did he join the company?

[5] A I think around 1960. He's dead. He was
 [6] responsible for correlating our outside toxicological work
 [7] with various laboratories we used.

[8] Q Were there other toxicology people who reported
 [9] to Mr. Hunt in 1962?

[10] A I don't think so. Eventually, we had, I think,
 [11] four toxicologists, but I don't know when they came on.
 [12] The last one came on in about '71, and the other two were
 [13] in there someplace, 1960, 1970.

[14] Q And just to round out the chart, if you look at
 [15] the left, there's also a block for general offices
 [16] dispensary?

[17] A Yes, sir.

[18] Q And there's a Dr. Mezera listed there?

[19] A Yes, sir.

[20] Q And there's another block for plant medical
 [21] dispensaries. There are no names there.

[22] A Well, that probably should be a dotted line

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[1] because they were not - we had a full-time doctor at the
 [2] Queeny Plant. We had three full-time doctors at our
 [3] Chemstrand plant but they were not medical department
 [4] personnel. So it really should be a dotted line.

[5] Q So leaving aside the plant medical dispensaries
 [6] for the moment, Dr. Kelly, how many doctors and other
 [7] professional personnel did you have in the medical
 [8] department at the corporate level in St. Louis in 1962?

[9] A I don't remember. I mean, obviously we had
 [10] these people and whether we had some of our - some more
 [11] industrial hygienists in 1962, I'm not sure. When
 [12] Dr. Carl Bohl came in, I know we didn't get a
 [13] toxicologist, a second one, until later in the '60s. We
 [14] had one, two, three, four - we had about eight
 [15] professional people there.

[16] Q And do you recall, at the time you retired in
 [17] 1974, how many professional people were working in
 [18] Monsanto's medical department at the corporate level in
 [19] St. Louis?

[20] A One, two, three - about 12 or 13, I think.

[21] Q If you added in the people in the plant medical
 [22] dispensaries and counted those as well, what would the

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[1] number be?

[2] A Gee, I'd have to - right off the top of my head,
 [3] I couldn't give you those figures because we had a
 [4] full-time doctor - there's our friend.

[5] MR. MC CONNELL: Let the record reflect that the

[6] window washer has returned. Would you like to break for
 [7] just a moment, Dr. Kelly?

[8] THE WITNESS: Fine.

[9] (Discussion off the record.)

[10] BY MR. MC CONNELL:

[11] Q Dr. Kelly, once again, the window washer, I
 [12] think, has interrupted our train of thought and I'll ask
 [13] the reporter to go back and read the last question and
 [14] give you a fair chance to answer it.

[15] (The reporter read the record as requested.)

[16] THE WITNESS: At the corporate level, probably
 [17] 12 to 14, I think. We had a librarian in there, and I
 [18] guess 12 to 14.

[19] BY MR. MC CONNELL:

[20] Q That's at the corporate level, not counting the
 [21] plant dispensaries?

[22] A That's correct.

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[1] Q Do you have any idea how many doctors and other
 [2] professional people would have been involved in the plant
 [3] dispensaries?

[4] A I'd have to add them up. For example, at
 [5] Pensacola, we had three full-time doctors. At Decatur we
 [6] had one. At Anniston we had one. At Columbia, Tennessee
 [7] we had two part-time doctors. At Texas City, we used a
 [8] clinic and at Chocolate Bayou we had two part-time
 [9] doctors. And at Springfield, we had a full-time doctor.
 [10] At Merrimac we had a part-time doctor. At Krummrich we
 [11] had two part-time doctors. There are probably some I've
 [12] forgotten.

[13] Q You had a substantial number of doctors on the
 [14] staff?

[15] A Yes, no question.

[16] Q We talked about Mr. Hunt, the toxicologist.
 [17] What were his credentials, sir? Was he an MD?

[18] A He was a PhD.

[19] Q Do you know in what field?

[20] A I beg your pardon?

[21] Q In what field?

[22] A Pharmacology. He was a toxicologist at Johnson

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[1] & Johnson, the pharmaceutical company, when he came with
 [2] us.

[3] Q The doctors at the Texas City plant, sir, could
 [4] you tell me what arrangements there were at Texas City.

[5] A It was a Beeler-Manske, B-e-e-l-e-r-M-a-n-s-k-e,
 [6] clinic. Dr. Manske was our main individual who visited
 [7] the plant. He was one of the founders of the clinic.

[8] Q Were there other doctors who also helped
 [9] Dr. Manske there?

[10] A Yes. Beeler, he was mainly the surgeon and they
 [11] had three or four other physicians who were - they might
 [12] have come over to our place in an emergency or we would
 [13] send our people over to the clinic.

[14] (Pause.)

[15] (Whereupon, at 12:00 p.m., the deposition was
 [16] recessed, to be reconvened at 1:00 p.m. this same day.)

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[17]
 [18]
 [19]
 [20]
 [21]
 [22]

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[1] AFTERNOON SESSION (1:06 p.m.)

[2] Whereupon,

[3] R. EMMET KELLY

[4] resumed the stand and, having been previously duly sworn,
 [5] was examined and testified further as follows:

[6] EXAMINATION (Continued)

[7] BY MR. MC CONNELL:

[8] Q I see you're setting your watch, Dr. Kelly.

[9] We'll give you a minute.

[10] A Consider it set.

[11] Q I'd like to talk with you this afternoon,

[12] Dr. Kelly, about some of the chemicals that were used at

[13] *Monsanto's Texas City plant. What is hydrogen cyanide,*
 [14] *Dr. Kelly?*
 [15] A It's one molecule of hydrogen and a cyanide
 [16] molecule, which is carbon and nitrogen. HCN.
 [17] Q The chemical symbol for that is HCN?
 [18] A HCN.
 [19] Q And is that a chemical that was used at the
 [20] Texas City plant, sir?
 [21] A Yes, sir.
 [22] Q What was it used for?

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[1] A I don't remember now. I say I do not remember
 [2] now. I think it was used in the manufacture of
 [3] acrylonitrile. I don't remember the exact use of it or
 [4] the flow sheet of the acrylonitrile plants.
 [5] Q But it was used in the acrylonitrile process?
 [6] A In the what?
 [7] Q It was used in the acrylonitrile manufacturing
 [8] process?
 [9] A That's correct. Yes.
 [10] Q Would it be fair to say that hydrogen cyanide is
 [11] an extremely toxic chemical?
 [12] A Yes, no question. Used for death chambers.
 [13] Q It's used for executions?
 [14] A Yes.
 [15] Q Kills within minutes?
 [16] A Yes.
 [17] Q Was there hydrogen cyanide contamination in some
 [18] of the waste materials from the acrylonitrile process at
 [19] the Texas City plant?
 [20] A Well, I can't answer that, whether that was the
 [21] hydrogen cyanide was combined with other chemicals or
 [22] not. I just cannot answer that but I'm sure there was

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[1] some hydrogen cyanide, either in pure form or combined
 [2] form, in some of the waste streams, yes, sir.
 [3] Q Was the toxicity of hydrogen cyanide known in
 [4] the 1940s?
 [5] A Yes, sir.
 [6] Q 1930s?
 [7] A Yes, sir.
 [8] Q Known to you at those times?
 [9] A I beg your pardon?
 [10] Q Was it known to you at those times?
 [11] A Yes, sir.
 [12] Q And known to Monsanto?
 [13] A Yes, sir, it was known.
 [14] Q What is cyanogen chloride, Dr. Kelly? Let me
 [15] spell that for you, c-y-a-n-o-g-e-n, c-h-l-o-r-i-d-e, two
 [16] words.
 [17] A It has a cyanide molecule with a chlorine atom;
 [18] with one or two chlorines, I don't remember.
 [19] Q And it's a chemical that's related to hydrogen
 [20] cyanide?
 [21] A Yes, it was one of the - hydrogen cyanide was
 [22] one of the building blocks of cyanogen chloride.

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[1] Q That's a chemical that was used at the Texas
 [2] City plant?
 [3] A To the best of my recollection, yes. I don't
 [4] recall too much about it at the present date.
 [5] Q Do you remember there was a cyanogen chloride
 [6] off-gas from one of the acrylonitrile processes at the
 [7] plant?
 [8] A I don't remember.
 [9] Q How toxic is cyanogen chloride, Dr. Kelly?
 [10] A Not nearly as toxic as hydrogen cyanide, but I
 [11] can't give you the relative toxicity of it.
 [12] Q Do you know whether cyanogen chloride was used
 [13] in manufacturing military war gases?
 [14] A I'm not sure. I think I recall something about
 [15] it, but the war gas - my experience with war gases was 50
 [16] years ago.
 [17] Q Yes, sir. That would have been during World War
 [18] II?
 [19] A Yes, sir.

[20] MR. MC CONNELL: Let me show you a document.
 [21] Dr. Kelly, that we will mark as Kelly Exhibit 3.
 [22] (Kelly Exhibit 3 identified.)

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[1] BY MR. MC CONNELL:
 [2] Q Dr. Kelly, do you recognize this as a memo that
 [3] you received from John Fox about April 11, 1957?
 [4] A Well, I certainly received it from John Fox.
 [5] Q And it's dated April 11, 1957?
 [6] A That's correct.
 [7] Q It's on a Monsanto Chemical Company letterhead?
 [8] A Yes, it is.
 [9] Q Who was John Fox?
 [10] A He was sort of research/safety/industrial
 [11] hygiene, sort of an unfrocked industrial hygienist at
 [12] Texas City. He was an employee of Texas City. I think he
 [13] was part research, part safety, part industrial hygiene.
 [14] Q If I could direct your attention to the first
 [15] paragraph of the memo, Dr. Kelly, Mr. Fox says "As you
 [16] know, we have a unit in the pilot plant where we are
 [17] making cyanuric chloride." Do you see that, sir?
 [18] A Yes, sir.
 [19] Q And further down, he points out that "we are
 [20] getting ready to start collecting the cyanogen chloride
 [21] off-gas for recycle to the unit." Do you see that, sir?
 [22] A Yes, sir.

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[1] Q And does that refresh your memory that there was
 [2] a cyanogen chloride off-gas from the process?
 [3] A No, sir, it doesn't.
 [4] Q And looking - you just don't remember one way or
 [5] the other?
 [6] A I don't remember. It was a pilot plant
 [7] operation. I don't know if it ever went to full scale
 [8] manufacturing or not. I don't know. I don't remember.
 [9] Q If we wanted to know about that, we might be
 [10] able to ask Mr. Fox?
 [11] A I beg your pardon?
 [12] Q If we wanted to know about that, we might be
 [13] able to ask Mr. Fox?
 [14] A Sure. He ought to remember it better than I.
 [15] Q And Mr. Fox goes on to say that he'd like to
 [16] collect all available information on cyanogen chloride; is
 [17] that correct, sir?
 [18] A Yes, sir, that's what he asks for.
 [19] Q He goes on to talk in the second paragraph about
 [20] some source materials that he's been looking at and the
 [21] first one he refers to is a book called "Handbook of
 [22] Dangerous Materials" by Sax. Do you see that, Dr. Kelly?

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[1] A Yes, I do.
 [2] Q Is that a reference that Monsanto used in the
 [3] 1950s at the time we're talking about?
 [4] A It may be. Some individuals at Monsanto used
 [5] it, but I do not believe that Sax was accepted as a
 [6] top-drawer expert on toxicity. His handbook, which went
 [7] through several editions, was more popular with the
 [8] nonscientific community than it was with the scientific
 [9] community.
 [10] Q It looks like Mr. Fox was using the Sax
 [11] reference here, doesn't it?
 [12] A Yes, it does.
 [13] Q Let's take a look at the next one, a book called
 [14] "Industrial Hygiene and Toxicology" by Patty. Are you
 [15] familiar with that, sir?
 [16] A Yes. Patty was a well-known industrial
 [17] hygienist at one of the states. I don't know if it was
 [18] the Midwestern or New England states.
 [19] Q Would you regard that as an authoritative
 [20] source?
 [21] A It all depends. I don't know the entire details
 [22] on it, and I'd have to - I couldn't say I accepted it as a

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[1] reference in toto. It may have errors when it's dealing
 [2] with some of the compounds, but I don't recall.
 [3] Q Was it a work that you used on occasion in your

[4] work as the medical director for Monsanto?
 [5] A Oh, we had it, I think. I didn't use it too
 [6] much. I think Wheeler used it more than anybody else in
 [7] the department.
 [8] Q Wheeler worked for you in the medical
 [9] department?
 [10] A Yes, that's correct.
 [11] Q Do you know whether Wheeler used the "Handbook
 [12] of Dangerous Materials" by Sax?
 [13] A I know he didn't give it a great deal of
 [14] respect.
 [15] Q There's another reference here called "The
 [16] Chemistry of Organic Cyanogen Compounds" by - you might
 [17] have to help me with this, Mugerdtchian?
 [18] A I can't help you with it. I never heard of it
 [19] before. On the document this is spelled
 [20] M-i-g-r-d-i-c-h-i-a-n.
 [21] Q You've never heard of this particular reference
 [22] before?

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[1] A No, I have no recollection of it.
 [2] Q Skipping down, it looks like Mr. Fox says in his
 [3] memo "Since this material was used in the manufacture of
 [4] military war gases, are there any government booklets
 [5] available from the Army Chemical Corps?" Does that ring a
 [6] bell with you that during the war the military had
 [7] experimented with the use of cyanogen chloride as a
 [8] military war gas?
 [9] A I remember something vaguely about it but I
 [10] don't remember any of the details. It was not a very
 [11] prominent war gas. Of course, we didn't use any war gases
 [12] in World War II and whether they manufactured it - I know
 [13] they didn't manufacture it at Pine Bluff. They may have
 [14] manufactured it at Edgewood. Edgewood had sort of a
 [15] research group as well as a manufacturing group, but I
 [16] don't recall anything from my year at Edgewood about
 [17] cyanogen. I do recognize the name but I don't recognize
 [18] any more about it than that.
 [19] Q Would you agree that it's a toxic material?
 [20] A Frankly, I'm not in the position to evaluate
 [21] right at present.
 [22] Q You just don't know one way or the other?

