

NO. 31506

SHIRLEY HODGE, Individually : IN THE DISTRICT COURT OF
and as Personal :
Representative of the and :
Estate of A. J. Hodge, Jr., :
Deceased; GREGG A HODGE and :
ANGELA R. McClain, :
Plaintiffs, :
VS. : FANNIN COUNTY, T E X A S
TEXAS UTILITIES ELECTRIC :
COMPANY (d/b/a VALLEY POWER :
PLANT), et al :
Defendants. : 6TH JUDICIAL DISTRICT

VIDEOTAPE

ORAL DEPOSITION OF DALE DRYSDALE

September 24th, 1996

Houston, Texas

COPY

Taxable Costs \$ _____

Paid by: Plaintiffs
Andrew Waters, Esq.
SBN 20911450

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EXAMINATION INDEX

DIRECT EXAMINATION	PAGE
By Mr. Waters.....	6

EXHIBIT INDEX

EXHIBITS MARKED FOR IDENTIFICATION

NUMBER	DESCRIPTION	PAGE
1	Article entitled "Occupational Health - Hazards of the Work Environment".....	70
2	Exhibit "A" to the Notice of Deposition....	73
3	Article entitled "Occupational Cancers of the Respiratory Tract".....	99
4	August 17, 1994 letter to Hans Siegel from James W. Hammond.....	99

1
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8 ALSO PRESENT:

9 Ms. Lynnette G. Adams
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7
8 On the 24th day of September, 1996, in
9 the offices of Brown & Root, 4100 Clinton Drive,
10 Houston, Harris County, Texas, beginning at 5:02 p.m.,
11 DALE DRYSDALE appeared before me, Michelle Pfeiffer, a
12 notary public in and for the State of Texas, and being
13 by me first duly sworn, testified by his video oral
14 deposition as hereinafter set out, pursuant to notice
15 and the Texas Rules of Civil Procedure;

16 The deposition may be signed by the
17 witness before any notary public or other officer
18 authorized to administer oaths.
19
20
21
22
23
24
25

1
2 THE VIDEOGRAPHER: It's 5:02. We're
3 going on the record. Would you swear in the
4 witness, please?

5
6 DALE DRYSDALE,
7 having been first duly sworn, testified as to the
8 following:

9
10 THE REPORTER: Stipulations?

11
12 MR. WATERS: None necessary.

13
14 THE REPORTER: Signature?

15
16 MR. BROWN: Yes, they'll both read and
17 sign but, you know, it can be any notary as far as
18 I'm concerned.

19
20 DIRECT EXAMINATION

21
22 BY MR. WATERS:

23 Q Can you state your name for the record, sir?

24 A My name is Dale Drysdale.

25 Q How old are you, sir?

1 A 45.

2 Q How are you presently employed?

3 A I work for Brown & Root, Inc.

4 Q Okay. Can you -- can you give me an idea of --
5 just in brief, your educational background,
6 summary?

7 A I have a bachelor's of arts in aquatic biology,
8 master of science in biological sciences and a
9 master's in public health.

10 Q Okay. Where did you go to school?

11 A Bachelor's from the University of California at
12 Santa Barbara, the first master's from the
13 University of West Florida and the public health
14 degree from the University of Alabama in
15 Birmingham.

16 Q Okay. Are you a certified industrial hygienist?

17 A I am.

18 Q And when were you certified, approximately?

19 A '88, '89, somewhere along in there.

20 Q And when did you get your MPH degree?

21 A '84.

22 Q Did you seek -- did you seek employment directly
23 with Brown & Root after you got finished with
24 school, or did you do something else before?

25 A I did something else before.

- 1 Q What was that?
- 2 A I worked for another company.
- 3 Q What company was that?
- 4 A The name is Vulcan Materials Company.
- 5 Q V-U-L-C-A-N?
- 6 A Correct.
- 7 Q Where are they located?
- 8 A Birmingham, Alabama.
- 9 Q What kind of business are they in?
- 10 A They're in construction materials and industrial
- 11 chemicals.
- 12 Q How was it that you came to work for Brown & Root?
- 13 A I was offered the job and accepted it.
- 14 Q Did they find you through a headhunter or --
- 15 A It was a headhunter.
- 16 Q Okay. And how long have you now been employed with
- 17 Brown & Root?
- 18 A About six and a half years.
- 19 Q Have you ever given your deposition before?
- 20 A I have.
- 21 Q Was it in a -- in an asbestos-related case?
- 22 A Yes.
- 23 Q Okay. Can you tell me when that was?
- 24 A Best of my memory, it was sometime in the last
- 25 year.

1 Q Do you recall the name of the plaintiff's attorney
2 that took your deposition?

3 A Not right offhand, no.

4 Q Where did the deposition take place?

5 A It was in Houston.

6 Q What was your understanding of the nature of that
7 case?

8 A This was the daughter of a -- I'm not sure if it
9 was a Brown & Root employee.

10 Q Oh, perhaps someone who worked on a Brown & --
11 worked on a Brown & Root construction site?

12 A Possibly. Don't know.

13 Q Was it the Bilder case?

14 A I believe it was.

15 Q Okay. Was the name of the plaintiff's lawyer
16 Herschel Hobson?

17 A Yes.

18 Q Okay. Well, I wish I would have known that before.
19 I would have read that one, then maybe I wouldn't
20 need to come ask you these questions today.

21 How long did that deposition last?

22 A I don't remember. It was a couple of hours, maybe.

23 Q Okay. Was it videotaped?

24 A I believe it was.

25 Q Okay. You obviously had extensive training prior

1 to being certified as an industrial hygienist. Is
2 that correct?

3 A You'll have to define extensive training for me.

4 Q Okay. You went to school for four years of
5 undergraduate work?

6 A That's right.

7 Q Then you completed, what, an additional probably
8 two or three years of postgraduate work?

9 A Correct.

10 Q And then you presumably did some additional
11 training for your certification?

12 A No. There's no training involved in certification.

13 Q Does the certification require a test or anything
14 of that nature?

15 A It does.

16 Q Do you have to recertify every so often?

17 A Yes.

18 Q How often do you have to recertify?

19 A Every six years.

20 Q Have you -- have you only taken the examination
21 once to date?

22 A That's correct.

23 Q And when is your recertification examination gonna
24 be necessary?

25 A Hopefully I won't have to take the exam again.

1 Q Okay. How do you -- how does that work? How do
2 you avoid having to take the exam again?

3 A If you accrue enough certification maintenance
4 points --

5 Q Okay.

6 A -- in the six-year cycle.

7 Q I understand. Kind of like continuing education?

8 A That's -- Yes, that's one way to get the points.

9 Q Okay. In the context of your educational
10 background, it sounds to me like the bulk of your
11 specialized training in the context of industrial
12 health and safety would have come when you were
13 getting your MPH degree.

14 A That's a fair statement.

15 Q All right. And again, tell me what university or
16 school that was.

17 A University of Alabama in Birmingham.

18 Q Did they have any courses at UAB concerning
19 asbestos hazards specifically?

20 A I don't remember anything like that.

21 Q Okay. Were your professors at UAB industrial
22 hygienists, some of them?

23 A Yes.

24 Q All right. And some of -- presumably some of them,
25 if not all of them, were certified industrial

1 hygienists?

2 A I believe some of them were.

3 Q Okay. Did you have a -- an advisor or a faculty
4 member that perhaps was involved with the writing
5 of your master's thesis?

6 A Yes.

7 Q What was his name?

8 A His name is Vernon Rose.

9 Q Vernon Rose?

10 A Correct.

11 Q Is Mr. Rose still employed at UAB, as far as you
12 know?

13 A I believe he is on a sabbatical. I don't know what
14 his employment status is with the university.

15 Q What was the -- what was your master's thesis, the
16 title of it?

17 A I'll have to paraphrase it. It was basically a
18 means of characterizing maintenance employees'
19 exposures.

20 Q All right. Exposure to asbestos or to other
21 substances?

22 A Substances in general.

23 Q Substances in general.

24 And when you say a means of characterizing --
25 I know you've selected your words carefully --

1 that's separate and distinct from a means of
2 measuring?

3 A That's correct.

4 Q Okay. And what was the conclusion of your thesis?

5 A It was more of a demonstration on how to do
6 something than -- than a conclusion.

7 Q Okay. In laymen's terms, if you could be a little
8 more specific, what -- what did it demonstrate?

9 A It demonstrated that given the right resources, one
10 can make guesstimates of exposures, but it's --
11 it's a rough guesstimate.

12 Q So it presents an analytical tool or a method of
13 analysis to estimate employees -- excuse me --
14 exposures to maintenance workers?

15 A I'm uncomfortable with the term estimate. It -- it
16 allows one to categorize maintenance employees into
17 a hierarchy for probably further assessment, to
18 prioritize based on work history.

19 Q Okay. And what did you look at -- what industry
20 did you look at to try to evaluate maintenance
21 workers in this context?