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[1] A One way or the other. When you say "toxic,"
 [2] what are your parameters for toxicity?
 [3] Q Do you remember -
 [4] A It shouldn't be a household compound, I'll say
 [5] that. You wouldn't want it in your kitchen, I don't
 [6] think.
 [7] Q Or your drinking water?
 [8] A Well, I don't know - it depends on the level.
 [9] Q You wouldn't put it in your coffee?
 [10] A Are we talking about a drop or five
 [11] tablespoonsful? I don't think it's intended for coffee.
 [12] It's certainly not a food chemical.
 [13] Q Do you remember whether there was a concern at
 [14] the time about the exposure of the Monsanto workers to
 [15] cyanogen chloride?
 [16] A No, sir, I don't remember any such concern.
 [17] Q You don't remember one way or the other?
 [18] A I don't remember hearing any.
 [19] Q But you did receive this memo from Mr. Fox?
 [20] A I can't hear you.
 [21] Q You did receive this memo from Mr. Fox?
 [22] A Oh, certainly. It was it was a concern on John

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[1] Fox's part.
 [2] MR. MC CONNELL: Could you read back to me.
 [3] (The reporter read the record as requested.)
 [4] BY MR. MC CONNELL:
 [5] Q If you look at the next paragraph of Mr. Fox's
 [6] memo, he says "Our possible sources of major exposure will
 [7] be to the toluene solvent, which will contain up to a
 [8] maximum of 10 percent dissolved cyanogen chloride, and to
 [9] the gas itself." Does that refresh your memory that there
 [10] was going to be a worker exposure to cyanogen chloride in

[11] the toluene solvent?
 [12] A No, because again, this is a pilot plant
 [13] operation, and I don't know how large it was, how long it
 [14] ran or whether it was discontinued after months or whether
 [15] it was an ongoing installation. I just don't know.
 [16] Q So you really don't remember this issue about
 [17] cyanogen chloride one way or the other?
 [18] A I don't remember much about it at all.
 [19] Q At we sit here today, you can't remember what
 [20] you knew in 1957 about the toxicity of cyanogen chloride?
 [21] A That's correct.
 [22] Q Before we leave this memo, do you see the

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[1] reference to "toluene solvent" that we've just been
 [2] talking about, sir?
 [3] A Yes, sir.
 [4] Q Was toluene a chemical that was used at the
 [5] Texas City plant?
 [6] A When it was used there, whether it was separated
 [7] from benzene, which came from the stream from the oil
 [8] refineries, I don't know. They certainly had it in the
 [9] plant. Whether it was used in the manufacturing, I don't
 [10] recall.
 [11] Q But it was certainly present at the Texas City
 [12] plant?
 [13] A It was what?
 [14] Q It was certainly present at the Texas City
 [15] plant?
 [16] A Yes.
 [17] Q Were there occasions, Dr. Kelly, where Monsanto
 [18] workers were injured in cyanide spills?
 [19] A Were there occasions when Monsanto workers were
 [20] what?
 [21] Q Were injured in cyanide spills.
 [22] A In cyanide -

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[1] Q Spills.
 [2] A Exposure?
 [3] Q Spills. Let me start over and I'll see if I can
 [4] speak up a little bit. Were there times when Monsanto
 [5] workers were injured in cyanide spills?
 [6] A Not that I recall. I don't think there were.
 [7] Our plant was an outside plant without walls and we had
 [8] suitable antidotes for cyanide, and I don't recall having
 [9] to use it at all, these antidotes.
 [10] MR. MC CONNELL: Let me show you a document.
 [11] Dr. Kelly, which we will mark as Kelly Exhibit 4.
 [12] (Kelly Exhibit 4 identified.)
 [13] BY MR. MC CONNELL:
 [14] Q If you'd like to take a moment and look that
 [15] over, Dr. Kelly.
 [16] A Yes, I will.
 [17] Q Have you had a chance to look that over,
 [18] Dr. Kelly?
 [19] A I beg your pardon?
 [20] Q Have you had a chance to look that over?
 [21] A I'm halfway through.
 [22] Q Take your time.

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[1] A Yes, sir, I've read it.
 [2] Q Is this a letter that you got from Otto Smith in
 [3] 1970, sir?
 [4] A Yes, it is.
 [5] Q It's dated September 28, 1970?
 [6] A Yes, sir.
 [7] Q And Otto Smith - who was Otto Smith?
 [8] A He was one of the physicians at the
 [9] Beeler-Manske clinic.
 [10] Q And he did work for Monsanto at the Texas City
 [11] plant?
 [12] A Well, he was a member of the staff at
 [13] Beeler-Manske. And as I said before, the two principal
 [14] members of that staff that came over were Manske and
 [15] Beeler, but Smith came over at some times, and he
 [16] certainly filled - any one of them would fill in on a
 [17] purchasing basis.

- [18] Q Would you read the first sentence of the letter
[19] for us, Dr. Kelly?
[20] A "We are still seeing the workmen who were
[21] injured in the cyanide derivative spill."
[22] Q Do you remember that spill now, Dr. Kelly?

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- [1] A No, I don't.
[2] Q Do you remember receiving this letter from Otto
[3] Smith?
[4] A Now I do.
[5] Q There had been a spill and some of the plant
[6] workers had been injured by the cyanide materials?
[7] A Yes, sir.
[8] Q Do you remember how many workers were injured in
[9] that spill, sir?
[10] A No, sir, although he mentions - he mentioned
[11] five.
[12] Q In the third paragraph, Dr. Kelly, Dr. Smith
[13] tells you it's interesting that all seemed to have
[14] cerebral signs and symptoms. They, of course, were
[15] cyanotic. What does "cyanotic" mean?
[16] A They're blue. They don't have enough oxygen and
[17] that's noticeable in a peripheral circulation.
[18] Q Is that a typical symptom of cyanide poisoning?
[19] A Yes, it is.
[20] Q And what does the phrase "cerebral signs and
[21] symptoms" mean, Dr. Kelly?
[22] A Well, a sign is something that physically is an

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- [1] objective occurrence. In other words, cyanosis is a
[2] sign. Symptom might be a headache or unconsciousness.
[3] Q And is that typical with cyanide poisoning?
[4] A Yes, sir.
[5] Q Further down in that paragraph there's a
[6] reference to "wild thrashing, purposeless movements." Do
[7] you see that, sir?
[8] A Yes, sir.
[9] Q Is that typical of cyanide poisoning?
[10] A I would say so. It certainly could happen when
[11] you're unconscious and when you don't have enough oxygen.
[12] Q I think we can put that aside now.
[13] A I think it should be noted that the fourth
[14] paragraph where he says I have had occasion to use oxygen
[15] on two cases this year. Neither of which was at all
[16] related to exposure to cyanide or any cyanide derivative.
[17] Q You don't interpret that as relating to the five
[18] worker poisonings we were talking about?
[19] A No.
[20] Q Those were other patients seen at the clinic?
[21] A Those were private cases of his. One was a
[22] young girl and the other was a person who had a stroke.

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- [1] Q Not related to the cyanide spill we were talking
[2] about?
[3] A That's right. That's correct.
[4] Q Dr. Kelly, what is AN catalyst tar? It's not on
[5] the exhibit.
[6] A What is -
[7] Q What is AN catalyst tar?
[8] A Spell the rest of it. AN -
[9] Q Catalyst, c-a-t-a-l-y-s-i, tar.
[10] A I don't know. I'll have to write that down and
[11] look at it.
[12] Q I can help you out, Dr. Kelly, because it
[13] actually appears in a letter that you wrote. Let me show
[14] you a document that we'll mark as Kelly Exhibit 5.
[15] (Kelly Exhibit 5 identified.)
[16] BY MR. MC CONNELL:
[17] Q Do you recognize this as a memo that you wrote
[18] on July 3, 1952, Dr. Kelly?
[19] A Well, I certainly wrote it, and the date was
[20] July the 3rd, 1952.
[21] Q Is this your signature at the bottom of the
[22] page?

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- [1] A Yes, it is.

- [2] Q And it's a memo to Mr. J.R. Mares, M-a-r-e-s, at
[3] Texas City?
[4] A That's correct.
[5] Q And right beside the subject line on the memo it
[6] says "AN catalyst tar." What is AN catalyst tar,
[7] Dr. Kelly?
[8] A It's a mixture of - AN is acrylonitrile.
[9] Catalyst is an additive that was used to make
[10] acrylonitrile. They had various catalysts. The tar is
[11] what was the chemical composition that remained in the
[12] distillate column after the AN was manufactured.
[13] Q Could the tar be known as still bottoms or heavy
[14] ends?
[15] A Yes, sir.
[16] Q What catalysts were used in the acrylonitrile
[17] process at Texas City, Dr. Kelly, do you know?
[18] A I don't remember them. I think they were
[19] butylenes. There were various catalysts but I don't know
[20] them now.
[21] Q Dr. Kelly, looking at the first sentence of your
[22] memo, you say "Some time ago you requested toxicity tests

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- [1] on the AN catalyst tar." Do you see that?
[2] A Yes, sir.
[3] Q And Monsanto had conducted some testing by the
[4] time you wrote this memo?
[5] A Yes, sir.
[6] Q And looking again at your memo, the first page
[7] of this exhibit, you reported that the AN catalyst tar is
[8] moderately toxic?
[9] A Yes, sir.
[10] Q Was that a true statement at the time?
[11] A Yes, sir.
[12] Q Monsanto knew in 1952 that the AN catalyst tar
[13] was moderately toxic?
[14] A Yes. You have to remember that's by
[15] classification. Other people may have different
[16] classifications as far as toxicity was concerned. There
[17] were no set standards, like boiling point, vapor pressure
[18] and stuff like that.
[19] Q Some people might think it was more toxic?
[20] A Some might think it was less.
[21] Q Your opinion is it was moderately toxic?
[22] A That's correct.

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- [1] Q And that was your opinion at the time in 1952?
[2] A That's correct.
[3] Q Let me ask you to look at the third page of this
[4] exhibit, Dr. Kelly, under "discussion," second paragraph.
[5] A Yes, sir.
[6] Q Is this part of the laboratory report on the
[7] toxicity testing that was done? Is this part of the
[8] laboratory report that was done on the toxicity testing?
[9] A Yes, it is.
[10] Q Would you read the part of that report that
[11] begins at "autopsy."
[12] A Yes, sir.
[13] Q Would you read that for us?
[14] A Yes, sir. Did I read it or will I read it?
[15] Q Would you.
[16] A "At autopsy there were instances of spotted
[17] livers suggesting possible dysfunction of that organ.
[18] Otherwise, the viscera appeared normal by microscopic
[19] examination."
[20] Q In 1952 when you had this study done, Monsanto
[21] knew that the AN catalyst tar could cause liver
[22] dysfunction?

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- [1] A Well, we didn't know that and that's really - if
[2] you're taking acute tests and animals die in 12 to 24
[3] hours, you really don't have time for any pathology to
[4] show up. So this laboratory technician is looking at the
[5] liver. It says spotting. I don't know what that means.
[6] A microscopic examination of an acute toxicity test
[7] doesn't tell you much, and I don't think I would put any
[8] credence, plus or minus, in that second sentence.

[9] Q And by the second sentence you mean "otherwise,
 [10] the viscera appeared normal" -
 [11] A No, the whole paragraph. "At autopsy there were
 [12] instances of spotted livers." I don't know what that
 [13] means. I don't know whether that occurred at the last
 [14] stages of the animal. After all when an animal has died
 [15] from an overdose of a compound, things happen in the
 [16] morphology of it and you get spotted livers from
 [17] collections of blood or collections of bile or God knows
 [18] what.
 [19] Q And this was a test to determine the minimum
 [20] lethal dose of AN catalyst tar; is that correct?
 [21] A That's correct.
 [22] MR. BRAY: Excuse me. I object. I'm sure this

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[1] is unintentionally misleading, but you left something
 [2] rather significant out of that question.
 [3] MR. MC CONNELL: I object to your coaching. If
 [4] you have an objection -
 [5] MR. BRAY: It's a misleading -
 [6] MR. MC CONNELL: It's not a misleading question.
 [7] MR. BRAY: It's terribly misleading.
 [8] MR. MC CONNELL: And I object to your coaching.
 [9] MR. BRAY: You left something out of what you
 [10] purported to read and I can't believe you're intentionally
 [11] doing it but if you are, I'm going to let it sit with
 [12] that.
 [13] MR. MC CONNELL: Jack, first of all, I didn't
 [14] intentionally leave anything out, and secondly, I don't
 [15] think -
 [16] MR. BRAY: Why don't you put in the simple
 [17] fact -
 [18] MR. MC CONNELL: No, Jack. I object to the
 [19] coaching and if you persist in this, we'll seek an order
 [20] from Magistrate Rubenstein.
 [21] MR. BRAY: You can go ahead because this is
 [22] potentially outrageous to read something like that.

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[1] MR. MC CONNELL: What is outrageous is your
 [2] deliberately and directly violating the Court's order.
 [3] MR. BRAY: You're looking at something and
 [4] intentionally leaving it out of your question, even though
 [5] you're both looking at it, to make the transcript appear
 [6] worse than it will be.
 [7] MR. MC CONNELL: No, sir, your objection is on
 [8] the record and I object to anything else.
 [9] MR. BRAY: You heard my objection.
 [10] THE WITNESS: May I have the question over.
 [11] MR. MC CONNELL: Let's read the question back.
 [12] (The reporter read the record as requested.)
 [13] BY MR. MC CONNELL:
 [14] Q Is that correct, Dr. Kelly?
 [15] MR. BRAY: Same objection.
 [16] THE WITNESS: That was the question. That was
 [17] not the title of this. It's for laboratory rats and the
 [18] oral dose for laboratory rats.
 [19] BY MR. MC CONNELL:
 [20] Q Let's break it down, then. The title or subject
 [21] of the test is the "Minimum lethal oral dose of
 [22] acrylonitrile catalyst tar, Monsanto lot number H 335, for

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[1] laboratory rats in New Zealand white rabbits"; is that
 [2] correct, sir?
 [3] A Yes, sir.
 [4] Q That's the full title of the report. Was the
 [5] purpose of the test to determine the minimum lethal dose
 [6] for those animals?
 [7] A Yes, sir.
 [8] Q And the laboratory that did the test for you
 [9] reported that there was possible dysfunction of the liver;
 [10] is that correct?
 [11] A Suggested possible dysfunction.
 [12] Q Do you remember, Dr. Kelly, there were
 [13] discussions about the soot from the acetylene process at
 [14] the Texas City plant back in the 1950s?
 [15] A Yes, sir.

[16] Q The acetylene process was the process used at
 [17] the Texas City plant?
 [18] A Yes, sir.
 [19] Q And was it part of the acrylonitrile
 [20] manufacturing process?
 [21] A Was it what?
 [22] Q Was the acetylene process part of the

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[1] acrylonitrile manufacturing process there?
 [2] A It was one of the feedstocks or the building
 [3] blocks for it.
 [4] Q For acrylonitrile?
 [5] A That's correct.
 [6] Q Do you remember discussing the possibility that
 [7] the acetylene soot would cause cancer?
 [8] A Was what?
 [9] Q Do you remember discussing the possibility that
 [10] the acetylene soot would cause cancer?
 [11] A What was the last word?
 [12] Q Cancer.
 [13] A Cancer?
 [14] Q Yes.
 [15] A That the soot was cancer - or carcinogenic, or
 [16] what are you asking me?
 [17] Q I'm asking you whether, back in the 1950s, you
 [18] can remember discussing the possibility that the soot from
 [19] the acetylene process was carcinogenic?
 [20] A I may have. I don't remember.
 [21] Q What does the word "carcinogenic" mean?
 [22] A The possibility of causing the occurrence of

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[1] cancer in laboratory animals or in the human animal.
 [2] Q If a material is carcinogenic, that simply means
 [3] it causes cancer?
 [4] A It all depends what species you're talking
 [5] about. It may be carcinogenic for rats and not
 [6] carcinogenic for humans.
 [7] Q But it means it causes cancer in something,
 [8] doesn't it, Dr. Kelly?
 [9] A Yes, sir.
 [10] Q Do you remember that the Union Carbide medical
 [11] staff believed that the acetylene soot could cause cancer
 [12] in workers?
 [13] A I don't remember that. They may have told me.
 [14] I don't know.
 [15] MR. MC CONNELL: Let me show you a document
 [16] which we'll mark as Kelly Exhibit 6.
 [17] (Kelly Exhibit 6 identified.)
 [18] BY MR. MC CONNELL:
 [19] Q Do you recognize this as a letter that you
 [20] received from either H.K. Eckert or E.K. Eckert?
 [21] A H.K. Eckert, yes, I do.
 [22] Q Eckert is E-c-k-e-r-t. Who was Mr. Eckert?

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[1] A He was a plant manager at Texas City.
 [2] Q Monsanto's plant manager?
 [3] A That is correct.
 [4] Q This is a letter that's dated March 14, 1956?
 [5] A Yes, sir.
 [6] Q You received this from Mr. Eckert at about that
 [7] time?
 [8] A Yes, sir.
 [9] Q Do you see in the very first paragraph
 [10] Mr. Eckert says "Mr. Dunlop asked me to convey to you some
 [11] information he received from Tom Wilbur, Plant
 [12] Superintendent of Carbide's plant at Texas City." Do you
 [13] see that?
 [14] A Yes, sir.
 [15] Q Who was Mr. Dunlop?
 [16] A I think he was head of research at Texas City.
 [17] Q At Monsanto's Texas City plant?
 [18] A That's correct.
 [19] Q He was a Monsanto employee?
 [20] A Yes, sir.
 [21] Q Would you read for us the next sentence in that
 [22] letter, sir.

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[1] A "During a conversation with Tom it was mentioned
[2] that their doctors who are resident at the Texas City
[3] plant (they have two) have arrived at the conclusion of
[4] the possibility of a carcinogenic nature of soot produced
[5] in the acetylene process."

[6] Q You remember now this was brought to your
[7] attention back in 1956 that the acetylene soot might be
[8] carcinogenic?

[9] A There was a possibility.

[10] Q Would you read the next sentence, sir?

[11] A "I bring this to your attention for any
[12] possible" -

[13] Q No, sir, I'm sorry, the one I'm referring to -

[14] A Oh, "Carbide produces acetylene by the same
[15] process that we do and presumably the soot from the two
[16] processes is similar."

[17] Q So you knew in 1956 that the Carbide people were
[18] concerned that the soot might be carcinogenic, sir?

[19] A Well, I don't know what the nature of the amount
[20] of their concern was. They came to a conclusion that it
[21] was possibly carcinogenic, the soot was possibly
[22] carcinogenic.

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[1] Q And you knew that Monsanto was using the same
[2] process in its plant in Texas City?

[3] A Yes, sir.

[4] Q Let me refer you now to the next paragraph,
[5] Dr. Kelly.

[6] A "I am bringing this to your attention for any
[7] possible action you might want to take. This information
[8] is not generally known at Carbide and no one knows it here
[9] at our plant except Mr. Dunlop and me. We prefer to keep
[10] it this way until something definite can be determined."

[11] Q Why did Monsanto want to keep it confidential
[12] and not generally known at the plant, Dr. Kelly?

[13] MR. BRAY: Objection to the mischaracterization.

[14] BY MR. MC CONNELL:

[15] Q Dr. Kelly?

[16] A May I have the question back.

[17] (The reporter read the record as requested.)

[18] THE WITNESS: I do not know why they said that.
[19] Whether or not Carbide asked them to keep it confidential
[20] or not, I don't know.

[21] BY MR. MC CONNELL:

[22] Q What did you do in response to this letter.

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[1] Dr. Kelly, do you remember?

[2] A Yes. I checked our cancer file and found that
[3] we did not have any clusterings of cancers in our workers
[4] who were exposed to the acetylene soot. I am not
[5] certain - I do not remember at the present time whether I
[6] checked with the Carbide doctors to find out if they
[7] actually had any cancers in their workers. I looked up
[8] what information I could find as the possibility of the
[9] cancer being caused by the acetylene soot. I do not know
[10] if there had been any laboratory work on this, so I don't
[11] know where the cancers were occurring, if any cancers were
[12] occurring. After all, they had just said that it's a
[13] possibility that it might. We didn't have any cancers.
[14] There was no cancers listed in the literature from
[15] acetylene soot.

[16] MR. MC CONNELL: Let me show you a document,

[17] Dr. Kelly, which we will mark as Kelly Exhibit 7.

[18] (Kelly Exhibit 7 identified.)

[19] BY MR. MC CONNELL:

[20] Q Dr. Kelly, I know this document looks like it's
[21] covered with that soot we've been talking about. This was
[22] the form that was given to us by Monsanto. Do you

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[1] recognize this as a letter you wrote back to Dr. Eckert on
[2] March 20, 1956?

[3] A Yes, sir.

[4] Q It's marked "confidential"?

[5] A I don't know who put that on. It is marked
[6] "confidential."

[7] Q And it looks like it's typed right above the
[8] text of the letter?

[9] A Well, I can't comment on that. It's on there
[10] someplace.

[11] Q It's in the same kind of typeface that's used in
[12] the letter?

[13] A Mine is different typeface.

[14] Q It's in capital letters but it's typewritten,
[15] isn't it?

[16] A Well, it's a lot bigger than the caps in the
[17] rest of the letter.

[18] Q Would you read the first sentence of that letter
[19] for me.

[20] A "As you know, there is a great deal of talk
[21] about the carcinogenicity of hydrocarbons derived from
[22] oil."

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[1] Q That was a hot topic at the time?

[2] A I don't know what you mean by "hot," but there
[3] was a lot of talk about lead black and carbon black which
[4] went into the tires, and the question was are these
[5] carcinogenic or not. "I imagine there is a certain amount
[6] of truth in it but certainly by far the largest is
[7] speculation."

[8] Q That last sentence that you read for us,
[9] Dr. Kelly, "I imagine there is a certain amount of truth
[10] in it but certainly by far the largest is speculation,"
[11] that's what you wrote in your memo in 1956; is that right?

[12] A Yes, sir.

[13] Q And you did believe at the time that there was a
[14] certain amount of truth in the discussion about
[15] carcinogenicity of hydrocarbons derived from oil?

[16] A A certain amount of truth?

[17] Q Yes, sir.

[18] A Well, it depends on which hydrocarbon they're
[19] talking about from oil. There are any number of
[20] hydrocarbons you get from oil and in relationship of that
[21] to acrylonitrile soot is - or acetylene soot is certainly
[22] ill defined.

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[1] Q Let's go on down. The next line in your memo or
[2] letter says "this is my opinion as far as the soot is
[3] concerned"; is that right?

[4] A That's correct.

[5] Q And your letter goes on to set out your opinion?

[6] A Yes, sir.

[7] Q Would you read the sentence by the numbered
[8] paragraph 1.

[9] A "It might very well be carcinogenic, although I
[10] know of no studies or cases that have occurred."

[11] Q And that was your opinion in 1956, that the
[12] acetylene soot might very well be carcinogenic?

[13] A It might.

[14] Q Would you read paragraph 2, Dr. Kelly?

[15] A "I do not believe any experimental work is
[16] indicated because as I understand it, the content of the
[17] soot varies considerably depending upon changes of the gas
[18] stream as well as the convergent factors."

[19] Q So even though you knew that the soot might be
[20] carcinogenic, you didn't conduct any studies?

[21] A I didn't know it might be. I said it's
[22] possible.

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[1] Q You said "it might very well be carcinogenic"?

[2] A That's right.

[3] Q But you didn't start any experimental work or
[4] studies on it?

[5] A Well, I didn't start experimental work. I
[6] started doing studies about it. I mean, we checked the
[7] literature. We checked the government. We checked our
[8] other areas.

[9] Q Did you find any, Dr. Kelly?

[10] A Find any what? Cancers?

[11] Q Did you find any studies on acetylene soot?

[12] A I do not recall finding any, no, sir.

[13] Q Did you conduct one?

[14] A Yes, sir.
 [15] Q And when did you conduct that study?
 [16] A What?
 [17] Q When did you conduct that study?
 [18] A I'd say 1956 sometime.
 [19] Q In your memo here you said "I do not believe any
 [20] experimental work is indicated."
 [21] A Yes, sir.
 [22] Q Was there something that changed your mind about

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[1] that?
 [2] A I don't think so, no, sir.
 [3] Q Maybe I have a disconnect on this. Did you or
 [4] did you not conduct a study on the carcinogenicity of
 [5] acetylene soot in 1956?
 [6] A It depends on what you mean by "study." If
 [7] you're talking about animal study -
 [8] Q A toxicology study.
 [9] A Animals we did not. Toxicological study by
 [10] literature searches we did.
 [11] Q But did you find any studies?
 [12] A No, sir, we did not. To the best of my
 [13] recollection, we did not.
 [14] Q And you did not conduct your own toxicology
 [15] study in animals?
 [16] A That's correct.
 [17] Q Let's look at paragraph 3, Dr. Kelly. You said
 [18] "it would seem to be a good idea to insist upon complete
 [19] cleanliness as you are doing." Why, Dr. Kelly?
 [20] A Well, even if there are suspicions that you may
 [21] have a carcinogenic product, it's always good industrial
 [22] practice to avoid excessive contact.

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[1] Q Would you read the next sentence, sir.
 [2] A "I believe that" -
 [3] Q No, no, it's the next sentence in paragraph 3.
 [4] A Let me finish that whole paragraph. I'll start
 [5] over. "It would seem to be a good idea to insist upon
 [6] complete cleanliness, as you are doing. I understand,
 [7] however, from the grapevine that the men state they blow
 [8] soot out of their noses after working around the filters.
 [9] If this is true, I believe a dust respirator should be
 [10] mandatory."
 [11] Q So you knew at the time that the workers in the
 [12] Texas City plant blew soot out of their noses after they
 [13] were working in this area?
 [14] A I didn't know that. I said I learned from the
 [15] grapevine that people told them so that - they did blow
 [16] soot out.
 [17] Q Would it be fair to say in 1956 you wanted to
 [18] eliminate worker exposure to the soot?
 [19] A I wanted to minimize it.
 [20] Q And why was that, Dr. Kelly?
 [21] A Because there was a suspicion that there might
 [22] be a carcinogenic agent in the soot even though we were

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[1] not at all certain and we had no evidence that there was
 [2] such a carcinogenic agent.
 [3] Q Would you skip down, Dr. Kelly, and read the
 [4] paragraph - it's not numbered but it's immediately below
 [5] paragraph 4.
 [6] A Why don't I read all of 4? "I believe our
 [7] doctor should be on the alert to watch for any changes in
 [8] the skin of the workers."
 [9] Q Let me ask you why you thought the doctors ought
 [10] to be on the alert?
 [11] A Because in certain oils, hydrocarbon oils, skin
 [12] cancers had occurred. That had been reported. For
 [13] example, carbon black, which is derived from oil, has
 [14] caused some skin cancers in workers. Lead black, which is
 [15] used in paint, which is also a carbon, a soot from
 [16] hydrocarbon oils, does not cause any skin troubles, any
 [17] skin cancers so that here we have a compound which we
 [18] don't know will cause any skin problems but watch out to
 [19] be sure that nothing sneaks up on us.
 [20] Q You had a suspicion that it might cause skin

[21] cancer?
 [22] A We just wanted - well, I really didn't have a

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[1] suspicion that it would, but I wanted to be sure of it.
 [2] Be a belt and suspenders man.
 [3] Q The purpose of putting the doctor on alert is to
 [4] find out whether there were any skin cancers?
 [5] A That's correct.
 [6] Q Would you read the next part of the letter for
 [7] us, Dr. Kelly.
 [8] A "I don't think this is going to be a matter of
 [9] too great a concern but I don't want to minimize it.
 [10] There has been, as you know, a great deal of talk about
 [11] carcinogenesis in the oil industry but frankly, you never
 [12] hear about too many" - there seems to be a word scratched
 [13] out.
 [14] Q Is it "cases," Dr. Kelly?
 [15] A What?
 [16] Q Is the missing word "cases"?
 [17] A What's the word?
 [18] Q Cases.
 [19] A I can't make it out.
 [20] Q Why don't you read the next sentence.
 [21] A "Even if a case develops on the skin, it is
 [22] fairly easily treated" - I can't make out the word.

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[1] Q Is the next sentence "If it develops in the
 [2] notices or lungs, that is something else"?
 [3] A Right.
 [4] Q Why would it be something else, Dr. Kelly, if
 [5] the cancer developed in the nose or the lungs?
 [6] A It's a lot tougher to treat than cancer of the
 [7] skin.
 [8] Q A lot tougher to diagnose?
 [9] A Yes. Maybe not the nose but it's not sticking
 [10] out there on the skin like - that's pretty easy to
 [11] diagnose.
 [12] Q Lung cancer is hard to diagnose?
 [13] A Well, if it's in the lung, it's inside and you
 [14] can't be as sure of it as something on the skin of your
 [15] arm.
 [16] Q Dr. Kelly, we've been going for about an hour.
 [17] Would you like to take a short break?
 [18] A It's all right with me. Whatever you want to
 [19] do.
 [20] MR. MC CONNELL: Why don't we do that.
 [21] (Recess.)
 [22] BY MR. MC CONNELL:

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[1] Q Dr. Kelly, what are polynuclear aromatic
 [2] compounds?
 [3] A Well, it's an aromatic compound; it includes a
 [4] benzene ring, which is six carbon atoms in a ring.
 [5] Polynuclear has several of those, one up to any number,
 [6] usually four or five, and aromatic is a description of an
 [7] organic compound where there are ring structures in
 [8] contrast to aliphatic, a-l-i-p-h-a-t-i-c, compounds, which
 [9] are straight chain hydrocarbons.
 [10] Q A number of the polynuclear aromatic compounds
 [11] are known to cause cancer in humans?
 [12] A I don't know if - there may be some that cause
 [13] cancer. There may be some polyaromatic compounds that are
 [14] present in vegetables that in large doses could cause
 [15] cancer. In small doses they certainly do not cause cancer
 [16] in humans. There are some polyaromatic nuclear compounds
 [17] such been anthracenes, a-n-t-h-r-a-c-e-n-e-s, which occur
 [18] in barbecuing steaks that in sufficient dose can cause
 [19] cancer, but by no means do all polyaromatics cause cancer
 [20] in humans or in animals.
 [21] Q But some of them do cause cancer?
 [22] A Yes, they do.

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[1] Q And that's been known for a very long time?
 [2] A Yes. I don't know what you mean by "very
 [3] long."
 [4] Q 100 years?

- [5] A Oh, let's say 50, 75.
 [6] MR. MC CONNELL: Let me show you, Dr. Kelly, a
 [7] document which we will mark as Kelly Exhibit 8.
 [8] (Kelly Exhibit 8 identified.)
 [9] BY MR. MC CONNELL:
 [10] Q Dr. Kelly, you see on the front page of this
 [11] document this is a report on cancer and chemical
 [12] structure?
 [13] A Yes, sir.
 [14] Q Monsanto medical department?
 [15] A Yes, sir.
 [16] Q And if you look on the next page, you'll see
 [17] this was written by Jack T. Garrett?
 [18] A Yes, sir.
 [19] Q That's the Jack T. Garrett who worked for you in
 [20] the medical department?
 [21] A Yes, sir.
 [22] Q The date is March 1963?

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- [1] A Yes, sir.
 [2] Q Do you remember this is a report that
 [3] Mr. Garrett wrote on cancer and chemical structure?
 [4] A Yes, sir.
 [5] Q Would you turn with me, Dr. Kelly, to the page
 [6] number 10. They're numbered at the top, and tell me when
 [7] you have that.
 [8] A Wait. I gotta find it.
 [9] Q Do you have that page?
 [10] A Yes.
 [11] Q Do you remember back in 1963 that Mr. Garrett
 [12] wrote this report on cancer and chemical structure?
 [13] A Do I what?
 [14] Q Do you remember that Mr. Garrett wrote this
 [15] report on cancer and chemical structure back in 1963?
 [16] A Yes.
 [17] Q You were familiar with it at the time?
 [18] A Yes. I really don't know why he wrote it but I
 [19] know he did it.
 [20] Q On page 10 of this report near the bottom of the
 [21] page there's a section called "Polynuclear Aromatic
 [22] Compounds."