22 A This was a typewriter manufacturing facility.

23 Q In Birmingham?

24 A No.

25 Q Where was it located?

- 1 A It was in Lexington, Kentucky.
- 2 Q Did the -- did you spend some time at the facility?
- 3 A Yes.
- 4 Q Okay. Did the facility have any asbestos in place?
- 5 A I don't know.
- 6 Q Did your analytical model include the potential for
- 7 assessing exposures to asbestos by maintenance
- 8 workers?
- 9 A Theoretically, it would include that.
- 10 Q Okay. Mr. Rose -- or is it Dr. Rose?
- 11 A Dr. Rose.
- 12 Q Dr. Rose. Do you know where he received his
- 13 training?
- 14 A I probably do, but I can't pull it back.
- 15 Q Okay. Do you know if it was at Michigan or at
- 16 Harvard or one of the bigger --
- 17 A Some of it may have been in Texas.
- 18 Q Okay. Do you know that schools of public health
- 19 began offering training to -- in industrial hygiene
- 20 courses in the 1930s?
- 21 A I don't know if I knew that or not.
- 22 Q Okay. Have you had an opportunity to review
- 23 industrial hygiene textbooks from the 1930s, '40s,
- 24 '50s?
- 25 A Possibly.

1 Q Okay. You have no specific recollection as we sit
2 here today?

3 A Correct.

4 Q Okay. Tell me, if you will, what your -- you
5 consider your duties and responsibilities to be at
6 the present time, in a general sense.

7 A In a general sense, I'm responsible for providing
8 industrial hygiene and medical surveillance
9 services to operating units in the company.

10 Q Do you actually do air monitoring?

11 A I don't do very much myself.

12 Q Okay. You probably used to do more yourself?

13 A Yes.

14 Q Okay. When was it that, to the best of your
15 knowledge, Brown & Root began to do air monitoring
16 in the vicinity of asbestos?

17 A I have no idea.

18 Q Okay. Were they doing it when you arrived?

19 A Yes.

20 Q Based on your experience, knowledge and training in
21 this and your -- and your area of expertise, will
22 you agree we with me, sir, that asbestos exposure
23 can cause cancer, various types of cancer?

24 A I don't have any direct knowledge of that, but
25 that's my understanding.

1 Q And that's based on your training and experience?

2 A Correct.

3 Q You'll agree with me that at the present time
4 Brown & Root attempts to avoid any and all employee
5 exposures to asbestos?

6 A I would say that's a fair statement.

7 Q When is the most recent occasion that you can think
8 of that air monitoring was done in the vicinity of
9 asbestos?

10 A For Brown & Root, you mean?

11 Q Yes, sir. I'm sorry.

12 A Specifically -- I don't know specifically for
13 asbestos.

14 Q Okay. How many -- Well, strike that.

15 What is your position presently -- Is there an
16 industrial hygiene department in the company?

17 A It's not a department, per se; it's a group.

18 Q Okay. Is it part of the -- of a safety department?

19 A Yes.

20 Q And where -- where do you fit in? I know there are
21 a number of different people working in that group.
22 Where -- where are you in terms of the levels of
23 command?

24 A I work for the director of corporate safety and
25 health.

1 Q And what is his name?

2 A His name is Charles Darnell.

3 Q Is he an industrial hygienist?

4 A No.

5 Q What is his background in safety and health, to the
6 extent you may know?

7 A He's been in the field professionally for 20 plus
8 years, I believe.

9 Q 20 plus years?

10 A That's my guess.

11 Q Has -- has he been with the company for that long?

12 A I don't think so.

13 Q Do you know where he was previously?

14 A I believe he was a teacher in one of the
15 independent school districts.

16 Q Do you have a working knowledge or do you consider
17 yourself to have a working knowledge of the OSHA
18 regulations pertaining to asbestos?

19 A Define working knowledge for me, please.

20 Q Do you feel that on most issues that arise
21 concerning asbestos that you have to address or
22 deal with as part of your job that you are
23 relatively familiar with the requirements that
24 the -- that the regulations may have or may state?

25 A I would say I have a general, bordering on vague,

1 knowledge of it at this point.

2 Q Okay. And that's because you're less involved with
3 it at this point in time?

4 A Correct.

5 Q So the -- the -- the knowledge that you had in your
6 familiarity with the regulations was probably
7 greater five or six years ago than it is presently?

8 A Yes.

9 Q Okay. Do you consider OSHA to be an authoritative
10 source for information about asbestos, the hazards
11 of asbestos and how to reduce the hazards of
12 asbestos?

13 A Yes.

14 Q And certainly here at Brown & Root you rely -- or
15 not just you particularly, but the -- the
16 department or the group relies on the OSHA
17 standards in terms of trying to ensure that your
18 workers are protected?

19 A Yes.

20 Q In your training in school at UAB, did you receive
21 instruction concerning the OSHA regulations?

22 A I don't remember specific training, no, regarding
23 that.

24 Q Have you ever had an opportunity to observe
25 asbestos being used?

- 1 A Being used? Yeah, on a couple of occasions.
- 2 Q Can you describe which two occasions?
- 3 A Let's see. The one that comes to mind is the --
- 4 and I'm real vague on this. And I'm not even sure
- 5 it's a memory. It may have been a mental picture
- 6 based on a description.
- 7 Q Well, in any event, describe it to me, if you will.
- 8 A It was the production of chlorine cell membranes.
- 9 And as I think of it, I don't believe I actually
- 10 witnessed it. I think I'm going on a mental
- 11 picture based on descriptions from other people.
- 12 Q Okay. You mentioned -- You stated a few minutes
- 13 ago that you thought there were several occasions.
- 14 Can you tell me what the other ones would have
- 15 been?
- 16 A I think I said there were a couple of occasions.
- 17 Q Okay. Fair enough.
- 18 A And I'm -- what I'm thinking of is -- is more
- 19 removal than -- than the application.
- 20 Q Have you witnessed the removal of asbestos while
- 21 employed by Brown & Root?
- 22 A From a distance, I have.
- 23 Q Does Brown & Root hold itself out to be an
- 24 abatement contractor?
- 25 A No.

1 Q Does it do abatement work at all?

2 A On occasion.

3 Q Is it properly licensed to do abatement work?

4 A I would imagine so.

5 Q Is it otherwise -- Is the answer you don't know?

6 A I guess the answer is I don't know.

7 Q Fair enough.

8 A Pretty sure it is.

9 Q Please stop me any time, you know, you don't know
10 something, and I'll move on to something else.

11 A All right.

12

13 MR. WATERS: Let me object to that
14 nonresponsive portion.

15

16 BY MR. WATERS:

17 Q Other than the deposition you gave to Mr. Hobson in
18 the Bilder case, have you ever given any other
19 depositions?

20 A Yes.

21 Q Any other depositions in asbestos cases?

22 A I don't believe so.

23 Q Okay. You're familiar with the fact, I'm sure, as
24 a result of your work with the company, that
25 Brown & Root was involved with a -- with a number

1 of construction projects in the 1940s, '50s, '60s
2 and early 1970s where they utilized asbestos
3 thermal insulation?

4 A I have no knowledge of that.

5 Q Okay. Have you -- Do you have any knowledge about
6 Brown & Root's continued work in the -- in the time
7 frame you've been at Brown & Root on projects where
8 asbestos had initially been installed back in pre --
9 in the early '70s and before?

10 A Rephrase that, please.

11 Q Okay. You mentioned, Mr. Drysdale, that you had
12 observed abatement work from a distance. Do you
13 recall that testimony?

14 A Yes.

15 Q Okay. On how many occasions have you done that?

16 A On how many occasions have I witnessed it?

17 Q Yes, sir.

18 A Two come to mind, maybe three.

19 Q Okay. Were those facilities or premises --
20 premises where Brown & Root had done work over the
21 course of many years?

22 A I think so.

23 Q What were the facilities, if you can tell me?

24 A I remember seeing one at the National Institute of
25 Health, one of the buildings on that campus. I

1 remember seeing one at a petrochemical plant in
2 West Virginia.

3 Q In West Virginia?

4 A Yes.

5 Q All right. Any others you can recall?

6 A I think we've also done some work on this campus,
7 some of the buildings on this campus.

8 Q Here at Brown & Root?

9 A Yes. But I'm not sure that was even Brown & Root
10 people even doing that.

11 Q Have you ever spent any time at the Exxon Baytown
12 facility?

13 A Very little.

14 Q But you have been on the premises?

15 A Yes.

16 Q Okay. Was that -- was -- was your presence on
17 the -- Well, tell me this. What was your purpose
18 in being on the premises?

19 A It's been a couple of years. I don't even
20 remember.

21 Q Okay. Are you familiar with the fact that Brown
22 & Root employees have been working on the Exxon
23 Baytown premises for many, many years?

24 A It's been told to me that that's the case, yes.

25 Q And were you told that by some other employee of

1 Brown & Root?

2 A I'm sure.

3 Q Okay. And I assume that from your experience in
4 the last six years you're familiar with the fact
5 that when contractors work at the Exxon facility
6 they are required to follow -- to know and follow
7 all of Exxon's safety regulations?

8 A I'm guessing that that's the case.

9 Q Okay.

10
11 MR. BROWN: You don't need to speculate.

12
13 THE WITNESS: Okay.

14
15 MR. BROWN: If you don't know, just tell
16 him that.

17
18 THE WITNESS: Okay.

19
20 BY MR. WATERS:

21 Q Have you been told previously, sir, that -- Strike
22 that.

23 Have you been told by someone at Brown & Root
24 or have you been made to understand by someone at
25 Brown & Root that it's necessary to follow Exxon's

1 rules and regulations concerning safety when work
2 is done at the Exxon facility?

3 A That's my understanding.

4 Q Okay. And is it also your understanding that that
5 has been the requirement for many, many years?

6 A I don't know.

7 Q Are Brown & Root employees typically instructed
8 that when they work on the premises of another
9 company that they are -- that they should
10 understand and follow that -- that party's
11 requirements concerning safety?