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- [1] A Yes, sir.
 [2] Q Would you read the first sentence in that
 [3] section.
 [4] A "This group of compounds has been studied ever
 [5] since coal tar cancer was described more than a century
 [6] ago."
 [7] Q Coal tar is one of the polynuclear aromatic
 [8] compounds?
 [9] A Yes, sir.
 [10] Q Do you agree with Mr. Garrett that coal tar
 [11] cancer was discovered and described more than 100 years
 [12] ago?
 [13] A I'm not certain about the time frame, but it's
 [14] been quite a while ago.
 [15] Q Would you read the next sentence, Dr. Kelly?
 [16] A "There is more data available on compounds of
 [17] this type than any other group."
 [18] Q Do you agree with Mr. Garrett on that point?
 [19] A Well, I don't know. I don't know what type of
 [20] data he's talking about, whether he's relating this to
 [21] cancer. I just don't know what that means.
 [22] Q By 1963, Dr. Kelly, had there been a number of

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- [1] studies of polynuclear aromatic compounds and their
 [2] ability to cause cancer?
 [3] A I'm sorry, my attention wavered. Would you
 [4] repeat it. I was reading the next paragraph.
 [5] Q Certainly. By 1963, had there been a number of
 [6] studies of polynuclear aromatic compounds and their
 [7] ability to cause cancer?
 [8] A I don't know. Again, I can't quantify it. Jack
 [9] mentions scrotal cancer 100 years ago. He's mentioning
 [10] scrotal cancer in petroleum refineries, presumably the
 [11] last 40 or 50 years. If that's what he means by lots of

- [12] them, that's fine.
 [13] Q It was well known in 1963 that some of these
 [14] compounds did cause cancer; is that right?
 [15] A That's correct.
 [16] Q And in fact, if you look with me over to the
 [17] continuation on page 11, would you read the sentence that
 [18] starts "human experience."
 [19] A - "with compounds of this type has shown that
 [20] in certain circumstances there are human carcinogens."
 [21] Q It goes on to describe the scrotal cancers in
 [22] chimney sweeps?

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- [1] A Yes, sir.
 [2] Q It goes on to describe the fact that the coal
 [3] tar cancers were obviously caused by polynuclear aromatics
 [4] absorbed on chimney soot and contained in coal tars?
 [5] A Yes, sir.
 [6] Q And he goes on to talk about the high incidence
 [7] of scrotal cancer in wax pressmen in petroleum refineries?
 [8] A Yes, sir.
 [9] Q And he says that was traced to polynuclear
 [10] aromatics found in the feedstocks?
 [11] A Yes, sir.
 [12] Q As well as the supernatant liquors from the wax
 [13] presses?
 [14] A Yes, sir.
 [15] Q Do you agree that in 1963 all of those things
 [16] were well known?
 [17] A That what?
 [18] Q All of those things were well known to the
 [19] people in the field?
 [20] A I don't know how well known scrotal cancer in
 [21] wax pressmen was known.
 [22] Q Mr. Garrett knew about it?

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- [1] A Oh, yeah, he knew about it, obviously.
 [2] Q You knew about it?
 [3] A Frankly, until this article of his came out, I
 [4] wasn't too familiar with it, to the best of my
 [5] recollection now, until Jack wrote this.
 [6] Q But you knew about it in 1963 when you read
 [7] Mr. Garrett's report?
 [8] A Yes, sir.
 [9] Q Do you remember, Dr. Kelly, that back in the
 [10] late 1950s Mr. Garrett was concerned about the presence of
 [11] polynuclear aromatic compounds on the acetylene soot we've
 [12] been discussing here?
 [13] A Let's see that reference again. I don't know if
 [14] we talked about Garrett. We talked about Fox. I don't
 [15] know if we mentioned Garrett in that discussion.
 [16] Q We hadn't quite gotten to Mr. Garrett.
 [17] A I beg your pardon?
 [18] Q We hadn't quite gotten to Mr. Garrett's
 [19] involvement in that but we're going to come back to it.
 [20] My question now is simply, do you remember back
 [21] in the late 1950s that Mr. Garrett was concerned about the
 [22] presence of polynuclear aromatic compounds in the

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- [1] acetylene soot?
 [2] A No, I don't remember, as well as I see it. I
 [3] remember hearing from Garrett about it.
 [4] Q If we looked at the memos, that might refresh
 [5] your memory on it?
 [6] A Yes, it would.
 [7] Q At the Texas City plant, Dr. Kelly, were there a
 [8] wide variety of hydrocarbons derived from oil?
 [9] A From what? From oil?
 [10] Q Yes, sir.
 [11] A Well, their feedstocks came from oil.
 [12] Q That was true in the styrene process?
 [13] A Well, they made ethylbenzene from benzene, which
 [14] was obtained from oil refineries.
 [15] Q Was it true in the acrylonitrile process, there
 [16] were hydrocarbons derived from oil in that process?
 [17] A Yes, sir, to the best of my recollection. I'm
 [18] not familiar at the present date with acrylonitrile

[19] process and the flow -
[20] Q I'm sorry, did you have something else you
[21] wanted to add?
[22] A With the flow diagrams of the acrylonitrile

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[1] process. I don't remember those today. I did in '63,
[2] obviously.
[3] Q And was it true that hydrocarbons derived from
[4] oil were used in the vinyl chloride process?
[5] A Yes, sir, but I do not believe that there were
[6] polynuclear aromatics in the vinyl chloride process.
[7] Q You don't believe that as we're sitting here
[8] today?
[9] A I'm not sure of that.
[10] Q You're just not sure one way or the other?
[11] A That's correct.
[12] Q How was Monsanto disposing of the acetylene soot
[13] in 1956, Dr. Kelly, do you know?
[14] A I don't know.
[15] Q Do you have any idea what it was doing with the
[16] soot after 1956?
[17] A No, sir, I don't.
[18] Q That wasn't part of your responsibility as
[19] medical director?
[20] A No, sir.
[21] Q Let's talk about acrylonitrile, Dr. Kelly.
[22] Would you agree that acrylonitrile is a toxic chemical?

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[1] A Again, by an individual - I say it is a toxic
[2] chemical. It's not nearly as toxic as hydrogen cyanide,
[3] but it could be considered toxic as an industrial chemical
[4] is concerned, yes.
[5] Q Hydrogen cyanide is an extremely toxic chemical?
[6] A Yes, it is.
[7] Q Acrylonitrile is toxic but not as toxic as
[8] hydrogen cyanide?
[9] A That's correct.
[10] Q Is there a relationship between acrylonitrile
[11] and cyanide?
[12] A I don't know what you mean by a "relationship."
[13] Q Are cyanide compounds used in making
[14] acrylonitrile?
[15] A Yes.
[16] Q If you ingested acrylonitrile, would that
[17] release cyanide compounds in the body?
[18] A Well, I have only experience with one person, a
[19] chemist at our Springfield laboratory who drank about a
[20] pint of acrylonitrile. I'm not sure of the dose but it
[21] was a good-sized dose and it took him, I think, 12 hours
[22] to die. So from that one case, it's not in the same

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[1] ballpark with cyanide which you're talking about minutes
[2] with a much smaller dose.
[3] MR. MC CONNELL: Let me show you a document,
[4] Dr. Kelly, that we will mark as Kelly Exhibit 9.
[5] (Kelly Exhibit 9 identified.)
[6] BY MR. MC CONNELL:
[7] Q Do you recognize this as a memorandum that you
[8] received from Dr. William E. Nessell, N-e-s-s-e-l-l?
[9] A Yes, sir.
[10] Q And you received it about June 30, 1954?
[11] A Yes, sir.
[12] Q Does this memo describe the acrylonitrile
[13] suicide you told me about?
[14] A Yes, sir.
[15] Q And who was Dr. Nessell?
[16] A He was our plant physician at the Springfield,
[17] Massachusetts plant of the Monsanto Company.
[18] Q And he reports that one of the chemists
[19] committed suicide by drinking acrylonitrile; is that
[20] right?
[21] A Yes, sir.
[22] Q Do you see in the second - actually, let me

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[1] refer you down to under the 2 numbered paragraph, the
[2] report says he died approximately 11 hours after

[3] ingestion.
[4] A Yes, sir.
[5] Q And would you read the paragraph right after
[6] that, sir.
[7] A Wait a minute. I've lost the -
[8] Q The paragraph that starts off "according to
[9] publication of" -
[10] A - "The Toxicity of Acrylonitrile," based on
[11] fatal doses for rats, a lethal dose for this individual
[12] would be approximately 6 cc; he took at least 15 cc in
[13] ginger ale."
[14] Q Dr. Nessell calculated the lethal dose at 6
[15] cc's?
[16] A No, he didn't calculate that. He quoted a very
[17] good Cyanamid company bulletin. That's comparing fatal
[18] dose for rats to fatal dose for humans, would be 6 cc's.
[19] Q How much is 6 cc's, Dr. Kelly?
[20] A A fifth of an ounce.
[21] Q A fifth?
[22] A 30 cc's is an ounce.

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[1] Q Very small dose?
[2] A It's a teaspoonful.
[3] Q And Dr. Nessell believed that that much would be
[4] a fatal dose?
[5] A No, he didn't say that. He said based on the
[6] publication of American Cyanamid, they calculated that a
[7] lethal dose would be 6 cc's, and I don't know what else to
[8] say.
[9] Q And he goes on to say that the chemist in
[10] question took at least 15 cc's?
[11] A Well, yes. I don't know how they came out with
[12] the dose of 15 cc's. Paragraph 2 said an amount in excess
[13] of 15 cc's and paragraph 7 he said at least 15 cc's so I
[14] don't know how much the man took. Anecdotally, I thought
[15] he took more than 15 cc's, which is half an ounce.
[16] Q 15 cc's is only a half an ounce?
[17] A That's correct.
[18] Q It's a lot less than a pint?
[19] A Well, there are 16 ounces in a pint. This is
[20] half an ounce.
[21] Q And apparently that amount was a lethal dose?
[22] A It was for him.

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[1] Q The toxicity of acrylonitrile was well known in
[2] the 1950s, Dr. Kelly?
[3] A Yes, sir.
[4] Q You knew about that even before the suicide of
[5] the chemist?
[6] A Yes, sir.
[7] Q Is it true, Dr. Kelly, that acrylonitrile can
[8] cause poisoning by inhalation as well as by ingestion?
[9] A Yes, sir, insufficient dose.
[10] Q And inhalation simply means breathing in the
[11] vapors of the chemical?
[12] A That's correct.
[13] Q Some fatalities have occurred?
[14] A What?
[15] Q Some fatalities have occurred?
[16] A Well, we never had any. No fatalities occurred
[17] at Monsanto from inhalation or from anyone working with
[18] the material. I don't recall at this time whether there
[19] have been - I have a vague recollection of some illness
[20] from breathing acrylonitrile. I don't know if it went on
[21] to fatalities or not. Again, not at Monsanto and I don't
[22] know -

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[1] Q And you knew that in the 1950s?
[2] A Yes, sir.
[3] Q Is it also true, Dr. Kelly, that acrylonitrile
[4] is a severe skin and eye irritant?
[5] A Yes, sir.
[6] Q Causes burns?
[7] A I beg your pardon? Yes.
[8] Q Causes headaches and vomiting?
[9] A I'm not sure. It all depends on the dose. It

[10] all depends on the temperature at which the material is
 [11] exposed. At ambient temperatures, the exposure is much
 [12] less than if the material is heated up.
 [13] Q And this information about toxicity that we've
 [14] been talking about was known to you in the 1950s?
 [15] A Yes, sir.
 [16] Q What is styrene monomer, Dr. Kelly?
 [17] A Well, it's a compound derived from
 [18] ethylbenzene. It's a liquid. It has - it's an industrial
 [19] chemical and it's moderate to low toxicity. It's used in
 [20] many applications.
 [21] Q It was manufactured by Monsanto at the Texas
 [22] City plant?

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[1] A Yes, sir.
 [2] Q Who were the largest producers of styrene in the
 [3] world in the 1950s and 1960s?
 [4] A Whether Dow or Monsanto was, I don't know.
 [5] Q Were they the two biggest?
 [6] A I believe so.
 [7] Q I believe so, too.
 [8] A Well, we agree.
 [9] MR. BRAY: I object to that testimony. His, not
 [10] yours.
 [11] BY MR. MC CONNELL:
 [12] Q Is it fair to say styrene was an important
 [13] product at that time for Monsanto?
 [14] A Oh, yes, it was a big-volume item. It was an
 [15] item that was growing, and it wasn't a sink or swim
 [16] product. I mean, we'd still be making chemicals when we
 [17] gave up styrene.
 [18] Q But it was important to you?
 [19] A Yes, it was important.
 [20] Q And you knew in the 1950s about the toxicity of
 [21] styrene monomer?
 [22] A Yes, sir.

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[1] Q In fact, you knew a fair amount about styrene
 [2] monomer toxicity in the 1940s; is that right?
 [3] A I don't know when I came upon the information,
 [4] but I've known it for quite a while.
 [5] Q Do you remember serving as an expert witness in
 [6] a styrene case in the late 1940s?
 [7] A I beg your pardon?
 [8] Q Do you remember serving as an expert witness in
 [9] a styrene case in the late 1940s?
 [10] A I don't remember.
 [11] Q Don't remember one way or the other?
 [12] A What?
 [13] Q You don't remember one way or the other?
 [14] A That's correct.
 [15] Q Do you remember some Dow scientists had
 [16] published an article on styrene monomer toxicity back in
 [17] 1942?
 [18] A Yes, I do.
 [19] Q And do you remember who some of those Dow
 [20] scientists were?
 [21] A Don Irish was one of them.
 [22] Q And who was Don Irish?

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[1] A Head of their toxicology department at Dow.
 [2] Q And do you remember the others?
 [3] A No, I don't.
 [4] Q Did you have some dealings with Don Irish over
 [5] the years?
 [6] A Yes, I did.
 [7] Q On the subject of styrene and its toxicity?
 [8] A Oh, it was lots of things. We made parallel
 [9] products, so we had quite a few discussions and meetings
 [10] with Dow.
 [11] Q And were you familiar with this article that
 [12] Dr. Irish and his colleagues published in 1940s?
 [13] A Am I familiar with the article?
 [14] Q Yes, sir.
 [15] A Yes. As I understand it, he did inhalation
 [16] studies for a relatively short period of time, 30 days or

[17] something like that, and he came out with safe
 [18] concentrations of the material.
 [19] Q And you were familiar with that article back in
 [20] the late 1940s?
 [21] A Yes, sir.
 [22] MR. MC CONNELL: Let me show you a document.

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[1] Dr. Kelly, that we will mark as Kelly Exhibit 10.
 [2] (Kelly Exhibit 10 identified.)
 [3] BY MR. MC CONNELL:
 [4] Q I'll just ask you briefly whether this is a copy
 [5] of the article that you and I have been talking about
 [6] written by Dr. Irish and his colleagues?
 [7] A Yes, sir, it is.
 [8] Q It's an article called "The Response of
 [9] Laboratory Animals to Monomeric Styrene"?
 [10] A Yes, sir.
 [11] Q Do you know the other gentlemen listed with
 [12] Dr. Irish as the authors of this report?
 [13] A Yes. V.K. Rowe I didn't know too well. Adams I
 [14] knew not as well as I did Rowe or Irish. I think Rowe
 [15] eventually followed Irish as head of the laboratory.
 [16] Q Were all of those people Dow employees?
 [17] A Yes, they were.
 [18] Q If I could ask you to look at the last page,
 [19] Dr. Kelly, page 301, do you have that now?
 [20] A Yes, I do.
 [21] Q I'd just like to direct your attention quickly
 [22] to the section marked "conclusions."

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[1] A Yes, sir.
 [2] Q They reported that "Vapor concentrations of
 [3] monomeric styrene which are acutely dangerous to guinea
 [4] pigs and rats range from 10-12 milligrams per liter
 [5] (approximately 2400 parts per million) for an 8-hour to 46
 [6] milligrams per liter (10,000 parts per million) for an
 [7] exposure of 30-60 minutes." You were aware of that
 [8] information back in the 1940s; is that correct, sir?
 [9] A Yes.
 [10] Q Skipping down in that paragraph they reported
 [11] immediate deaths result -
 [12] A Let's take the second sentence first.
 [13] Q Why don't you read the second sentence for us.
 [14] A "Higher concentrations are impossible to attain
 [15] at ordinary temperatures."
 [16] Q Why don't you read the next sentence?
 [17] A "Immediate deaths result from the primary action
 [18] upon the central nervous system, while many delayed deaths
 [19] result from the pneumonia which frequently develops
 [20] following acute lung irritation."
 [21] Q So in this study, the material caused deaths in
 [22] the experimental deaths?

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[1] A It what?
 [2] Q In the experimental animals?
 [3] A Yes, it caused deaths at 10,000 parts per
 [4] million.
 [5] Q What does it mean, Dr. Kelly, that the primary
 [6] action was on the central nervous system?
 [7] A It was an anesthetic.
 [8] Q I'm sorry, sir?
 [9] A It's an anesthetic.
 [10] Q What's the result of that?
 [11] A You can go to sleep. You can go into a coma and
 [12] you die if you stay in it long enough.
 [13] Q Let me ask you to look down at the next to last
 [14] paragraph, Dr. Kelly. Would you read that for us,
 [15] please.
 [16] A "Monomeric styrene produces a reaction on the
 [17] rabbit's skin which is very similar to that produced by
 [18] the common aromatic hydrocarbons. In industrial use the
 [19] same precautions should be observed to avoid skin contact
 [20] as are now followed in the handling of other aromatic
 [21] hydrocarbon solvents."
 [22] Q You were aware of that information back in the

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[1] 1940s?
 [2] A Yes, that it was a skin irritant, yes, sir.
 [3] Q So again, styrene monomer is not something you'd
 [4] want to put in your coffee?
 [5] MR. BRAY: Objection to the trivialization and
 [6] the characterization inherent in that question.
 [7] MR. MC CONNELL: Objection to your speech.
 [8] MR. BRAY: It's not a speech. It's an
 [9] objection.
 [10] THE WITNESS: It's not intended as a food
 [11] additive.
 [12] BY MR. MC CONNELL:
 [13] Q And you wouldn't put it in your coffee,
 [14] Dr. Kelly, would you?
 [15] MR. BRAY: Same objection. It's repetitious.
 [16] It's been asked and answered.
 [17] THE WITNESS: No, I wouldn't put it in coffee.
 [18] BY MR. MC CONNELL:
 [19] Q And you wouldn't want it in your drinking water?
 [20] A Now, that depends. What dose are we talking
 [21] about? Are we talking about 1 teaspoonful of styrene in a
 [22] tankful of water? That wouldn't bother anybody.

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[1] Q Would you want it in your drinking water,
 [2] Dr. Kelly?
 [3] MR. BRAY: It's been asked and answered.
 [4] THE WITNESS: I wouldn't want anything in my
 [5] drinking water if it could be obtained without a
 [6] particular chemical, but I wouldn't object to it depending
 [7] upon the dose involved. Remember, he's talking about
 [8] inhalation here. You've gone over to drinking water, the
 [9] oral dose of the material.
 [10] BY MR. MC CONNELL:
 [11] Q Did they also look at the oral doses of styrene
 [12] monomer in this study, Dr. Kelly?
 [13] A Wait until I look.
 [14] Q Let me refer you to page 299. Is there a
 [15] section on oral administration, Dr. Kelly?
 [16] A Yes, there is.
 [17] Q And did they find a lethal dose in the oral
 [18] administration study?
 [19] A They found that giving 1.6 grams of material per
 [20] kilogram of body weight showed 100 percent survival. Now,
 [21] if you want to transpose that directly to people, it's a
 [22] 70-kilogram man, which was allegedly the average man, 155

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[1] pounds, that would be 100 grams. 100 grams would be
 [2] roughly equivalent to 3-1/2 ounces in the material every
 [3] day to a person without causing any fatalities. There was
 [4] irritation of the esophagus and the stomach, which in some
 [5] cases at 2 grams caused death of the animal from
 [6] irritation.
 [7] Q Let's look at the third paragraph under the
 [8] section called "Oral Administration." Would you read that
 [9] for us, Dr. Kelly.
 [10] A The third paragraph?
 [11] Q Yes, sir.
 [12] A I just read it. "A very few oral doses of 2.0
 [13] grams per kilogram (50 percent solution) produced a
 [14] pronounced irritation of the esophagus and stomach which
 [15] quickly resulted in the death of the animal. Even 1.0
 [16] gram per kilogram often caused a similar reaction after a
 [17] few doses, with deaths in some cases before the end of the
 [18] 28-day experimental period."
 [19] Q So in the study, 1942 study, they found that
 [20] oral doses could cause death as well as inhalation; is
 [21] that correct?
 [22] A As well as what?

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[1] Q They found that oral doses could also cause
 [2] death; is that correct?
 [3] A Oh, yes, sir, if given enough of it.
 [4] Q I think you mentioned earlier you were active in
 [5] the Manufacturing Chemists Association; is that right,
 [6] Dr. Kelly?
 [7] A Yes, sir.

[8] Q What is a material safety data sheet?
 [9] A Well, it's a publication that is intended to
 [10] describe the characteristics of a product as well as
 [11] explaining how it can be handled safely.
 [12] Q Did the Manufacturing Chemists Association have
 [13] a program of writing material safety data sheets for
 [14] various chemicals?
 [15] A Yes, they did.
 [16] Q And those safety data sheets contained
 [17] information about the toxicity of the chemicals?
 [18] A Yes, sir, it did.
 [19] Q Did you write the material safety data sheet for
 [20] styrene in 1949?
 [21] A I don't think so. I think Dow must have.
 [22] Q You don't remember working on the material

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[1] safety data sheet for styrene?
 [2] A I don't remember. We only got in the styrene
 [3] business at the close of World War II, where Dow had been
 [4] making it for quite some time before, so I know I didn't
 [5] write it.
 [6] Q Did Monsanto operate the Texas City plant for
 [7] the government during World War II?
 [8] A They bought it afterwards. I was gone. I don't
 [9] know if they operated it during the war.
 [10] Q You weren't around during the war because you
 [11] were in the Army?
 [12] A That's correct.
 [13] (Pause.)
 [14] BY MR. MC CONNELL:
 [15] Q Dr. Kelly, did you have a chance to talk with
 [16] Mr. Bray during the break we took?
 [17] A With whom?
 [18] Q Mr. Bray.
 [19] A Did I have a talk with him about, when did you
 [20] say, today?
 [21] Q During any of the breaks we've taken today.
 [22] A Not about this case.

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[1] Q About the deposition?
 [2] A Not about that. I talked to him about the
 [3] pastrami sandwich.
 [4] Q But not about the case or the deposition?
 [5] A Not about the case at all.
 [6] MR. MC CONNELL: Let me show you a document,
 [7] Dr. Kelly, which we will mark as Kelly Exhibit 11.
 [8] (Kelly Exhibit 11 identified.)
 [9] BY MR. MC CONNELL:
 [10] Q Dr. Kelly, we've been talking about styrene
 [11] toxicity, and I asked you whether you could remember being
 [12] asked to testify as an expert witness in a styrene case in
 [13] the late 1940s. Do you recognize this document I've
 [14] handed you as a letter that you wrote on October 9, 1948?
 [15] A Do I recognize this?
 [16] Q Yes, sir.
 [17] A No, I don't. I've forgotten all about it.
 [18] Q Now that you've seen it, Dr. Kelly, is this a
 [19] letter you wrote to Don Irish at the Dow Chemical Company
 [20] on October 9, 1948?
 [21] A Yes, sir.
 [22] Q I'd like to direct your attention to the first

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[1] paragraph, Dr. Kelly, the second sentence. You say "one
 [2] large user of styrene, and I don't believe it is our
 [3] styrene either, has asked me to testify as an expert
 [4] witness in the case of an employee who is alleging
 [5] permanent disability because of inhaling this compound."
 [6] Do you see that, Dr. Kelly?
 [7] A Yes, sir.
 [8] Q Does that refresh your memory you did testify in
 [9] the styrene case in the late 1940s?
 [10] A I must have. I know I never testified or gave a
 [11] deposition in it. It doesn't refresh much of my memory on
 [12] it.
 [13] Q You don't doubt that it happened?
 [14] A Oh, no, I'm sure it happened.

[15] Q And the second paragraph, could I ask you to
[16] read the second paragraph of the letter, Dr. Kelly.
[17] A "The second point is that I am to write a first
[18] draft of the medical section on styrene for the MCA safety
[19] data sheet on this product."
[20] Q Does that refresh your memory at all, Dr. Kelly,
[21] that you wrote at least part of the safety data sheet on
[22] styrene for the MCA?

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[1] A No, it doesn't, and I don't know really why I
[2] was talked into it. It doesn't really.
[3] Q As we sit here today, you can't remember one way
[4] or the other?
[5] A I can't remember.
[6] Q Dr. Kelly, do you remember that styrene was used
[7] in food packaging materials?
[8] A In what?
[9] Q In food packaging materials.
[10] A Polystyrene, yes, sir.
[11] Q And Monsanto manufactured polystyrene for use in
[12] food packaging?
[13] A Yes.
[14] Q Do you remember in 1961 there was a concern
[15] raised about the residual styrene monomer present in that
[16] food packaging material?
[17] A I don't remember it off the top of my head, no,
[18] sir.
[19] MR. MC CONNELL: Let me show you a document,
[20] Dr. Kelly, which we will mark as Kelly Exhibit 12.
[21] (Kelly Exhibit 12 identified.)
[22] BY MR. MC CONNELL:

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[1] Q Do you recognize this, Dr. Kelly, as a memo you
[2] received from Mr. G.W. Ingle?
[3] A Yes, I do.
[4] Q It's dated April 5, 1961?
[5] A Yes, sir.
[6] Q Who was Mr. Ingle?
[7] A He was in the research department or the
[8] development department of our Springfield, Massachusetts
[9] plant of Monsanto, which was the plastic division of the
[10] company.
[11] Q Mr. Ingle was a Monsanto employee?
[12] A Yes, that's correct.
[13] Q And he's talking in this memo about the
[14] polystyrene task force. What was the polystyrene task
[15] force, do you know?
[16] A I don't know.
[17] Q It goes on to say "After some months of work a
[18] statement has been developed which indicates that residual
[19] styrene monomer is the only parameter to be specified. In
[20] addition 0.75 percent has been tentatively fixed as the
[21] upper limit for residual styrene monomer. There remains,
[22] however, some feeling that the toxicology of styrene has

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[1] been inadequately defined to document the safety of such a
[2] widely used polymer."
[3] Does that refresh your memory that there was a
[4] concern about the styrene monomer in these food packaging
[5] materials?
[6] A Yes, I think so, yes, sir.
[7] Q And do you recall that Mr. Ingle was asking you
[8] whether you thought additional studies ought to be
[9] performed on styrene monomer?
[10] A Yes, sir.
[11] Q Do you remember whether Monsanto conducted those
[12] studies?
[13] A Whether they -
[14] Q Whether Monsanto conducted those studies in
[15] 1961?
[16] A Well, it really was - Monsanto was not the one
[17] to conduct them. It was a group of styrene manufacturers
[18] that was supposed to get a collaborative investigation of
[19] it. To the best of my recollection, that was never done.
[20] I think they concluded from the extraction studies that
[21] there was no particular hazard involved because

[22] polystyrene film is, by and large, a rigid type of plastic

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[1] rather than a film like you put around meat or flexible,
[2] thin type of film. This is a solid, sort of like a box
[3] type of material that you use. I don't think it was ever
[4] done.
[5] Q And the reason it was never done is that you
[6] determined that none of the styrene monomer could get into
[7] the food?
[8] A Either that or the FDA decided that there was no
[9] hazard involved. I really think the ball was in their
[10] court, was the FDA to make their mind up about it.
[11] Q Do you believe the FDA would have tolerated any
[12] migration of the styrene monomer into the food?
[13] A It would have tolerated some.
[14] Q Do you think they would have required safety
[15] studies on that before allowing it?
[16] A Well, that was our common practice with
[17] unintentional food additives from plastics, and I think
[18] they would have done the same thing with styrene being
[19] extracted from polystyrene. But as I say, I don't recall
[20] what they did, except the fact that I do not remember this
[21] group in general, Monsanto in particular, doing any
[22] further study. I think there's an error here because the

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[1] statement that in inhalation work there was two or
[2] three-week stuff and fairly good sized doses of - what was
[3] it - 1 gram per kilo or something like that, 30 days work
[4] of. There was a certain amount of oral studies done by
[5] Irish.
[6] Q That's the 1942 study that you and I looked at
[7] before?
[8] A That's correct.
[9] Q In his memo Mr. Ingle is talking about two
[10] different kinds of studies. One type is a 90-day study?
[11] A Well, he was hoping if they had to do it, they
[12] could get away with that rather than a two-year study.
[13] Q And in fact, he says "certainly the shorter-term
[14] studies would be far less expensive than the latter."
[15] A No question about that.
[16] Q Was that an important question to you, whether
[17] you had to do a 90-day study or two-year study?
[18] A You would settle the issue. A two-year study
[19] takes three years to do, by the time you set up the
[20] parameters, by the time you have the two years, by the
[21] time you have the animals examined microscopically, so
[22] it's three years before you get the report. And the 90

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[1] days, you get it over 100 days, 110 days and the cost is
[2] probably a 20th. So it's important.
[3] Q And that was an important consideration to you
[4] in deciding whether to conduct that study?
[5] A Well, it was - no, because it was important but
[6] when you're dealing with the FDA, they make the rules and
[7] it doesn't matter to them if you say well, we're going to
[8] spend - these rules are going to cost us \$100,000. The
[9] FDA will say well, that's tough. That's what you have to
[10] do, so you don't argue with them about it.
[11] MR. MC CONNELL: Let me show you another
[12] document which we can mark as Kelly Exhibit 13.
[13] (Kelly Exhibit 13 identified.)
[14] BY MR. MC CONNELL:
[15] Q Is this your response to Mr. Ingle on the
[16] question we've been talking about, Dr. Kelly?
[17] A Yes, sir, it is.
[18] Q It's a memo from you dated April 11, 1961?
[19] A That's correct.
[20] Q You start out by saying "Certainly I think if we
[21] could get all the manufacturers to do a decent 90-day test
[22] on styrene monomer, it wouldn't cost us very much."

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[1] A That's correct.
[2] Q And you go on to say it "might satisfy the Food
[3] and Drug Administration"?
[4] A Yes, sir, but I also say we'd have to go out and
[5] talk to the FDA beforehand.

[6] Q You'd have to negotiate with them on what type
[7] of study you had to do?
[8] A This is what we think is needed. What do you
[9] think about it? And they might say negative or yes, go
[10] ahead.

[11] Q Would you look at the top of page 2 of this
[12] memo, Dr. Kelly. You quote a long passage from a book
[13] called "Detoxification Mechanisms," but I'm really just
[14] interested in the first sentence. Would you read that for
[15] us.

[16] A "Styrene phenylethylene appears to be more toxic
[17] than ethylbenzene and differs from it in its metabolism."

[18] Q Styrene is more toxic than ethylbenzene?

[19] A That's what the Williams text talks about.

[20] Q That was information you had available to you in
[21] 1961?

[22] A Yes, sir.

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[1] Q And was it an accurate statement?

[2] A Pardon?

[3] Q Was it an accurate statement at that time?

[4] A Let me finish reading it.

[5] Q Certainly.

[6] A Well, yes, I don't exactly see where the basis
[7] of his statement, "appears to be more toxic than
[8] ethylbenzene," how much more or - he doesn't even give
[9] any basis for the statement, per se, than it is more toxic
[10] than ethylbenzene. Maybe it was in some other part of
[11] that textbook of his. Gerarde is a well known
[12] investigator.

[13] Q If he made that statement, would you give that
[14] some credit?

[15] A I'd give it some credit but I'd still have a
[16] couple of caveats about his evidence, but I don't know
[17] it. He may have - this may have referred to the paragraph
[18] ahead of it.