12 A I believe so.

13 Q But Brown & Root also has its own set of safety
14 rules and regulations, correct?

15 A Correct.

16 Q And if the two -- if Brown & Root's rules and
17 regulations are less strenuous or less stringent
18 than those of, say, Exxon, then they would follow
19 the ones that are more stringent, correct?

20 A I don't know. I'm not involved in that decision
21 typically.

22 Q In response to our request, you produced a number
23 of books from the industrial hygiene library of
24 Brown & Root. Do you recall that?

25 A Yes.

1 Q And one of the books that you found was --

2
3 MR. WATERS: Can you get the camera on
4 that?

5
6 BY MR. WATERS:

7 Q -- "Industrial Hygiene and Toxicology," second
8 edition, commonly known as the Patty Book on
9 Industrial Hygiene and Toxicology. Is that
10 correct?

11 A Yes.

12 Q Okay. This is the second edition published in
13 1963. Have you ever looked at this document -- at
14 this book before?

15 A I probably have.

16 Q Okay. I want to bring your attention to Page 2,243
17 and the chapter entitled "Potential Exposures in
18 Industry." Under "asbestos workers" it states,
19 "Dustiness around asbestos workers is sometimes
20 above the proposed standard of 5 million particles
21 per cubic foot." My first question to you is if
22 you were aware that as of 1963 there was at least a
23 proposed standard or maximum level exposure that --
24 that workers were supposed to stay under? Were you
25 aware of that?

1 A I may have been. I don't recall.

2
3 MR. BROWN: How old were you in 1963?

4
5 THE WITNESS: I was 12.

6
7 MR. BROWN: Okay.

8
9 BY MR. WATERS:

10 Q It goes on to state that mixing and use -- using
11 asbestos cement and insulating material and the
12 sawing or beveling of asbestos boards are dusty
13 operations unless properly engineered. You are an
14 industrial hygienist, and I presume that you have
15 some understanding of what engineering techniques
16 can be used to reduce exposures. Is that a fair
17 statement?

18 A It's a fair statement.

19 Q Okay. And in this context, am I correct that some
20 of the engineering techniques that can be used to
21 reduce the types of exposure discussed in Patty's
22 include wetting down the asbestos?

23 A That would be one.

24 Q Using masks or respiratory protection?

25 A That's generally what's --

1
2 MR. BROWN: Excuse me. Are you reading
3 from the book?
4

5 MR. WATERS: You interrupt -- No, I'm --
6 No, I'm not. You're interrupting my -- his answer.
7

8 MR. BROWN: I'm gonna -- I'm gonna
9 object.
10

11 MR. WATERS: I don't want you to
12 interrupt his answer.
13

14 MR. BROWN: I want to make my objection.
15 Your question said techniques are discussed in the
16 book.
17

18 MR. WATERS: No, my question did not say
19 that. I said the book is --
20

21 MR. BROWN: Let's -- let's stop right
22 there. Would you read back his question, please?
23

24 MR. WATERS: The book said, and I quoted,
25 that it said these are dusty operations unless

1 properly engineered. I then asked the question,
2 which you apparently missed, if he was aware with
3 what type of engineering precautions could be
4 taken, and then we got into the list.

5
6 MR. BROWN: Okay. You weren't referring
7 to something from the book?

8
9 MR. WATERS: No. And the record is clear
10 on that.

11
12 MR. BROWN: All right. That's why I
13 interrupted, to make sure.

14
15 BY MR. WATERS:

16 Q Among the engineering -- or scratch that.

17 Among the engineering precautions that can be
18 taken, we discussed the fact that the asbestos
19 could be wetted down. Correct, sir?

20 A Correct.

21 Q All right. We were about to -- I had just asked
22 you about the use of masks or respiratory
23 protection so that asbestos dust wouldn't be
24 inhaled into the lungs of workers.

25 A That's a way to control the exposure, yes.

1 Q Okay. Do you -- Is that considered an engineering
2 method?

3 A No.

4 Q Okay. Use of localized exhaust to remove the
5 asbestos dust from the breathing area of the
6 worker.

7 A Correct.

8 Q Utilizing barriers to preclude either the movement
9 of dust or the movement of people into dusty areas.

10 A You'd have to define that a little bit better.

11 Q Okay. Well, I guess I should ask -- ask you this
12 way. Using barriers in the way I just described --
13 and perhaps would that not be considered an
14 engineering method?

15 A Possibly. You're splitting hairs there.

16 Q All right. Okay. Well, similarly, then, I take it
17 that things like protective clothing, signs,
18 warnings, those items would not be considered
19 engineering methods?

20 A I think it depends on who you ask.

21 Q Okay. Did you learn about the -- the various
22 engineering methods that we've just discussed that
23 can be used to reduce the hazards of asbestos when
24 you were in school at UAB?

25 A I don't remember -- Well, I take that back. Yes.

1 There were some specific instruction. I don't know
2 if they're related to asbestos.

3 Q Okay. There's been evidence in this case that
4 Brown & Root employees were aware, at least in the
5 1960s, that in 1958 the State of Texas passed a law
6 that required that exposures be maintained below a
7 certain level. Do you have any -- any knowledge
8 about the 1958 threshold limit value?

9
10 MR. BROWN: Let me, just for the record,
11 say that I don't believe that's a correct
12 characterization of the testimony. You're assuming
13 facts not in evidence. I object.

14
15 BY MR. WATERS:

16 Q Do you have any knowledge, sir, about the fact that
17 in 1958 the State of Texas told all the employers
18 in the State of Texas that they needed to keep
19 asbestos exposures below a certain level?

20 A I don't have direct knowledge on that, no.

21 Q Okay. And of course, you weren't here in -- well,
22 you were not here at Brown & Root in 1958, correct?

23 A That's correct.

24 Q All right. And so I understand that you don't have
25 direct knowledge of that, but you've been told, I

1 presume, by people who do have more direct
2 knowledge that, in fact, that was the case?

3 A I wouldn't characterize it that way, no.

4 Q Okay. How would you characterize it?

5 A I believe I saw a -- a copy of some document that
6 looked to be from the State of Texas.

7 Q Okay. When -- In what context did you see that
8 document?

9 A I believe it was in the Bilder case.

10 Q At the time of your deposition or in preparation
11 for it?

12 A I don't recall.

13 Q Okay. But it was -- In any event, it was a
14 document that was shown to you by attorneys, or did
15 you --

16 A I saw it in the context of the case. I don't
17 remember the details.

18 Q Was it a document that was maintained in your -- in
19 your files? I mean, did it --

20 A I don't believe I have a copy of it.

21 Q I understand you don't have a copy of it now. Was
22 it a document that was in your files prior to the
23 deposition?

24 A In my own filings?

25 Q In the industrial hygiene filings of Brown & Root.

1 A No, I don't believe so.

2 Q Okay. Have you ever heard of the Walsh-Healy Act?

3 A Yes.

4 Q Is the Walsh-Healy Act still in force?

5 A To the best of my knowledge.

6 Q And what the Walsh-Healy Act does is require
7 contractors who have contracts with the United
8 States Government above the -- that are worth above
9 a certain amount to follow certain safety and
10 health requirements that the government sets forth;
11 is that correct?

12 A I think that's my understanding of it.

13 Q All right. Are you familiar with the fact that the
14 Walsh-Healy Act required that contractors working
15 for the United States Government maintain asbestos
16 exposures below a certain level?

17 A I don't recall that, no.

18 Q Okay. Have you ever testified at trial?

19 A No.

20 Q Okay. Have you ever testified in any other cases
21 while employed by Brown & Root that were not
22 asbestos cases?

23 A Yes.

24 Q In what -- How many times?

25 A I believe twice.

1 Q What kind of cases were those?

2 A One was an alleged wrongful termination.

3 Q Okay. And what was the other one?

4 A The other was a tort case.

5 Q What kind of case?

6 A What are the details of it?

7 Q Well, was it an exposure case? Was it an accident?

8 A It was an exposure case.

9 Q To what type of substance?

10 A The allegation was exposure to radiation.

11 Q Okay. You arrived in 1990?

12 A I arrived in Houston in 1990, yes.

13 Q I'm sorry. When did you first start working for

14 Brown & Root?

15 A 1990.

16 Q Okay. At that time who was the -- Strike that.

17 Are you presently the senior industrial

18 hygienist at Brown & Root?

19 A I'm the one with the longest --

20 Q Tenure?

21 A -- tenure. Yes.

22 Q Okay. And is that different from being senior

23 most?

24 A Not in this case. It's -- We have a -- a title

25 called senior industrial hygienist. There's a job

1 position called senior industrial hygienist.

2 Q And who is that person?

3 A His name is Tom Sampson.

4 Q How old is Mr. Sampson?

5 A He's in -- about my age, mid to late 40s.

6 Q Was he with the company when you arrived?

7 A No.

8 Q At the time you arrived, were there other
9 industrial hygienists employed?

10 A No.

11 Q You were the -- At the time you were hired, there
12 were no other industrial hygienists employed by
13 Brown & Root?

14 A To the best of my knowledge, that's correct.

15 Q And how many are there presently?

16 A I believe there's about seven.

17 Q Okay. For how long a period of time, to the best
18 of your knowledge, had there not been industrial
19 hygienists employed by Brown & Root before you
20 arrived?