[19] Q But you did decide to quote that in your
[20] response to Mr. Ingle, didn't you?

[21] A Yes, I did.

[22] Q As far as you know, Monsanto didn't do any

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[1] further studies at that time?

[2] A As far as I know, Monsanto did not do any by
[3] itself or participate in any group study. I do not know -
[4] I feel quite sure that no group study was done.

[5] Q Did Monsanto use toluene and benzene at the
[6] Texas City plant?

[7] A Did they use -

[8] Q Toluene and benzene.

[9] A Yes, sir. They used benzene a great deal.

[10] Whether they separated toluene from benzene, I don't know
[11] if they stripped off the toluene and sold it or used it at
[12] some process which I don't recall at present. It was
[13] around there.

[14] Q Is it true that very large amounts of benzene
[15] were used in the Texas City plant?

[16] A Oh, yes, lots and lots.

[17] Q And would there also have been large amounts of
[18] toluene?

[19] A I don't know that exactly. I don't know that.

[20] Q You just don't know one way or the other?

[21] A That's correct.

[22] Q Is toluene a toxic material?

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[1] A Again, any industrial compound is toxic. I
[2] mean, even aspirin is toxic. It depends on your
[3] definition. Even salt is toxic. So it is, under that
[4] broad, generic definition. Toluene can be called toxic
[5] but I would say it's only moderately toxic as an
[6] industrial compound is concerned.

[7] Q There were other things at the Texas City plant
[8] that were more toxic?

[9] A Oh, yes, certainly.

[10] Q But toluene is moderately toxic?

[11] A Is not what?

[12] Q Is it moderately toxic?

[13] A By my definition, I would say yes.

[14] Q And you knew that in the 1950s?

[15] A Yes, sir.

[16] Q There were scientific reports in the 1950s that
[17] indicated that exposure to toluene could cause chronic
[18] toluene poisoning?

[19] A I'm not so sure about that. I know that it
[20] would cause immediate nervous symptoms. You would get a
[21] toluene jag much like the beginning of alcohol
[22] intoxication. Whether it caused - it did not cause

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[1] leukemia like benzene and was not as far as aplastic
[2] anemia which was attributed to benzene.

[3] Q So benzene caused leukemia?

[4] A Yes, sir.

[5] Q And benzene caused aplastic anemia?

[6] A In sufficient doses, yes, sir, and I probably
[7] would have to say it's definitely known in the causes of
[8] chronic myelogenous, m-y-e-l-o-g-e-n-o-u-s, leukemia, but
[9] not chronic lymphatic leukemia.

[10] Q What's the difference in the two kinds of
[11] leukemia?

[12] A It depends on which of the cells proliferates,
[13] the leukocytes or the lymphocytes.

[14] Q Both kinds of leukemia are forms of cancer?

[15] A They're both malignant changes. Cancer is
[16] usually not a term that's used for leukemias, although
[17] it's a serious illness, but it's amenable to treatment
[18] much more than other forms of cancer is concerned, so I
[19] don't think it can be equated as a cancer.

[20] Q It's often fatal?

[21] A What?

[22] Q It's often fatal?

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[1] A Oh, yes, certainly.

[2] Q How treatable was it in the 1950s, Dr. Kelly?

[3] A Not very treatable. I don't know when the good
[4] chemotherapeutic agents came into play, but it was around
[5] that time or a little later.

[6] MR. MC CONNELL: Let me show you a document,
[7] Dr. Kelly, which we will mark as Kelly Exhibit 14.

[8] (Kelly Exhibit 14 identified.)

[9] BY MR. MC CONNELL:

[10] Q Is this a memo that you received from C.L.
[11] Gilmore in 1958?

[12] A Yes, it is.

[13] Q And who was Mr. Gilmore?

[14] A Safety manager at the Monsanto plant at Texas
[15] City.

[16] Q It's dated February 25, 1958?

[17] A Yes, sir.

[18] Q And he says "One of the units at the plant is
[19] planning on the use of toluene in a process which may
[20] involve personnel to be working in an atmosphere
[21] containing toluene?"

[22] A Yes, sir.

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[1] Q The workers might be exposed to toluene?

[2] A Yes, sir.

[3] Q In the second paragraph he goes on to say "From
[4] the various references available to us, it would seem that
[5] a maximum working concentration would be 200 parts per
[6] million." Is that right, Dr. Kelly?

[7] A That's what it says here.

[8] Q And he goes on to say "However, these same
[9] references make references to chronic toluene poisoning
[10] which apparently produces blood changes."

[11] A Well, he doesn't say "references." He says
[12] "inferences."

[13] Q I'm sorry, my copy is very hard to read. Is
[14] that "inferences"?

[15] A "Inferences."

[16] Q Why don't we start over, then. "However, these
[17] same references make inferences to chronic toluene
[18] poisoning which apparently produces blood changes."
[19] Mr. Gilmore brought this to your attention in 1958?

- [20] A Yes, sir.
 [21] Q Do you remember what those blood changes were?
 [22] A No. It probably came from Sax and I don't

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- [1] believe it's been accepted that chronic toluene poisoning
 [2] causes blood change. It's certainly not similar at all to
 [3] benzene.
 [4] Q Whether it's similar to benzene or not,
 [5] Mr. Gilmore seems to think it caused blood changes; is
 [6] that correct, sir?
 [7] A Well, yes, but I don't understand - I don't
 [8] accept Mr. Gilmore as an authority on blood changes due to
 [9] toluene.
 [10] Q He was Monsanto's safety director at the Texas
 [11] City plant?
 [12] A That's correct.
 [13] Q And if Sax said the toluene exposure caused
 [14] blood changes, you just don't accept that?
 [15] A That's correct. I don't know if Gilmore is
 [16] quoting Sax, but that seems to be his bible.
 [17] Q Did you know Sax?
 [18] A Did I know him? No. He was an industrial
 [19] hygienist someplace. He was someone who just compiled a
 [20] bunch of references and wrote the book.
 [21] Q You were familiar with Sax back at that time in
 [22] the 1950s?

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- [1] A Yes, sir.
 [2] MR. MC CONNELL: Dr. Kelly, let me show you a
 [3] document which we will mark as Kelly Exhibit 15.
 [4] (Kelly Exhibit 15 identified.)
 [5] BY MR. MC CONNELL:
 [6] Q Dr. Kelly, this was a document that was produced
 [7] by Monsanto in this litigation. It seems to be an excerpt
 [8] from a longer document and there's a section here on
 [9] toluene. Do you see that?
 [10] A Yes, sir.
 [11] Q There's a section on the first page we have
 [12] called "Toxicity and Hazards."
 [13] A The first page says what?
 [14] Q There's a section B called "Toxicity and
 [15] Hazards" under toluene?
 [16] A Yes, sir.
 [17] Q I'd like to go over some of the statements here
 [18] and find out whether you agree with them.
 [19] A First, I don't know - I don't know who wrote
 [20] this or what's the date on it or anything about it.
 [21] Q Nor do I, Dr. Kelly, because this seems to be
 [22] the form we got it in.

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- [1] A Okay.
 [2] Q And I don't think that matters for present
 [3] purposes.
 [4] A Okay.
 [5] Q Under the "Toxicity and Hazards" section there
 [6] are a number of statements, Dr. Kelly. One of them is
 [7] this: "Toluene has an acute narcotic effect comparable to
 [8] that of benzene but lacks the convulsant effect of the
 [9] latter." Do you agree with that statement?
 [10] A I'd have to look it up in an authoritative
 [11] toxicological text. It's probably correct, but I can't
 [12] say I agree with it without knowing more about it.
 [13] Q It says "Unconsciousness appears earlier in
 [14] toluene than in benzene poisoning." Is that right,
 [15] Dr. Kelly?
 [16] A I think that's true.
 [17] Q And was that known back in the 1940s and 1950s?
 [18] A I believe so.
 [19] Q It goes on to say "The subacute or chronic
 [20] toxicity of toluene is considerably less than that of
 [21] benzene due at least in part to its difference in
 [22] volatility." Do you agree with that?

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- [1] A Yes, sir.
 [2] Q It goes on to say that "Toluene may enter the
 [3] body by inhalation, ingestion or absorption through the

- [4] skin and mucus membranes." Do you agree with that?
 [5] A I'd have to check on how easily it is absorbed
 [6] through the skin.
 [7] Q Do you believe it is absorbed through the skin?
 [8] A I don't know. I said I'd have to check it.
 [9] Q Is it true that toluene may enter the body by
 [10] inhalation and ingestion?
 [11] A No question. Yes.
 [12] Q And you knew that back in the 1940s and 1950s?
 [13] A Yes, sir.
 [14] Q It goes on to say, Dr. Kelly, that "toluene
 [15] exerts a similar but stronger irritant action on the skin
 [16] and mucus membranes than benzene. Dermatitis may result
 [17] from its drying and defatting action on the skin." Do you
 [18] agree with that?
 [19] A Yes, sir.
 [20] Q Was that known in the 1940s and 1950s?
 [21] A You mean in general?
 [22] Q Was it known to you?

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- [1] A Yes, it was.
 [2] Q It goes on to say "toluene can cause
 [3] considerable damage to the eye tissue." Do you agree with
 [4] that?
 [5] A Yes, sir.
 [6] Q Was that known in the 1940s and '50s?
 [7] A Yes, sir.
 [8] Q Let's skip over to the next page. It talks
 [9] about effects and there's a section labeled "acute." Do
 [10] you see that, Dr. Kelly?
 [11] A Yes.
 [12] Q It says "exposure to high concentrations of
 [13] toluene results in headache, vomiting and disturbance of
 [14] equilibrium." Do you agree with that?
 [15] A Yes, sir.
 [16] Q Was that known in the 1940s and 1950s?
 [17] A Yes, sir.
 [18] Q Known to you and Monsanto?
 [19] A Yes, sir.
 [20] Q It goes on to say "Loss of consciousness is only
 [21] rarely encountered. Men exposed to 800 parts per million
 [22] for three days developed severe nervousness, muscular

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- [1] fatigue, extreme nausea and insomnia which persisted for
 [2] several days. They exhibited mental confusion, loss of
 [3] self-control, lack of muscular coordination and impairment
 [4] of visual accommodation. Similar but less pronounced
 [5] findings were encountered following exposure to lower
 [6] concentrations." Do you agree with that?
 [7] A Yes, sir.
 [8] Q Was that known to you back in the 1940s and
 [9] 1950s?
 [10] A Yes, sir.
 [11] Q Monsanto knew about that at that time?
 [12] A Yes, sir.
 [13] Q The next section is called "Chronic." It goes
 [14] on to say "long-continued or repeated exposure to toluene
 [15] is followed by headache, giddiness, insomnia, nervous
 [16] irritability and inability to work. Loss of appetite,
 [17] nausea and vomiting are noted." Do you agree with that?
 [18] A I'm not sure about the loss of appetite, nausea
 [19] and vomiting. I would have to -
 [20] Q You'd have to check on that part of it?
 [21] A Yes, sir.
 [22] Q Do you agree with the rest of it?

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- [1] A Yes, sir.
 [2] Q And that was known to you in the 1940s and
 [3] 1950s?
 [4] A Yes, sir.
 [5] Q It goes on to say "Intolerance to alcohol is
 [6] pronounced and is sufficiently characteristic of toluene
 [7] poisoning to be considered of diagnostic importance.
 [8] Nosebleeds and heart pains may be encountered." Do you
 [9] agree with that?
 [10] A Oh, I'm not sure of the evidence for that. That

[11] I'd have to -
 [12] Q You'd have to check on that part?
 [13] A Yes, that's correct.
 [14] Q Let's talk about the next part, Dr. Kelly.
 [15] "Chronic toluene poisoning, like benzene poisoning,
 [16] produces blood changes. Toluene poisoning differs from
 [17] benzene poisoning, however, in the absence of extreme
 [18] changes." Do you agree with that?
 [19] A I don't know because he doesn't say what the
 [20] blood changes are. If he's talking about a very mild
 [21] anemia, that could be one thing. If he's talking about
 [22] aplastic anemia, he's wrong. So I don't know what he's

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[1] talking about, but I can't agree with that statement. He
 [2] qualifies it and says it differs from benzene poisoning in
 [3] the absence of extreme changes, so he's got statements in
 [4] there that only he knows what he's talking about and I
 [5] don't believe I could agree with it without knowing more
 [6] about what evidence he has. All I can say is that from an
 [7] industrial point of view, toluene is a much less of a
 [8] problem than benzene.
 [9] Q Benzene is a problem?
 [10] A Well, it could be a problem, yes.
 [11] Q Did Monsanto monitor workers who were exposed to
 [12] toluene and benzene in the plants?
 [13] A They did of the benzene workers. I do not
 [14] believe that we monitored the toluene workers. It
 [15] depended on the air levels of the benzene. We monitored
 [16] the working environment and we also monitored the blood
 [17] levels, the urinary levels of phenols with the benzene
 [18] workers. We did that. We did not do that with toluene
 [19] workers.
 [20] MR. MC CONNELL: Let me show you, Dr. Kelly,
 [21] what we will mark as Kelly Exhibit 16.
 [22] (Kelly Exhibit 16 identified.)

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[1] BY MR. MC CONNELL:
 [2] Q Dr. Kelly, do you recognize this as a letter you
 [3] wrote to Mr. A.B. Trebiz in 1959?
 [4] A I do now. I didn't remember anything about it
 [5] until you showed me this.
 [6] Q But you remember it now?
 [7] A Yes, sir.
 [8] Q And it's dated September 18, 1959?
 [9] A Yes, sir.
 [10] Q Mr. Trebiz was at the Vickers Petroleum
 [11] Company?
 [12] A Yes, sir.
 [13] Q And why were you writing to Mr. Trebiz?
 [14] A He obviously got communication with me asking
 [15] what we did for periodic examinations on workers with
 [16] benzene and toluene. Whether he wrote to me as a
 [17] physician for a supplier - I don't know if this man was a
 [18] customer of ours for - we obviously wrote asking about
 [19] xylene and I told him we - we didn't even make it. And as
 [20] far as toluene and benzene are concerned, I do not know
 [21] whether he wrote to me as a Monsanto employee or a member
 [22] of the Manufacturing Chemists Association. Sometime when

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[1] I was on that committee people would write into the MCA
 [2] and they would give it down to me or some other member of
 [3] the committee.
 [4] Q Would you read the first sentence of the second
 [5] paragraph, Dr. Kelly?
 [6] A "With toluene and benzene, we examine workers
 [7] yearly and do a complete blood count, including smear."
 [8] Q What did you mean, Dr. Kelly, by "we examine
 [9] workers yearly"?
 [10] A We examined them once a year.
 [11] Q Did they get a complete physical examination?
 [12] A Yes, sir, but I'm not sure that we did with
 [13] toluene as much as with benzene. An awful lot of times
 [14] workers were exposed to both toluene and benzene. I don't
 [15] remember if we had individuals just exposed to toluene,
 [16] per se, and I would doubt if we would give them a yearly
 [17] examination if they were not exposed to benzene along with

[18] the toluene.
 [19] Q But your letter does say "With toluene and
 [20] benzene, we examine workers yearly"?
 [21] A Yes, sir.
 [22] Q And it goes on to say that you do "a complete

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[1] blood count, including smear." What does that mean,
 [2] Dr. Kelly?
 [3] A Smear is a differential look at the blood
 [4] cells. You see the characteristic of the blood cells. In
 [5] a blood count you just count them. In a smear you look at
 [6] the character of the blood cells and whether there's any
 [7] abnormal proportion in any of the individual components of
 [8] the blood, the various lymphocytes, leukocytes, et cetera.
 [9] Q Is it to determine whether there are any
 [10] abnormal or changed blood cells?
 [11] A Yes, sir.
 [12] Q You go on to say here, Dr. Kelly, "In addition
 [13] we carry out an interval complete blood count on our
 [14] benzene workers so that these workers receive a blood
 [15] count every six months. In addition, we carry out urine
 [16] sulfate tests on our benzene workers." What are urine
 [17] sulfate tests, Dr. Kelly?
 [18] A It has to do with the ratio of conjugated
 [19] sulfates in the urine. In addition, it referenced in
 [20] comparison to the unconjugated. I don't know the details
 [21] of it now but that was a test used for a while and carried
 [22] out examination of the phenols in blood as a more delicate

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[1] test, so I guess this fell out sometime in 1960.
 [2] Q In 1959 when you wrote this letter, you knew
 [3] that benzene was an extremely toxic material?
 [4] A Well, again, you're using a term "extremely
 [5] toxic." It's a toxic material. There's probably billions
 [6] of pounds of the stuff made every year and used every year
 [7] and it is not in the same ballpark as hydrogen cyanide but
 [8] it is more toxic - I would say it's a toxic compound, not
 [9] highly toxic like cyanide would be, but more toxic than
 [10] toluene is, certainly.
 [11] Q And you knew that long-term exposure would cause
 [12] aplastic anemia?
 [13] A In a sufficient amount. There was - the
 [14] government had set various safe levels. I don't know what
 [15] the level was in 1959, but I think it was around 100 parts
 [16] per million, something along there, and then they dropped
 [17] it to 50 and then they dropped it to 10, and I think they
 [18] were talking about dropping it to one by the time I left
 [19] Monsanto. So it was a toxic compound.
 [20] Q No secret?
 [21] A I beg your pardon?
 [22] Q No secret?