21 A I'll give you the best answer I can. Anywhere from
22 a day to six months.

23 Q Okay. Do you know the name of your predecessors?

24 A I know the name of a couple of the predecessors.

25 Q Okay. What are their names?

1 A My immediate predecessor is Lynly Harris.

2 Q L-Y-N?

3 A L-Y-N-L-Y, I believe.

4 Q Harris.

5 Is that a man or a woman?

6 A It's a woman.

7 Q Okay. Who else?

8 A There was a fellow by the name of Ralph Craig.

9 Q Okay. Anyone else?

10 A Carl Richardson was way back.

11 Q Have you ever spoken to Mr. Richardson?

12 A Yes.

13 Q Have you ever spoken to him about -- Well, strike
14 that.

15 When did you most recently speak to

16 Mr. Richardson?

17 A Oh, it's been a couple three years, probably.

18 Q Okay. What was the context in which you spoke to
19 Mr. Richardson approximately three years ago?

20 A I don't recall.

21 Q Was it a work-related issue? Did you need his
22 advice on something?

23 A I don't recall.

24 Q Do you recall how you contacted him?

25 A I think I probably saw him at an association

- 1 meeting.
- 2 Q And which association would that be? The IHA?
- 3 A Yeah. It would be the IHA in one form or another.
- 4 Q Do you know where Mr. Richardson resides?
- 5 A Resides? No, I don't.
- 6 Q Is he still a practicing industrial hygienist?
- 7 A I don't know.
- 8 Q Was he three years ago?
- 9 A I believe so.
- 10 Q Okay. Lynly Harris, Ralph Craig and Carl
- 11 Richardson. Any others?
- 12 A Steve Sellers was, I believe, a hygienist here.
- 13 Q S-E-L-L-E-R-S?
- 14 A Probably.
- 15 Q Have you ever had any discussions with Lynly
- 16 Harris, Ralph Craig or Steve Sellers since you came
- 17 to the company?
- 18 A I've -- I never met Ralph Craig. Last time I
- 19 talked to Lynly was probably four or five years
- 20 ago.
- 21 Q Where is she located?
- 22 A I don't know.
- 23 Q Do you know where she's employed?
- 24 A No.
- 25 Q Okay. Steve Sellers, where he lives or where he's

1 employed?

2 A I believe Steve Sellers works for Halliburton.

3 Q I want to -- I asked you earlier and you were not
4 aware, I don't think -- maybe -- maybe I
5 misunderstood your answer, but I think you said you
6 were not aware that there were industrial
7 hygienists being trained in this country in the
8 1930s and 1940s.

9 A I believe your question was different.

10 Q Okay. And I apologize. Are you aware that, in
11 fact, there were industrial hygienists in this
12 country being trained, formally trained as a
13 discipline, in the 1930s and 1940s?

14 A I believe so.

15 Q Okay. And are you also aware that those industrial
16 hygienists were train -- one of the things that
17 they were trained about was relative to the hazards
18 of asbestos?

19 A I don't know that.

20 Q Okay. Let me show you a document -- book, excuse
21 me, excerpts from a book entitled "Industrial Dust,
22 Hygienic Significance Measurement and Control" by
23 Drinker and Hatch, published in 1954, first edition
24 in 1936. Is -- is '36, '54, is that the
25 approximate time frame of your understanding when

1 the -- when they began to have formal training for
2 industrial hygienists?

3 A You mentioned two dates there.

4 Q Okay. I'm sorry. You're right. I did. Is --
5 Would 1936 correspond with your understanding of
6 when formal training for industrial hygienists
7 became more prevalent?

8 A Became more prevalent?

9 Q Yes.

10 A Now you're getting into territory that I'm not real
11 familiar with.

12 Q Okay. Let me -- let me rephrase the question. Is
13 it your -- is it consistent with your understanding
14 that in 1936 -- by 1936 formal training was
15 available in the field of industrial hygiene?

16 A That was my understanding.

17 Q Okay. The -- This book published in 1954, Page 46
18 is -- there's a section entitled "asbestosis" and
19 "lung cancer." It goes on to state that -- it
20 talks about 235 cases of asbestosis autopsied
21 between 1924 and 1946. 13.2 percent of them were
22 complicated by carcinoma of -- of the lungs or
23 pleura. I should ask you first if you're aware
24 that cancer of the pleura is also known as
25 mesothelioma.

1 A Yes.

2 Q Okay. And you know that from your background and
3 training in the field, correct?

4 A Correct.

5 Q And mesothelioma you know also, as well, is a
6 disease that is caused by asbestos exposure?

7 A I know that it's caused by a number of things,
8 including asbestos exposure.

9 Q Okay. And you're aware that the primary cause in
10 this country of mesothelioma is asbestos exposure?

11 A That is my understanding. I have no direct
12 knowledge of that.

13 Q Okay. Do you have any knowledge about the relative
14 cancer causing potential of different types of
15 asbestos fibers?

16 A I've read some about it.

17 Q Okay. In the literature?

18 A Yes.

19 Q All right. Do you -- do you -- Will you agree with
20 me that it is generally recognized that all of the
21 different fiber types can cause mesothelioma?

22 A I don't know.

23 Q Okay. That's something you don't have an opinion
24 on?

25 A It would be fair to say that --

1 Q Just --

2 A -- whatever I've read, I probably have forgotten
3 about.

4 Q Okay. Fair enough. Were you aware or did you
5 learn as part of your educational background that
6 as early as the 1950s textbooks were indicating
7 that asbestos exposure was linked with lung cancer?

8 A I don't have any recollection of that, no.

9 Q In your studies you did learn, however, that it has
10 been confirmed that asbestos causes mesothelioma
11 and lung cancer and asbestosis, correct?

12 A That is my understanding in general, yes.

13 Q Okay. And you may have also learned that asbestos
14 can cause gastrointestinal cancers?

15 A I have read that. I don't know that I would say
16 that it's a fact.

17 Q All right. I have another industrial hygiene text
18 entitled "Occupational Health Hazards of the Work
19 Environment" by a May Mayers, M.D., former chief of
20 the Division of Industrial Hygiene New York State
21 Department of Labor. Is this book one of the
22 textbooks that -- that y'all used at -- when you
23 were in training or perhaps a more recent edition
24 of it?

25 A I don't recognize it.

1 Q Okay. This edition is published in 1969, and at
2 Page 295 the document states -- discusses pleura
3 and peritoneal tumors as being mesothelioma. Is it
4 your understanding from your background and
5 training that mesothelioma is a cancer that arises
6 in the pleura space as opposed to actually inside
7 the lungs?

8 A That was a long question.

9 Q It was. I tell you what. I'll strike it.

10
11 MR. BROWN: Can we -- If you're gonna
12 show him things or quote from things, would you
13 please mark them for identification purposes?

14
15 MR. WATERS: Well, I can't do that. It's
16 my only copy.

17
18 MR. BROWN: Well, you can keep your copy
19 and then -- and then substitute a copy for the
20 record.

21 But, Mr. Drysdale, would you please ask him to
22 furnish you the document so that we can review it,
23 if we want to, and also mark it for
24 identification --
25

1 MR. WATERS: Well, I --

2
3 MR. BROWN: -- so we'll know exactly what
4 he's talking about and we don't have to take it on
5 faith that he's correctly summarizing?

6
7 MR. WATERS: Well, and I -- yeah. And
8 I've given you the citation that it -- if I -- if I
9 didn't, I meant to.

10
11 MR. BROWN: Well, I'm -- I'm telling you
12 if you want to ask him any more questions about a
13 document, you need to be prepared to mark that
14 document for identification. Okay?

15
16 MR. WATERS: What rule is that?

17
18 MR. BROWN: Would you mark the document
19 you've been referring to for identification,
20 please, sir?

21
22 MR. WATERS: I've already fully
23 identified the document, and you're more than
24 entitled to go get the textbook if you want to.

1 MR. BROWN: I don't have a copy of it and
2 I'd like to be able to review what you're talking
3 to the witness about.
4

5 MR. WATERS: Well, I'll be happy to let
6 you review it.
7

8 MR. BROWN: Would you please mark it for
9 identification?
10

11 MR. WATERS: No, I'm not gonna mark my
12 copy for identification, Phil. I told you what the
13 book is. You're more than welcome to look at this
14 excerpt from the book, but I'm not going -- I'm not
15 going to mar my copy of the book with an exhibit
16 sticker. I don't think it's necessary.
17

18 MR. BROWN: We're more than happy --
19 we're more than happy to make the copy, and we'll
20 mark the copy. You don't have to mark your copy.
21

22 MR. WATERS: Well, then you can go make a
23 copy right now.
24

25 MR. BROWN: Thank you.

1
2 THE VIDEOGRAPHER: We'll go off the
3 record at --
4

5 MR. BROWN: No, you continue -- you can
6 continue on.
7

8 MR. WATERS: Yeah, we can continue, I
9 mean, if you don't mind taking a break to make a
10 copy. I'll come back to it.
11

12 MR. BROWN: Are you gonna have any others
13 that we can go ahead and -- and get?
14

15 MR. WATERS: Not at this point in time.
16

17 MR. BROWN: Okay.
18

19 MR. WATERS: Unless we have some stuff,
20 but it's gonna be in your materials.
21

22 MR. BROWN: Well, I don't need copies of
23 my materials.
24

25 THE VIDEOGRAPHER: We're back on the

1 record at 6:15 -- I mean 5:50. I'm sorry.

2
3 BY MR. WATERS:

4 Q You're familiar with NIOSH, National Institute for
5 Occupational Safety and Health?

6 A Yes.

7 Q Okay. And this is a book entitled "Occupational
8 Diseases." I'll just show it to the jury.

9
10 THE VIDEOGRAPHER: If you'd hand it to
11 the witness, I can zoom in on it, Mr. Waters.

12
13 MR. WATERS: All right. Well, that
14 causes me to lose my page, but that's okay. All
15 right. Fine.

16
17 BY MR. WATERS:

18 Q Do you agree with NIOSH in this book, sir, that is
19 found in the Brown & Root industrial hygiene
20 library that asbestos is a confirmed occupational
21 carcinogen?

22 A I believe that's true.

23 Q Okay. Incidentally, the -- the books that have
24 been produced here, the various documentation, am I
25 correct that it all comes from the industrial

1 hygiene library of Brown & Root?

2 A That is correct.

3 Q Okay. One of the materials is a -- an article
4 entire -- entitled "Low Level of Asbestos
5 Exposure." It came from your files. Are you
6 familiar with this article?

7 A If it's in my files, I -- I don't know if I'm
8 familiar with it. I'm not sure how to answer that
9 question.

10
11 MR. BROWN: Are you pulling things out of
12 the file folders as they were presented to you?

13
14 MR. KALE: I have got them all right
15 here, Phil.

16
17 MR. BROWN: All right. Well, where did
18 this one come from?

19
20 MR. KALE: It came out of one entitled
21 "Asbestos Information."

22
23 MR. BROWN: Okay. Well, can we keep them
24 together, please?

1 MR. KALE: They -- they will all be kept
2 together.

3
4 MR. WATERS: No, I know that, but
5 still -- Okay.

6 Phil, are we gonna be able to get copies of
7 the -- these files?

8
9 MR. BROWN: Is the question can you send
10 them out and have them copied?

11
12 MR. WATERS: Not right this second. I'm
13 just talking in more a general context.

14
15 MR. BROWN: We'll make them available for
16 copying at your expense.

17
18 MR. WATERS: Well, no. I would
19 appreciate -- I would presume they would be at my
20 expense.

21
22 MR. BROWN: Yeah. And we'll just have to
23 work through the paralegals here at Brown & Root,
24 Legal. You'll have just to designate what you want
25 and --

1
2 MR. WATERS: Well, I think we're just --

3
4 MR. BROWN: Go in the room --

5
6 MR. WATERS: I think we're gonna get the
7 whole shebang, the whole -- this whole box and
8 these materials.

9
10 MR. BROWN: You're certainly entitled to
11 them.

12
13 MR. WATERS: Okay.

14
15 MR. BROWN: Everything but textbooks. Is
16 that right?

17
18 MR. WATERS: Yeah. I'm not gonna ask
19 you-all to copy the textbooks.

20
21 MR. BROWN: All -- all we have to do is
22 to make sure she's here and tell her what you want.

23
24 MR. WATERS: Okay. Well, why -- why
25 don't we wait until she comes back and we'll --

1
2 MR. BROWN: Whenever we get around to
3 doing that, that's fine.
4

5 MR. WATERS: Okay. Good.
6

7 MR. BROWN: Is NightRider all right?
8

9 BY MR. WATERS:

10 Q Tell me this, Mr. Drysdale. From looking at some
11 of these materials, it would appear to me that you
12 review articles and information from a variety of
13 sources that comes in to you --
14

15 MR. BROWN: Go ahead.
16

17 BY MR. WATERS:

18 Q -- by virtue of your position in the -- in the
19 industrial hygiene loop.
20

21 MR. BROWN: I want to object to that
22 question because you're assuming that he's reviewed
23 these articles. There's no foundation for that.
24

25 MR. WATERS: No, I didn't -- I don't

1 think I said that, but let me rephrase the question
2 to cover that.

3
4 BY MR. WATERS:

5 Q In your capacity as an industrial hygienist for
6 Brown & Root, sir, do you review articles and
7 information that from time to time crosses your
8 desk on the subject of asbestos disease?

9 A Yes.

10 Q All right. And these files that we've been
11 provided, are they common files that are utilized
12 by all the different industrial hygienists for
13 maintaining information that may be of relevance to
14 the work you do?

15 A Explain it. I'm not sure I understand what you're
16 asking.

17 Q Okay. These files that have been provided and that
18 you have brought in -- in this box, I think.

19 A Yes.

20 Q Are those materials that are maintained by the
21 industrial hygiene department -- group, excuse me?

22 A It's more accurate to say that I maintain them.

23 Q You maintain them?

24 A Most of the ones that you've asked for.

25 Q Do y'all have some kind of a split responsibility

1 in terms of who -- who perhaps saves articles or
2 materials on certain issues or certain topics?

3 A I don't believe that that's a fair statement, no.

4 Q Okay. How is it, then, that you are the person who
5 is responsible for maintaining the files that we
6 have here pertinent to asbestos?

7 A Most of the files that I brought are brought to me
8 with -- Let me -- let me back up and say that most
9 of the files that I have brought here today, I
10 carried with me to Brown & Root when I came to work
11 here.

12 Q When you came from Vulcan?

13 A Correct.

14 Q Okay. And insofar as any of these materials are
15 dated 1990 or more recently, we can assume they're
16 documents that you received here at Brown & Root
17 and decided to put in the files?

18 A A fair statement. There may be some exceptions to
19 it.

20 Q Okay. One of the -- the documents that was found
21 in your files is an article -- it's unclear what
22 publication it comes from, but it's entitled "An
23 Asbestos Nightmare." Do you recall placing that
24 article in your files?

25 A No.

1 Q Okay. Do you remember reading that article
2 previously?

3 A Not specifically.

4 Q All right, sir. We'll move on from that, then.

5 Do you consider exposure to asbestos to be --
6 Strike that.

7 Do you consider that exposure to asbestos or
8 asbestos dust creates a hazardous condition?

9
10 MR. BROWN: Well, I need to object to the
11 question as being -- it's broad and vague. It
12 lacks any details such that he could formulate an
13 opinion and, therefore, he's being asked to
14 speculate.

15
16 BY MR. WATERS:

17 Q Can you answer, sir?

18 A My understanding is that the degree of hazard is a
19 function of the dose.

20 Q Okay. So what you're saying is there can be some
21 levels of exposure that you would not consider to
22 be unsafe -- excuse me. Long day. There are some
23 levels of exposure, Mr. Drysdale, that you would
24 not consider to be a hazard?

25 A That's my personal opinion, yes.

1 Q All right. Is that -- is that the corporate policy
2 of Brown & Root?

3 A No.

4 Q Okay. What is Brown & Root's corporate policy with
5 respect to exposures to asbestos and when those
6 exposures might be considered hazardous and when
7 they might not be?

8 A We don't have a corporate policy on that.

9 Q Okay. There is no corporate policy, per se, on
10 what exposure should be considered hazardous and
11 avoided?

12 A I can't think of one, if there is.

13 Q Okay. Well, surely if there was one you would know
14 about it, I would presume?

15 A If there was a policy as specific as what you've
16 just stated, then I would know about it probably.

17 Q Let me show you -- From time to time do you
18 highlight certain materials that you think may be
19 of particular relevance or be informative for the
20 future?

21 A Yes.

22 Q Let me show you this page from a document --
23 from -- excuse me, appears to be a series of
24 abstracts, publication, "Environmental and
25 Occupational Carcin" -- "Carcinogenesis," and ask

1 you to just look at that briefly and you can hand
2 it back to me.

3 A Do you want the -- Do you want this one marked,
4 also?

5 Q No.

6
7 MR. BROWN: No. I just want to give
8 these to the court reporter and ask her to mark the
9 copy as whatever the next exhibit is and then give
10 Mr. Waters back his.

11
12 MR. WATERS: All right.

13
14 MR. BROWN: Did the witness indicate
15 whether or not he marked on that, or is that
16 somebody else?

17
18 MR. WATERS: I don't know that we've --
19 we've discussed that yet.

20
21 MR. BROWN: Okay.

22
23 THE WITNESS: No, we haven't.

1 BY MR. WATERS:

2 Q The -- the title of one of the abstracts is
3 highlighted in yellow highlighter. Is that
4 characteristic of what you -- you might have done?

5 A I use a yellow highlighter from time to time.

6 Q All right. Do you believe, then, that given where
7 this page was found and the fact that it's
8 highlighted with a yellow highlighter that this
9 would have been your highlighting?

10 A I don't know.

11 Q In any event, the article highlighted is entitled
12 "Asbestos Content of Lung Tissue in Asbestos
13 Related" -- excuse me -- "Asbestos Associated
14 Diseases, A Study of 110 Cases." And it
15 indicates -- it discusses an article by a
16 V. L. Roggli at the Department of Pathology, Duke
17 University, Durham, North Carolina. Are you
18 familiar with Dr. -- Dr. Roggli's work?

19 A No.

20 Q Okay. Are you aware that Dr. Roggli is going to
21 testify as an expert in this case?

22 A No.

23 Q Okay. What is it about an article entitled
24 "Asbestos Content of Lung Tissue and Asbestos
25 Associated Diseases" that might be relevant or

1 significant to your practice?

2
3 MR. BROWN: And again, you're assuming
4 that he, as indicated by highlighting, that that's
5 significant to him, which has not been established.
6 So there's no foundation for this question.

7
8 BY MR. WATERS:

9 Q Uh-huh. Okay. You can answer.

10 A I think what the -- what -- the idea of what he's
11 saying is true. I mean, there are -- that could
12 have come -- that could have been my highlighting.
13 It could have been someone who highlighted it and
14 gave it to me.

15 Q Okay. In any event, regardless of whether you
16 highlighted it or someone else highlighted it and
17 gave it to you and then you stuck it in the file,
18 do you consider that -- and I quote -- "Asbestos
19 Content of Lung Tissue and Asbestos-Related
20 Diseases," is a topic that would be of interest to
21 both yourself and to the Brown & Root industrial
22 hygiene group?