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[1] A No what?
 [2] Q It wasn't a secret?
 [3] A Oh, no.
 [4] Q And it causes leukemia?
 [5] A Benzene?
 [6] Q Yes, sir.
 [7] A It can cause leukemia in sufficient dose.
 [8] Q And you knew that at the time?
 [9] A Yes, sir.
 [10] (Pause.)
 [11] MR. MC CONNELL: Dr. Kelly, let me ask you to
 [12] look at a document which we'll mark as Kelly Exhibit 17.
 [13] (Kelly Exhibit 17 identified.)
 [14] BY MR. MC CONNELL:
 [15] Q This is a memo from W.R. Skinner to J.H.
 [16] Kernan. It's dated July 25, 1947, and if you'll look in
 [17] the upper right-hand corner, there's a list of names and
 [18] Dr. R.E. Kelly is one of those names?
 [19] A Yes, sir.
 [20] Q Is this a memo you received a copy of back in
 [21] 1947?
 [22] A Yes, sir.

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[1] Q Who was W.R. Skinner?

[2] A W.R. who?
 [3] Q W.R. Skinner.
 [4] A I don't know who he was.
 [5] Q In any event, this is a memo about benzene
 [6] toxicity?
 [7] A Yes.
 [8] Q And the first sentence says "Answering our
 [9] inquiry about the toxicity of benzene and how to deal with
 [10] it, Dr. R.E. Kelly stated that among other precautionary
 [11] steps, 'medical control by blood counts and urine tests'
 [12] should be considered."
 [13] A Yes, sir.
 [14] Q And is that an accurate statement of the
 [15] measures you were taking in the late 1940s regarding
 [16] benzene exposure?
 [17] A Yes, sir.
 [18] Q Further down it says "It seems best that the
 [19] medical department be prepared to make such tests and at
 [20] such intervals as are necessary to detect a tendency to
 [21] chronic benzene poisoning, and also be prepared to deal
 [22] with cases of acute poisoning as well." And my question

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[1] for you is, did the Monsanto medical department deal with
 [2] cases of benzene poisoning back in the 1940s?
 [3] A No, we never had it. We prevented it.
 [4] Q You were prepared for it?
 [5] A Yes, sir.
 [6] Q And you worked hard to prevent any exposure to
 [7] the workers?
 [8] A Well, we did work hard but we took the proper
 [9] precautionary steps to prevent it.
 [10] Q And the toxicity information about benzene that
 [11] we've been talking about was known to you in the late
 [12] 1940s?
 [13] A Yes, sir.
 [14] Q What is benzol, Dr. Kelly?
 [15] A Same as benzene.
 [16] Q The same thing as benzene?
 [17] A Yes, sir.
 [18] Q Different term for the same chemical?
 [19] A Yes, sir, just like "whiskey" is spelled
 [20] differently in the United States than the United Kingdom.
 [21] MR. MC CONNELL: Let me show you a document
 [22] which we'll mark as Kelly Exhibit 18.

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[1] (Kelly Exhibit 18 identified.)
 [2] BY MR. MC CONNELL:
 [3] Q Is this a memo that you received from Robert D.
 [4] Sutherland in 1946?
 [5] A Yes, sir, it is.
 [6] Q It's dated May 20, 1946?
 [7] A Yes, sir.
 [8] Q Who was Robert D. Sutherland?
 [9] A I haven't the slightest idea. It says he was a
 [10] safety engineer for the Reconstruction Finance
 [11] Corporation, which was an agent for Monsanto Chemical
 [12] Company in Texas City.
 [13] Q Do you know what the Reconstruction Finance
 [14] Corporation was?
 [15] A No, sir, I don't.
 [16] Q And if you read the letterhead at the top, it
 [17] says "Monsanto Chemical Company, agent for Reconstruction
 [18] Finance Corp."
 [19] A Yes, sir, I read that.
 [20] Q And do you know what the relationship was
 [21] between Monsanto and the Reconstruction Finance Corp. at
 [22] that time?

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[1] A We were their agent, but I don't know what else
 [2] that means.
 [3] Q Would you read the first sentence of that,
 [4] Dr. Kelly.
 [5] A "We have been running blood counts on all our
 [6] lab personnel to check on the absorption of benzol fumes
 [7] and the tests have shown that the hemoglobin was low on
 [8] all tested with the exception of three."

[9] Q What would it mean to you if the hemoglobin
 [10] counts were low on those employees after the exposure to
 [11] benzol?
 [12] A It could mean a lot of different things. How
 [13] low was it? What's the percentage? Three out of how
 [14] many? Did he have 20 people where their hemoglobin was
 [15] low? It could be from the action of benzene. It could be
 [16] from the loss of blood. I don't know if these were
 [17] females or males or if they had another reason to have a
 [18] low hemoglobin. So it was just something that had to be
 [19] investigated.
 [20] Q He goes on to say "Our principal hazard in the
 [21] lab is from benzol fumes which are contained in all our
 [22] materials such as styrene, ethylbenzene, polyethylbenzol,

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[1] et cetera." Is that an accurate statement?
 [2] A I don't know - no, I don't think so. I don't
 [3] know what he means by saying benzol fumes are contained in
 [4] all our materials such as styrene. Maybe there's a small
 [5] percentage of benzene residual in styrene, but I don't
 [6] know what the exposure would be, what - the lab people as
 [7] a rule do not get a great deal of exposure. They work
 [8] under hoods and other laboratory apparatus. So I don't
 [9] know what he means by that's the hazard.
 [10] Q He goes on to ask you to contact the plant
 [11] physician, Dr. Manske?
 [12] A Yes, sir.
 [13] Q Do you remember doing that?
 [14] A I'm sure I did, but I don't remember it.
 [15] Q You don't remember what the follow-up on this
 [16] problem was?
 [17] A No, sir. 47 years ago? I don't remember.
 [18] MR. MC CONNELL: Why don't we take five.
 [19] (Recess.)
 [20] BY MR. MC CONNELL:
 [21] Q Dr. Kelly, we're all back now. Do you recall
 [22] that a little earlier you and I had some discussions about

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[1] the acetylene soot at the Monsanto Texas City plant?
 [2] A Yes, sir.
 [3] Q And you couldn't remember when we talked whether
 [4] there had been some evidence that there were polynuclear
 [5] aromatic compounds contained in that soot; is that right,
 [6] sir?
 [7] A No - well, no, I think it was established that
 [8] there was some, but I thought the discussion was whether
 [9] or not it was a possible carcinogen.
 [10] Q And you remember it was established that there
 [11] were polynuclear aromatics contained in the soot?
 [12] A I'm not really sure.
 [13] MR. MC CONNELL: Why don't we do this: I'll
 [14] show you a document, Dr. Kelly, which we will mark as
 [15] Kelly Exhibit 19.
 [16] (Kelly Exhibit 19 identified.)
 [17] BY MR. MC CONNELL:
 [18] Q Dr. Kelly, this is a letter from Jack Garrett to
 [19] Mr. Joseph Houghton, H-o-u-g-h-t-o-n. Your name doesn't
 [20] appear on this document, Dr. Kelly, but I would draw your
 [21] attention to the second paragraph of the letter. And by
 [22] the way, this is dated December 8, 1958; is that correct,

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[1] sir?
 [2] A Yes, sir.
 [3] Q And Mr. Garrett was working on your staff at
 [4] that time in the medical department?
 [5] A Yes, sir.
 [6] Q The second paragraph of the letter, Mr. Garrett
 [7] says "While discussing the acetylene soot problem with
 [8] Mr. Rotzler, who supervises this group of departments, the
 [9] acetylene polymer problem was brought up. There is a
 [10] possibility that if there are polynuclear aromatic
 [11] hydrocarbons in the soot, some of these compounds are also
 [12] in the acetylene polymer." Does this refresh your memory
 [13] that by 1958 it had been established that there were
 [14] polynuclear aromatics in the acetylene soot?
 [15] A No, sir. They don't say it was established.

[16] They say there's a possibility that if there are
 [17] polynuclear aromatic hydrocarbons, some of these are also
 [18] in the acetylene polymer. So if there weren't any in the
 [19] soot, there wouldn't be any in the polymer, so it's just a
 [20] possibility.
 [21] MR. MC CONNELL: Let's take a look at a document
 [22] that we will mark as Kelly Exhibit 20.

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[1] (Kelly Exhibit 20 identified.)
 [2] BY MR. MC CONNELL:
 [3] Q Do you have that in front of you now, sir?
 [4] A Yes, I do.
 [5] Q This is a memo from M.L. Owens to R.J. Schatz?
 [6] A Yes, sir.
 [7] Q Did you know those men, sir?
 [8] A Did I know -
 [9] Q Did you know them at the time?
 [10] A No, not those two.
 [11] Q This is a memorandum dated January 19, 1959?
 [12] A Yes, sir.
 [13] Q And if you'll look in the column in the upper
 [14] right-hand corner, a copy apparently went to Jack Garrett
 [15] in St. Louis?
 [16] A Yes, sir.
 [17] Q And Jack Garrett was working in your medical
 [18] department at the time?
 [19] A That's correct.
 [20] Q If we could look at paragraph 1, the memorandum
 [21] says "Incomplete combustion of gaseous fuels, including
 [22] acetylene, forms condensed polynuclear hydrocarbons."

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[1] Those found fairly conclusively in the work of references
 [2] 4 and 5 (Tebbens) included 3,4-benzpyrene and
 [3] 1,2,5,6-dibenzanthracene which are known to be
 [4] carcinogenic. "Do you see that, Dr. Kelly?
 [5] A Yes, sir, I see it.
 [6] Q And do you remember knowing that at the time?
 [7] A I don't remember whether I knew it or not.
 [8] Q If you'll look at the second paragraph, the
 [9] memorandum says "Any extensive analytical work on
 [10] Department 18 soot will without doubt in my mind find some
 [11] 3,4-benzpyrene. The definition of 'some' is the hooker in
 [12] this whole problem. Houghton says the presence of
 [13] benzpyrene from his lab work can be suspected. I think he
 [14] has shown it is present." Do you see that, Dr. Kelly?
 [15] A Yes, sir.
 [16] Q Did Mr. Garrett ever bring this to your
 [17] attention back in the 1950s?
 [18] A Let me finish the paragraph.
 [19] Q Go ahead and take your time, too.
 [20] A Yes, sir.
 [21] Q My question is simply whether Mr. Garrett
 [22] discussed this matter with you back in the 1950s.

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[1] A I don't remember whether he did or not.
 [2] Q As we're sitting here today, you can't remember
 [3] one way or the other?
 [4] A That's correct.
 [5] Q You don't remember what Monsanto was doing with
 [6] its acetylene soot from the Texas City plants at the time?
 [7] A I don't remember.
 [8] Q Do you remember at any time what Monsanto did
 [9] with the acetylene soot from the plants?
 [10] A I remember there was a great deal - not a great
 [11] deal, but there was considerable discussion about the
 [12] acetylene soot and presence or absence of any carcinogenic
 [13] products in it, but I have no clear recollection of what
 [14] was done, what we established one way or the other.
 [15] Q That was handled by Mr. Garrett?
 [16] A I beg your pardon?
 [17] Q That was handled by Mr. Garrett?
 [18] A Yes, I think so.
 [19] Q Dr. Kelly, do you remember in the 1950s there
 [20] were some questions that came up about benzene that was
 [21] contained in polyethylene manufactured by Monsanto?
 [22] A You don't mean polystyrene?

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[1] Q No, sir.
 [2] A Maybe the memorandum will refresh me.
 [3] MR. MC CONNELL: Let me show you a document that
 [4] we'll mark as Kelly Exhibit 21.
 [5] (Kelly Exhibit 21 identified.)
 [6] BY MR. MC CONNELL:
 [7] Q Is this a memo that you received from John Fox
 [8] in 1958?
 [9] A Yes, it is.
 [10] Q And Mr. Fox is the gentleman at the Monsanto
 [11] Texas City plant that we discussed earlier today?
 [12] A Yes, we discussed his position at Texas City.
 [13] Q He was the safety director?
 [14] A No. He was - Gilmore was the safety director.
 [15] Fox was research, part industrial hygiene, part safety, I
 [16] guess. I don't really know what his title was, but he was
 [17] doing some things in all those three areas.
 [18] Q The date on this memo is May 29, 1958?
 [19] A Yes, sir.
 [20] Q And the subject is "Benzene in Polyethylene"?
 [21] A Yes, sir.
 [22] Q Do you remember that Mr. Fox wrote you to ask

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[1] for some information about the benzene contamination in
 [2] polyethylene?
 [3] A Do I remember that he asked me?
 [4] Q Yes, sir.
 [5] A Yes, sir.
 [6] Q And that polyethylene was going to be used for
 [7] food packaging?
 [8] A Yes, sir.
 [9] Q He went on to say that at present the only
 [10] available information they have is that the fresh
 [11] unrefined pellets contain 400 to 500 parts per million of
 [12] benzene and the refined pellets 50 parts per million?
 [13] A That's what he says.
 [14] Q And he goes on to say they "have no information
 [15] on how much is left in the polymer after it passes through
 [16] a molding machine but since the machine operates at 350
 [17] degrees centigrade, there shouldn't be much benzene
 [18] left."
 [19] A Yes, sir.
 [20] Q And do you remember that was a problem that
 [21] confronted Monsanto back in 1958?
 [22] A Well, I don't remember how extensive the problem

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[1] was or how it was solved. Were there any other memorandum
 [2] of mine back to him?
 [3] Q He goes on to say that "the unrefined product is
 [4] already on the market."
 [5] A That's what he says.
 [6] Q Is that accurate?
 [7] A I don't know.
 [8] Q Do you have any reason to question it?
 [9] A What?
 [10] Q Do you have any reason to question it?
 [11] A No, I don't have any reason to distrust him, but
 [12] I can't of my own knowledge say it's accurate or not.
 [13] Q He goes on to say their "question now is
 [14] whether there is an acceptable limit already established
 [15] for benzene in polyethylene. They are rather late
 [16] requesting this information but they needed to first
 [17] obtain reliable information on the amount of benzene
 [18] present."
 [19] A That's what he says.
 [20] Q And he goes on to say "if refining is necessary
 [21] to reduce the level to 50 parts per million, the
 [22] production cost will certainly be increased. Any further