23 A That's a loaded question.

24 Q Well, if you could do your best to respond to it.
25 If you can't, then just do the best you can.

1 A Would it be of interest to hygienists at Brown
2 & Root? Is that what you're asking?

3 Q Well, I'm assuming somebody was interested in it at
4 your group because that's why it was highlighted.
5 What I'm trying to understand is why.

6 A I don't know. I would say it's generally related
7 to asbestos and we -- you know, we're interested in
8 asbestos.

9 Q Okay. Can you think of any other instances where
10 you or anybody else in the industrial hygiene group
11 may have relied on the opinions of Dr. Roggli?

12 A I have no idea.

13 Q Okay. Do you know if Dr. Roggli has ever testified
14 or worked on behalf of Brown & Root?

15 A I don't know.

16 Q Do you maintain a copy of the OSHA regulations at
17 your desk or nearby?

18 A Do I personally? I don't know. Probably.

19 Q Who is the industrial hygienist in your group who
20 is -- Who is the industrial hygienist in your group
21 who spends the most of his or her time working on
22 asbestos-related matters?

23 A The industrial hygienist who deals the most with
24 asbestos is Delbert Gaines.

25 Q Mr. Gaines is the gentleman who's going to be

1 giving his -- his testimony in this case tomorrow?

2 A I don't know.

3 Q Okay. I want to read you a statement from the
4 Federal Register OSHA findings, June 20th, 1986.
5 See if it's something you're familiar with. It
6 says, "OSHA is aware of no instance in which
7 exposure to a toxic substance has more clearly
8 demonstrated detrimental health effects on humans
9 than has asbestos exposure."

10 My first question to you, Mr. Drysdale, as a
11 certified industrial hygienist, a person trained in
12 the context of toxic substances and diseases, do
13 you agree with this statement by OSHA?

14 A I don't know if I agree or disagree.

15 Q Okay.

16 A I don't have an opinion on it.

17 Q All right. It goes on to state, "The diseases
18 caused by asbestos exposure are life threatening or
19 disabling." And I assume you agree with that.

20 A I have read that.

21 Q Okay. Do you have any reason to disagree with
22 that?

23 A No.

24 Q Okay. It goes on to state, "Among these diseases
25 are lung cancer, cancer of the mesothelial lining

1 of the pleura and peritoneum, asbestosis and
2 gastrointestinal cancer." Do you agree, sir, that
3 those are diseases that are caused by exposure to
4 asbestos based on your experience and training?

5 A I have read that.

6 Q Do you have an opinion one way or another as -- as
7 to whether or not that was, in fact, the case?

8 A I -- I believe it to be true.

9 Q Okay. It goes on to state that, "Many studies have
10 also shown conclusively that mesothelioma is
11 associated with asbestos exposure." I think
12 you're -- you've already agreed with that, haven't
13 you?

14 A Yes.

15 Q "In some asbestos exposed occupational groups, 10
16 to 18 percent of deaths have been attributable to
17 malignant mesothelioma." In your experience, have
18 you ever reviewed any statistics that would
19 correlate to almost one-fifth of deaths being
20 caused by this disease?

21 A I don't recall.

22 Q It states that this form of cancer, mesothelioma,
23 is rare -- rarely curable and is usually fatal
24 within a year after diagnosis. Do you have any
25 knowledge that that is, in fact, the case?

1 A I believe I read that.

2 Q Are you familiar with the fact that the disease,
3 mesothelioma, can result from very, very low
4 exposures?

5
6 MR. BROWN: Excuse me here. You're
7 asking him a vague and general question, not
8 defining for him what low exposures are. It's
9 certainly not providing him with any facts upon
10 which he might be able to give an opinion.
11 Therefore, it calls for speculation and I object to
12 the question.

13

14 BY MR. WATERS:

15 Q Can you answer, sir?

16 A Can you restate the question, please?

17 Q Yes. Are you familiar from your experience,
18 training, review of the literature and educational
19 background with the fact that the disease
20 mesothelioma can be caused by low exposures to
21 asbestos?

22 A I don't think I have any knowledge about that.

23 Q Okay. OSHA states -- again, from the Federal
24 Registry -- that, "Well-conducted studies
25 demonstrate a substantially increased rate of lung

1 cancer and mesothelioma mortality among workers
2 having low cumulative exposures to asbestos." Were
3 you familiar with that finding from OSHA?

4 A Not that I recall.

5 Q Okay. I noticed in passing and looking at some of
6 the materials that the Federal Register from June
7 20, 1986 that I've been reading from is contained
8 in your industrial hygiene materials. Is that
9 correct?

10 A I believe so.

11 Q All right. Do you understand -- Well, strike that.

12 Did you learn in your master's program or
13 during any part of your formal education that OSHA
14 promulgated regulations pertaining to the hazards
15 of asbestos in 1970?

16 A I don't believe I knew that.

17 Q Did -- Before this deposition, did you have an --
18 any understanding as to when regulations first came
19 into place concerning the hazards of asbestos?

20 A The date in my mind is 1972.

21 Q Okay. And that date in your mind is -- is the
22 passage of the implementing regulatory --
23 regulations for OSHA?

24 A That's just a date of what I remember to be the
25 first asbestos standard.

1 Q Okay. What is Brown & Root's policy presently with
2 regard to workers who may be exposed to asbestos
3 dust?

4 A That's a broad --

5 Q Let me ask it --

6 A -- broad question.

7 Q -- ask it another way.

8 Based on your time with the company, what is
9 Brown & Root's policy concerning whether
10 individuals may be exposed to asbestos?

11 A The policy that I'm aware of says that we will not
12 seek asbestos abatement work.

13 Q Okay. So Brown & Root has made a policy decision
14 that it will not be involved with the removal or
15 tear out of asbestos-containing materials, correct?

16 A They made a policy decision that we will not seek
17 asbestos abatement work.

18 Q All right. And is the reason for that policy to
19 avoid the potential for exposure or actual
20 exposure --

21 A I don't know.

22 Q Let me finish my question.

23 A Sorry.

24 Q That's all right. Of Brown & Root employees that
25 might result during the abatement process?

1 A I don't know the reason for it.

2 Q Okay. Is that a policy that existed before you
3 arrived and began working for the company?

4 A I think so.

5 Q Mr. Heit, do you know Mr. Heit?

6 A I've met him.

7 Q Okay. Have you had any discussions with Mr. Heit
8 in the context of this deposition or this case?

9 A No.

10 Q Okay. Mr. Heit told us that his involvement with
11 asbestos, at the present time, is limited to
12 reviewing specifications and if he sees that
13 asbestos has been called for, he will make every
14 effort to -- to find a substitute material or make
15 arrangements so that asbestos is not used.
16 Understanding that he's testified to that effect,
17 does Brown & Root presently have a policy to avoid
18 any use of asbestos in its specification process or
19 its construction process?

20 A I don't know.

21 Q If there is such a policy, I guess it would be in --
22 on the engineering side?

23 A I don't know.

24 Q Does Brown & Root maintain materials -- written
25 materials that constitute a handbook or policy

1 statements concerning asbestos exposure?

2 A Yes.

3 Q Is that document found in your files?

4 A I don't believe so.

5 Q Okay. Where is that document retained?

6 A I'm sure I have a copy of it someplace in my
7 office.

8 Q Did you -- Were you involved with working on that
9 document or preparing it?

10 A I believe I may have reviewed a revision of it.

11 Q When was that?

12 A Probably three or four years ago.

13 Q Okay. Do you know when the first such document
14 was -- was put into place?

15 A No.

16 Q Who is the person at Brown & Root, to the best of
17 your knowledge, who has the most information
18 concerning the hazards of asbestos? And I'm not
19 restricting my question to your industrial hygiene
20 group.

21 A I don't know.

22 Q Is there a Dr. Conti? Do you know who he is?

23 A I know Dr. Conti.

24 Q Who is Dr. Conti?

25 A He's the Brown & Root medical director.

- 1 Q Okay. Is he located at this facility?
- 2 A Sometimes.
- 3 Q Where -- where is he otherwise, or is he -- is he
- 4 on the road or what -- explain that answer, if you
- 5 will.
- 6 A He's a contracted employee. Or he's a contractor.
- 7 I don't know if he's an employee.
- 8 Q How long has he been employed as a contract doctor
- 9 by Brown & Root?
- 10 A I don't know.
- 11 Q Was he here before you arrived?
- 12 A I believe so.
- 13 Q Okay. Do you know the name -- name or names of any
- 14 of his predecessors?
- 15 A No.
- 16 Q What are, to the best of your knowledge,
- 17 Dr. Conti's responsibilities with respect to
- 18 potential exposures to toxic substances?
- 19 A Say it again, please.
- 20 Q What is your understanding of Dr. Conti's
- 21 responsibilities with respect to avoiding or
- 22 limiting potential asbestos exposures on the job?
- 23 A I don't know that they're clearly defined.
- 24 Q Does he perform physical examinations on workers?
- 25 A I don't believe so.

1 Q Okay. Does Brown & Root have in place a program to
2 complete regular x-ray examinations of workers to
3 determine whether or not they may develop any
4 asbestos disease?

5 A In some cases, yes.

6 Q Okay. And in what cases is such a program -- has
7 such program been implemented?

8 A As directed by the OSHA standard.

9 Q Okay. And when was that first begun, that -- that
10 process of examining workers or having x-ray
11 examinations to see if there were signs of asbestos
12 disease?

13 A I don't know.

14 Q Okay. Is it your understanding that that program
15 is required in circumstances where workers are
16 actually exposed to asbestos?

17 A That is my understanding.

18 Q Okay. And has that program been in place since you
19 arrived in 1990?

20 A I believe so.

21 Q I take it from that fact, sir, that there have been
22 documented exposures, at least in the time frame
23 1990 to 1996, of Brown & Root employees to
24 asbestos. Is that correct?

25 A There have been documented air monitoring results

1 on Brown & Root employees with asbestos.

2 Q Okay. And, again, in the '90 to '96 time frame?

3 A Correct.

4 Q Okay. And those have identified certain levels of
5 asbestos fibers in the -- in the work areas?

6 A Correct.

7 Q Are you responsible for maintaining records
8 pertaining to monitoring?

9 A Partially, yes.

10 Q Can you explain to me why you say partially?

11 A The responsibility is not clearly defined, but as a
12 part of the scope of our work, we maintain records
13 where we have them.

14 Q And how far back do those records go?

15 A I don't know.

16 Q Is Brown & Root a member of the National Safety
17 Council?

18 A I believe so.

19 Q Is it your understanding that Brown & Root has been
20 a member of the National Safety Council for many
21 years?

22 A I don't know.

23 Q How long has Brown & Root been in existence?

24 A 76 or so years.

25 Q Okay. And that's in the present corporate

1 structure?

2 A I don't know about that.

3 Q Okay. Do you know anything about the history of
4 the company?

5
6 MR. BROWN: History of what?

7
8 A Do I know anything about it?

9
10 MR. WATERS: History of the company.

11
12 MR. BROWN: Company?

13
14 MR. WATERS: Yes, sir.

15
16 MR. BROWN: Your voice is fading --

17
18 MR. WATERS: I know.

19
20 MR. BROWN: -- as the hours go by. It's
21 been a long day.

22
23 MR. WATERS: Losing my energy. Draining.
24 I should have eaten some lunch.

1 BY MR. WATERS:

2 Q I'm sorry. Tell me just very generally what you
3 know about the -- about the background and the
4 foundation and formation of Brown & Root as an
5 entity.

6 A All I know is it's been a construction engineering
7 company for a long time.

8 Q Okay. Are you aware that at one time it was
9 involved with ship repair operations?

10 A I don't believe I know that, no.

11 Q Okay. I take it it's not involved with ship repair
12 operations at the present time, to the best of your
13 knowledge?

14 A Not to my knowledge.

15
16 THE REPORTER: Mr. Waters, I need to
17 change break -- tape and a break.

18
19 MR. WATERS: Oh, sure. Go ahead. Be
20 glad to take a break.

21
22 THE VIDEOGRAPHER: We're off the record
23 at 6:20.

24
25 (At which time, a short recess was

1 taken.)

2
3 (At this time, the instrument
4 referred to was marked Drysdale Exhibit
5 No. 1 for identification and is attached
6 hereto.)

7
8 THE VIDEOGRAPHER: Back on the record at
9 6:31.

10
11 BY MR. WATERS:

12 Q Looking through some of these materials, there
13 appear to be some notes from May 10, 1984 and
14 there's a name at the top right that says J. Kelin,
15 K-E-L-I-N. Is that one of your profs?

16 A I -- I'd have to take a look at it.

17 Q Yeah. Go ahead.

18
19 THE WITNESS: Do you want this one
20 marked, too?

21
22 MR. BROWN: Not your things. I'm just
23 interested in his things that I don't have copies
24 of.

1 A I -- I don't recognize the name.

2
3 BY MR. WATERS:

4 Q Is that your handwriting?

5 A No.

6 Q All right.

7
8 MR. BROWN: He didn't join the company
9 until '90.

10
11 MR. WATERS: I know that. I thought
12 these were his school notes.

13
14 MR. BROWN: Oh, I'm sorry.

15
16 MR. WATERS: I thought he saved
17 everything.

18
19 BY MR. WATERS:

20 Q You have no idea what this document is?

21 A From the date, it could be school notes.

22 Q Okay.

23 A But it's not my handwriting.

24 Q Right. It would be notes, perhaps, that you got
25 from someone else in studying, something like that?

- 1 A Possibly.
- 2 Q Okay. Do -- do you recall a student named
- 3 J. Kelin?
- 4 A I don't recognize the name.
- 5 Q Okay. Do you recall that this would have come from
- 6 your files when you came from Vulcan?
- 7 A Yes.
- 8 Q Do you subscribe to the journal -- excuse me. You
- 9 are a member of the AIHA, correct?
- 10 A Correct.
- 11 Q And what is the journal, professional journal that
- 12 y'all receive?
- 13 A I believe it's called Journal of the American
- 14 Industrial Hygiene Association.
- 15 Q Do you get that on a monthly basis probably?
- 16 A Yes.
- 17 Q From time to time do you review and read -- or do
- 18 you read or review asbestos articles or articles
- 19 related to asbestos in that journal?
- 20 A I'm sure there are some, yes.
- 21 Q Are there any other journals that you read and rely
- 22 on for purposes of educating yourself on a regular
- 23 basis as part of your practice?
- 24 A Yes.
- 25 Q What would they be?

1 A Applied Occupational and Environmental Hygiene is
2 one.

3 Q All right, sir.

4 A Journal of the American Public Health Association,
5 something like that.

6 Q Okay.

7 A Journal of Occupational Medicine.

8 Q Journal of Occupational -- all right. Any others?

9 A Those are the ones that come to mind that are
10 publications or periodicals.

11 Q Okay. Can you cite me to any textbooks, other than
12 perhaps Patty's that we have here today, that you
13 rely on in your practice as an industrial
14 hygienist?

15 A I'd have to work up a list for you. In fact, I
16 think you have a list in the -- right here.

17 Q Well, I was gonna ask you, if you don't mind, let's
18 go ahead and attach that as the next exhibit to the
19 deposition so we have a reference point.
20

21 (At this time, the instrument
22 referred to was marked Drysdale Exhibit
23 No. 2 for identification and is attached
24 hereto.)
25

1 MR. WATERS: Okay. What are we referring
2 to it?

3
4 THE REPORTER: Drysdale 2.

5
6 MR. WATERS: Drysdale 2.

7
8 BY MR. WATERS:

9 Q Mr. Drysdale, could you take a moment and review
10 Drysdale 2 and tell me which of those publications
11 or files -- well, strike that -- just publications
12 that you rely on in the context of work you do in
13 terms of educating yourself about the hazards of
14 asbestos?

15 A I think the most accurate answer would be that I
16 don't really rely on these. I may refer to them
17 from time to time, but I don't -- it's not very
18 often any longer.

19 Q Okay. What percentage of your work is related to
20 asbestos or asbestos hazards?

21 A My personal?

22 Q Yes, sir.

23 A Less than 5 percent.

24 Q Okay. And the gentleman, Mr. Gaines, would --
25 would you tell us approximately what level -- I

1 mean -- excuse me. Would you tell me approximately
2 how much time he spends or a percentage of his
3 time?

4 A You'd have to ask him that.

5 Q Okay. One of the articles I found in your stack is
6 something from the American Journal of Industrial
7 Medicine. Is that one of the journals you
8 referenced earlier?

9 A I don't subscribe to it, no.

10 Q Okay. You have, however, received copies of
11 articles from it in the past?

12 A It would appear so.

13 Q All right. Article entitled "Malignant
14 Mesothelioma Caused by Childhood Exposure to Long
15 Fiber, Low Aspect Ratio to Tremolite." And someone
16 has written in red pen, "This is a very strong word
17 for such meager evidence." Is that your notation?

18 A I'd have to look at it.

19 Q Yeah, take a look.

20 A It looks like my handwriting.

21 Q Okay. Was it your -- Can I have that back, please?
22 I take it that you -- it was your opinion in
23 reading the article that the author's conclusions
24 about mesothelioma caused by childhood exposure
25 were incorrect?

- 1 A No, I wouldn't say that.
- 2 Q Okay. How would you characterize the notes that
3 you made?
- 4 A I don't remember making the -- the notation, but
5 it's my handwriting. I would let it stand on its
6 own.
- 7 Q Okay. Here's a review article from Chest magazine.
8 Are you familiar with that?
- 9 A Am I familiar with the article or the magazine?
- 10 Q I'm sorry. The magazine.
- 11 A No.
- 12 Q What is your full name? I'm sorry.
- 13 A Dale Drysdale.
- 14 Q And middle initial?
- 15 A T.
- 16 Q Okay. So you would be the DT -- DTD referenced at
17 the top of this page?
- 18 A Probably, yes.
- 19 Q Okay. And again, this document has highlights that
20 probably you made?
- 21 A I don't know.
- 22 Q Okay. Well, this is a document dated 14 June,
23 1988. This is a document that you would have
24 brought over from your work at Vulcan, correct?
- 25 A In all likelihood, yes.

1 Q All right. And among the highlighted portions, it
2 states, "These observations indicate that -- that
3 chrysotile asbestos can produce mesothelioma in
4 man." I take it you don't have a present
5 recollection of reading this?

6 A That's correct.

7 Q All right. And I can't remember, but I think I
8 asked you and you stated that at the present time
9 you do not have an opinion as to whether certain
10 fiber types can cause mesothelioma.