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[1] lowering would really get expensive."
 [2] A Yes, sir.
 [3] Q Was that true?
 [4] A I don't know how - obviously if you're going to
 [5] do more refining, the cost is going to go up. I don't
 [6] know what he means by "really get expensive." I don't

[7] know what that means.
 [8] Q Was there a concern at Monsanto about increasing
 [9] the production costs?
 [10] A Well, I don't know. This is John Fox. This is
 [11] not the manufacturing group. This is not the research
 [12] group, and I don't know how to resolve the problem.
 [13] Obviously, as he does say, if you put -- no matter how much
 [14] benzene, 400 parts per million in pellets, you subjected
 [15] them to 350 degrees centigrade, you're going to volatilize
 [16] an awful lot. If there's any benzene in there, it's not
 [17] going to be remaining at the other end of the extrusion
 [18] line, so it would appear the sensible thing would be to
 [19] get some of the material that comes out of a molding
 [20] machine and see whether there's any benzene left in it at
 [21] that point rather than any pellets.
 [22] Q Would it be important to make sure there wasn't

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[1] any benzene left in the material that was going to be used
 [2] for food packaging?
 [3] A Any benzene, no. I think that the FDA has put
 [4] limits on sometime, I don't know when they did it, in food
 [5] packaging but down to a zero level is not necessary.
 [6] MR. MC CONNELL: Let's look at your answer to
 [7] Mr. Fox. Let's mark this as Kelly Exhibit 22.
 [8] (Kelly Exhibit 22 identified.)
 [9] BY MR. MC CONNELL:
 [10] Q Would you read that and tell me when you're
 [11] finished, Dr. Kelly.
 [12] A Yes. Yes, sir.
 [13] Q Is this your memo to Mr. Fox regarding benzene
 [14] in polyethylene?
 [15] A Yes, sir.
 [16] Q It's dated June 2, 1958?
 [17] A Yes, sir.
 [18] Q Let's look at the first paragraph, Dr. Kelly.
 [19] You say "First, a strict scientific answer to your
 [20] question as to 'the amount of benzene that can be safely
 [21] left in polyethylene used in food packaging' would require
 [22] extraction data. Even then the individual would have to

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[1] come out with an opinion which would be more or less an
 [2] educated guess."
 [3] A Yes, sir.
 [4] Q So you didn't really know with any certainty how
 [5] much benzene would be left in the food packaging?
 [6] A We're not dealing with opinions. We're dealing
 [7] with Food and Drug Administration thinking and if I were
 [8] the individual, I'd have to come out with a more or less
 [9] educated guess, depending on what the level was. If it
 [10] was 1 part per million in the food packaging, I would say
 [11] forget about it. It's no problem. If it were more, that
 [12] may be get into the regulatory aspect. I don't know where
 [13] I came up with that a 10th of a part per million that the
 [14] FDA might be talking about. I just don't know.
 [15] Q Let's read the next paragraph. Would you read
 [16] that for us, Dr. Kelly.
 [17] A Which is the next one?
 [18] Q "You then ask."
 [19] A "You then ask whether or not there is any level
 [20] that would be acceptable. I presume by this you mean
 [21] acceptable by the Food and Drug Administration. If any is
 [22] extractable, the FDA would say if more than a 10th of a

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[1] part per million came out, it would be unacceptable."
 [2] Q Let me stop you there and ask a question. You
 [3] told Mr. Fox that the FDA would say it was unacceptable if
 [4] more than a 10th of a part per million came out of the
 [5] material?
 [6] A That's what I told them. I do not know at the
 [7] present time what my basis for that statement was.
 [8] Q But that's what you told Mr. Fox in 1958?
 [9] A That's what I told him in 1958, yes.
 [10] Q Would you read the first sentence of the next
 [11] paragraph.
 [12] A "Now we can come down to being practical."
 [13] Q So you're putting aside what the FDA thinks and

[14] you're talking about what's practical?
 [15] MR. BRAY: I object to that characterization.
 [16] MR. MC CONNELL: Object to the coaching. You
 [17] can answer.
 [18] MR. BRAY: What coaching are you talking about?
 [19] I object to the mischaracterization of what you said.
 [20] That's all I said.
 [21] BY MR. MC CONNELL:
 [22] Q You can answer, Dr. Kelly. Do you need to hear

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[1] the question again?
 [2] A I'd like to hear the question, yes, sir.
 [3] MR. MC CONNELL: Read it back to him.
 [4] (The reporter read the record as requested.)
 [5] THE WITNESS: Well, no. Certainly anything the
 [6] FDA says is pretty practical because they're the ones who
 [7] are in charge, but I go on to say if we have 400 parts per
 [8] million in the refined pellets, which are then stored and
 [9] come through a molding machine at 350 degrees C, that
 [10] would present no hazard to the ultimate user. But
 [11] unfortunately, mine might be a strong vote if we're taking
 [12] it up with the FDA because I feel sure any benzene not
 [13] removed by molding at 350 degrees C would be so bound with
 [14] polyethylene it would not be removed by contact with the
 [15] food.
 [16] BY MR. MC CONNELL:
 [17] Q Was it important, Dr. Kelly, to make sure there
 [18] wasn't any benzene getting into the food?
 [19] A It was important to find out what level would be
 [20] getting into the food. "Any" is not necessarily the right
 [21] answer.
 [22] Q And you went on to say here, Dr. Kelly,

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[1] "Believing this and proving it are two different things so
 [2] what we should do is keep still about any possible benzene
 [3] contamination in polyethylene." Did you write that,
 [4] Dr. Kelly?
 [5] A Did I write it? Yes, I did.
 [6] Q What did you mean, Dr. Kelly, when you said
 [7] "what we should do is keep still about any possible
 [8] benzene contamination in polyethylene"?
 [9] A Yes, sir.
 [10] Q What did you mean by that?
 [11] A Well, until we found out really what levels of
 [12] benzene contamination were present, we ought to keep still
 [13] about it. Maybe we've got a problem, but maybe we don't.
 [14] We don't know anything about it.
 [15] Q You didn't tell the FDA?
 [16] A I can't answer that. Now I don't know whether I
 [17] did or not. Whether I did or not, I don't know.
 [18] Q You didn't tell your customers?
 [19] A No, I did not.
 [20] Q And in fact, you went on -- go ahead, Dr. Kelly.
 [21] A Because, in my belief, we did not have any
 [22] problem with safety with any food that was packaged in

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[1] polyethylene that came through a molding machine at 350
 [2] degrees C.
 [3] Q And you went on to say "I think our salespeople
 [4] should be notified but certainly no one on the outside
 [5] should be told about it."
 [6] A Yes, sir, I said that.
 [7] Q To the best of your knowledge, Dr. Kelly, is it
 [8] true that no one on the outside was told about it?
 [9] A I don't know. I don't know what developed after
 [10] March of 1958. I don't know what else happened. Do you
 [11] have anymore memoranda there on this matter?
 [12] Q You just don't remember?
 [13] A I don't remember.
 [14] Q You don't remember going to the FDA to talk with
 [15] them about this?
 [16] A I don't remember going. I don't believe I went,
 [17] but there certainly may be correspondence with the FDA.
 [18] Q Can you remember any correspondence with the FDA
 [19] as we sit here today?
 [20] A I don't remember.

[21] MR. MC CONNELL: Let me show you a document,
[22] Dr. Kelly, which we will mark as Kelly Exhibit 23.

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[1] (Kelly Exhibit 23 identified.)
[2] BY MR. MC CONNELL:
[3] Q Is this a memo that you got from John L. Tuley
[4] in 1964?
[5] A I can't make out the date, but it is March the
[6] 5th, something.
[7] Q On my copy it looks like March 4, 1964.
[8] A Mine is March the 5th - oh, I see.
[9] MR. FLORIG: You're looking in two different
[10] places.
[11] BY MR. MC CONNELL:
[12] Q Oh, there's a stamped date, which is not very
[13] legible. In fact, I can barely see it on my copy and
[14] there's a typewritten date on the left.
[15] A I wasn't seeing that. Yes, that's correct,
[16] March 4, '64.
[17] Q Subject is "Toxicity of Benzene"?
[18] A Yes, sir.
[19] Q Who was Mr. Tuley?
[20] A Safety supervisor at the Long Beach plant of the
[21] Monsanto Company.
[22] Q And without reading it all, Dr. Kelly, Mr. Tuley

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[1] advised you that they anticipated using benzene in a
[2] process starting up at the Long Beach plant?
[3] A Yes, sir.
[4] Q And he asked your advice about benzene toxicity?
[5] A Yes, sir.
[6] Q Do you remember your response to Mr. Tuley?
[7] A No, I don't remember it.
[8] MR. MC CONNELL: Let me show you a document that
[9] we'll mark as Kelly Exhibit 24.
[10] (Kelly Exhibit 24 identified.)
[11] BY MR. MC CONNELL:
[12] Q Is this your letter back to Mr. Tuley?
[13] A Yes, it is.
[14] Q Dated March 10, 1964?
[15] A Yes, sir.
[16] Q You provided him some information about benzene
[17] toxicity?
[18] A I beg your pardon?
[19] Q You provided Mr. Tuley with some information
[20] about benzene toxicity?
[21] A Yes.
[22] Q Would you read the first sentence in the second

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[1] paragraph.
[2] A "From the medical point of view, I am distressed
[3] at the substitution of benzene for a less toxic solvent,
[4] toluene."
[5] Q And that's what you told me earlier, that
[6] benzene is more toxic than toluene?
[7] A Yes, sir.
[8] Q And Mr. Tuley and the people at the Long Beach
[9] plant were substituting benzene for toluene in their
[10] process; is that right?
[11] A That's what it seems they wanted to do.
[12] Q Would you read the next sentence for us?
[13] A "I am sure, however, that you have sufficient
[14] commercial justification."
[15] Q What was the commercial justification for
[16] changing to a more toxic solvent?
[17] A Maybe it was a better product.
[18] Q Maybe it was cheaper?
[19] A I beg your pardon?
[20] Q Maybe it was cheaper?
[21] A I don't really know the cost differential
[22] between benzene and toluene.

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[1] Q You go on to say there, Dr. Kelly - why don't
[2] you just read the next sentence for us.
[3] A "While it is true the process is a closed one,
[4] we always have to worry about leaks. We have found the

[5] pump house to be an extremely dangerous area."

[6] Q What did you mean by that last statement,

[7] Dr. Kelly?

[8] A Well, the pump house is a place where pumps are
[9] enclosed in a small outside shed and the possibility of
[10] leaks through the gaskets and the various parts of the
[11] pumps can occur, and it was one of the more - places
[12] where the exposure would be higher.

[13] Q And you were always worried about leaks in the
[14] pump house?

[15] A Well, we worried in case there were a leak. We
[16] didn't have leaks all the time. We didn't have people
[17] working around the pump house, but they had to go and
[18] check the pumps. Presumably they went in and did
[19] something with the packing of the pump, had to tear a pump
[20] down. Pumps don't leak all the time, obviously, but there
[21] could be leaks and there could be repairs on the pumps.
[22] Q And if you're running a chemical plant, you know

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[1] you're going to have leaks from time to time; is that
[2] right?

[3] A Well, we don't know. We always are getting -
[4] allegedly getting better pumps that won't leak but that
[5] doesn't seem to happen all the time.

[6] Q Sometimes they do leak?

[7] A Sometime they leak, sure.

[8] Q Do you remember, Dr. Kelly, there was an issue
[9] in the 1950s about a possible acrylonitrile contamination
[10] of the styrene made by Monsanto?

[11] A I don't remember that.

[12] MR. MC CONNELL: Let me show you a document
[13] which we'll mark as Kelly Exhibit 25.

[14] (Kelly Exhibit 25 identified.)

[15] BY MR. MC CONNELL:

[16] Q Is this a letter that you got from F.J. Hahn in
[17] 1953?

[18] A Yes, sir.

[19] Q I'm sorry, I think that's 1958, Dr. Kelly. I
[20] didn't mislead you but it's hard to read. It's dated June
[21] 11, 1958?

[22] A Yes, sir.

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[1] Q Who was F.J. Hahn?

[2] A I don't know.

[3] Q Do you remember he worked in Monsanto's
[4] Massachusetts plant?

[5] A Yes - I mean, this came from Springfield so I'm
[6] sure he worked there.

[7] Q He says in the first paragraph that "The present
[8] arrangement for manufacturing styrene and styrene
[9] copolymer latices requires that they share equipment with
[10] Lytron 680 which employs acrylonitrile?"

[11] A Yes, sir.

[12] Q And he goes on to say that "This arrangement
[13] presents the possibility of contamination of the styrene
[14] latices with acrylonitrile monomer and since these
[15] latices were sold in food packaging applications, we are
[16] faced with the need to determine the degree of
[17] acrylonitrile contamination as a regular control
[18] measure." Do you remember discussing that with Mr. Hahn?

[19] A No, I don't.

[20] Q Do you remember anything at all about this
[21] problem?

[22] A No, sir.

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[1] MR. MC CONNELL: Let me show you a document
[2] which we'll mark as Kelly Exhibit 26.

[3] (Kelly Exhibit 26 identified.)

[4] BY MR. MC CONNELL:

[5] Q Do you recognize this, Dr. Kelly, as your
[6] response to Mr. Hahn?

[7] A No, I don't. Let me read it all the way through
[8] and I may be able to remember.

[9] MR. MC CONNELL: Sure.

[10] (Pause.)

[11] THE WITNESS: Yes, sir, I finished reading it.

[12] BY MR. MC CONNELL:
[13] *Q Do you recognize that now as your response to*
[14] *Mr. Hahn?*
[15] A Yes, I do.
[16] *Q It's dated July 7, 1958?*
[17] A Yes, sir.
[18] *Q I have just one or two very short questions*
[19] *about this, Dr. Kelly. Would you look down at the fifth*
[20] *paragraph in the letter.*
[21] A Yes, sir.
[22] *Q Would you read just the first sentence for us?*

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[1] A "I might also say that Dr. Lehman would take a
[2] very negative view as to the presence of any AN in an
[3] extractable form."
[4] *Q Who was Dr. Lehman?*
[5] A Director of the Food and Drug Administration -
[6] director of pharmacology.
[7] *Q And you knew in 1958 that he would take a very*
[8] *negative view about any acrylonitrile that might migrate*
[9] *into food products?*
[10] MR. BRAY: Objection to that characterization of
[11] the document.
[12] MR. MC CONNELL: Object to your coaching again,
[13] Jack.
[14] MR. BRAY: That's an objection. If you're going
[15] to mislead and misstate the document, I have to object.
[16] There's no other way to do it. This is very short.
[17] THE WITNESS: Well, I said I really didn't know
[18] what Lehman was going to do, but I say I believe that he
[19] would take a negative view as to the presence of any AN in
[20] an extractable form.
[21] BY MR. MC CONNELL:
[22] *Q And you knew that in 1958?*

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[1] A Yes, sir.
[2] MR. MC CONNELL: It's 5:00 and we've promised to
[3] turn over the conference room at 5:00, so I think we
[4] should set a date for - a time for resuming in the
[5] morning.
[6] MR. BRAY: The earlier the better.
[7] MR. MC CONNELL: Why don't we go off the record
[8] for a minute.
[9] (Discussion off the record.)
[10] (Whereupon, at 5:00 p.m., the deposition was
[11] adjourned, to reconvene at 9:30 a.m., Thursday, January
[12] 28, 1993.)
[13]
[14]
[15]
[16] R. EMMET KELLY
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Look-See Concordance
Report

2,404 UNIQUE WORDS
386 NOISE WORDS
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