11 A I'm not sure what I stated. I believe I've read
12 that.

13 Q Okay. I'm sorry. Now I've confused myself. You
14 have read what?

15 A I've read that the various fiber types can cause
16 mesothelioma, but I'm -- I don't want to swear to
17 that.

18 Q Okay. It goes on to state that some reports and
19 some governmental agencies, such as OSHA and the
20 United States -- in the United States operate under
21 the theory that there is no difference in risk
22 between the various fiber types. Is that
23 consistent with your understanding on that issue?

24 A Restate your question, please.

25 Q I'm sorry. It goes on to state that some reports

1 and some governmental agencies, such as OSHA, in
2 the United States, operate on the theory that there
3 is no difference in risk between the different
4 fiber types in the context of mesothelioma. Do you
5 generally agree, sir, with that statement?

6 A I agree that OSHA does not differentiate between
7 the various fiber types.

8 Q Do you have any basis to differentiate between the
9 various fiber types?

10 A I'm aware that there is research that suggests that
11 there -- they have different toxicity.

12 Q Okay. Do you ever get involved with claims made
13 against Brown & Root for asbestos-related disease,
14 investigation of claims or anything of that nature?

15 A I don't recall being involved at that level, no.

16 Q Article entitled "Occupational Cancers of the
17 Medical" -- excuse me -- "Occupational Cancers of
18 the Respiratory Tract." There's a stamp indicating
19 that it was received 26 May, 1987 and there's a
20 notation that you reviewed the article, DT-- DTD,
21 with your initials crossed out and that it was
22 eventually sent to KFB for the lung file. Who was
23 KFB?

24 A Can I take a look at that?

25 Q Sure.

1 A I believe that was a person at Vulcan.

2 Q Okay. Is that somebody you worked for at Vulcan?

3 A Yes.

4 Q Another industrial hygienist?

5 A Yes.

6 Q Okay. And it's a little hard to read. It looks
7 like the document came -- went from DRG to DTD --
8 that would be yourself -- and then on to KFB. Who
9 was DRG?

10 A I believe that's another Vulcan employee.

11 Q Another industrial hygienist?

12 A Yes.

13 Q Okay. All right. And then you would have brought
14 this document with you to Brown & Root?

15 A Yes.

16 Q Okay. The author is Arthur L. Frank, Ph.D.,
17 indicated to be from the Department of Preventative
18 Medicine and Environmental Health at the University
19 of Kentucky. And at Page 73 of this article from
20 your files, the doctor says, "Lung cancer
21 associated with asbestos exposure was first
22 reported by Lynch and Smith, who in their paper of
23 1935 suggested that expose" -- "that exposure to
24 asbestos may have a role in the development of lung
25 cancer." Do you recall information on that issue

1 while you were going to school?

2 A Please make your question more specific. I don't
3 understand it.

4 Q Okay. Do you recall being advised of the fact that
5 in 1935 there were reported -- there were reports
6 suggesting that exposure to asbestos may play a
7 role in the development of lung cancer?

8 A I don't recall that, no.

9 Q It goes on to state that Hueper wrote in 1942 in
10 his treatise, "Occupational Tumors and Allied
11 Diseases," that he considered asbestos to be an
12 occupational lung carcinogen. For the benefit of
13 the jury, is a carcinogen something that causes
14 cancer?

15 A That is my understanding.

16 Q Got you. Doll wrote in 1955 -- or excuse me.
17 Doll, in 1955, published the first major
18 epidemiological study demonstrating the
19 relationship between occupational exposure to
20 asbestos and the development of lung cancer. Were
21 you aware of the Doll 1955 article?

22 A I don't recall reading it.

23 Q Okay. Any reason you can think of that
24 Brown & Root would not have been aware or should
25 not have been aware of articles in the medical and

1 scientific literature concerning the hazards of
2 asbestos in the 1930s, 1940s, 1950s?

3 A I don't understand your question.

4 Q Is there any reason you can think of that
5 Brown & Root should not or could not have been
6 aware of the articles concerning the hazards of
7 asbestos, the diseases caused by asbestos, and
8 specifically cancer, in the 1930s, 1940s and 1950s?

9 A You're asking me something I have absolutely no
10 knowledge about.

11 Q Is there any reason you can think of that it
12 wouldn't have known that, sir?

13 A You're asking --

14
15 MR. BROWN: Well, let me -- let me object
16 to the question that there's no foundation for it.
17 He obviously wasn't here at the time. You're
18 asking him to speculate. I don't see how he can
19 formulate an opinion to answer that.

20
21 BY MR. WATERS:

22 Q It goes on to state in this article from your
23 files, "In addition to asbestos affecting the
24 parenchyma and pleura of the lung, there is a wide
25 range of cancers that are now known to be related

1 to asbestos exposure, including lung cancer,
2 mesothelioma, laryngeal cancer, a variety of
3 gastrointestinal tract cancers, including cancer of
4 the esophagus, stomach, colon, and rectum."

5 Do you agree with Dr. Frank's conclusions that
6 these various different types of cancers are caused
7 by asbestos exposure?

8
9 MR. BROWN: This witness has not been
10 shown to have any kind of medical expertise.
11 You're asking him for an opinion which he is not
12 qualified to give.

13
14 MR. WATERS: Well, he is an industrial
15 hygienist.

16
17 MR. BROWN: Doesn't make him a medical
18 doctor, does it?

19
20 A I've never done any research on asbestos.

21
22 BY MR. WATERS:

23 Q Okay. Do you have any opinion one way or another
24 as to whether these various diseases are caused by
25 asbestos?

1 A I've read speculation. I don't have an opinion on
2 whether or not it's true.

3 Q Okay. It states that "What is increasingly clear
4 is that it is not only asbestos insulators who are
5 at significant risk, because other occupations have
6 also shown levels of exposure that raise concern.
7 Included in this group would be railroad yard
8 workers, shipyard workers and construction workers
9 in general." That would include people --
10 Construction workers would include people employed
11 by Brown & Root, would it not, sir?

12 A Brown & Root employs construction workers.

13 Q Has Brown & Root, in your experience and your
14 knowledge, recognized that the workers that they
15 employ are among a group that would be considered
16 at a -- at risk and that should raise concern?

17
18 MR. BROWN: Your question is vague in
19 that it does not describe who his workers are or
20 the circumstances under which you are posing this
21 question.

22
23 BY MR. WATERS:

24 Q Let me --
25

1 MR. BROWN: It's taken out of context.

2
3 BY MR. WATERS:

4 Q -- rephrase.

5
6 MR. BROWN: You're asking him to
7 speculate.

8
9 BY MR. WATERS:

10 Q In -- in your experience, sir, has Brown & Root
11 recognized that it employs and has employed a class
12 of workers -- that is to say construction
13 workers -- who are a significant risk of developing
14 asbestos diseases because of exposures in that
15 industry?

16
17 MR. BROWN: There's no foundation for
18 this and asks him to speculate.

19
20 A I can't speak for the company on that.

21
22 BY MR. WATERS:

23 Q Okay. Do you personally recognize that
24 construction workers, by nature of work that they
25 did, are at a significant risk of developing these

1 diseases?

2 A The way you've asked your question, no, that's --
3 the category of construction workers is way too
4 broad.

5 Q Okay. So you would disagree with Dr. Frank in that
6 regard, from a personal standpoint?

7 A Read the statement again, please.

8 Q "What is becoming increasingly clear is that it is
9 not only asbestos insulators who are at significant
10 risk, because other occupations have also shown
11 levels of exposure that raise concern." Do you
12 agree with Dr. Frank that construction workers have
13 shown levels of exposure that raise concern about
14 asbestos diseases?

15 A I don't think I have an opinion on that.

16 Q Okay.

17
18 MR. WATERS: Can we attach this one,
19 Phil, to the deposition?

20
21 MR. BROWN: What?

22
23 MR. WATERS: This particular article, as
24 an exhibit.

1 working on the premises of another person --
2 another company, are required to know and follow
3 the safety regulations of that company. Is that
4 correct?

5
6 MR. BROWN: You're asking him to
7 interpret the document that he hasn't seen before.

8
9 MR. WATERS: No. I'm asking -- No, I'm
10 not asking him that.

11
12 MR. BROWN: Well, in a sense you've said
13 does it dovetail with something that happened.

14
15 MR. WATERS: No. I said I think it
16 dovetails. Let me start over.

17
18 BY MR. WATERS:

19 Q I believe you told me earlier that in the context
20 of present day operations and your time with the
21 company in the last six years that it is company
22 policy to -- still company policy that employees
23 will follow -- will know and follow the safety
24 regulations and rules that pertain to the work
25 practices on those premises. Is that correct?

1 MR. BROWN: We'll have to go make a
2 copy --

3
4 MR. WATERS: All right. If we could --

5
6 MR. BROWN: -- and put it back.

7
8 MR. WATERS: If we could do that. I've
9 only got about five more minutes at the most.

10
11 MR. BROWN: Is this yours or his?

12
13 THE WITNESS: No, it's his.

14
15 MR. BROWN: We'll make a copy and then
16 you can mark that and we'll put his copy back where
17 it goes.

18
19 MR. WATERS: All right.

20
21 MR. BROWN: And make another copy.

22
23 MR. WATERS: Okay.

24
25 MR. BROWN: Do you have some others you

1 want --

2
3 MS. ADAMS: All right. If I get stuck in
4 the elevator --

5
6 MR. BROWN: Why don't you wait.

7
8 MS. ADAMS: No, but if I'm gonna --

9
10 MR. BROWN: No. Let's wait until we're
11 through, and then we'll make one more trip.

12
13 MR. WATERS: All right.

14
15 MR. BROWN: That will be number what? 3?

16
17 THE REPORTER: 3.

18
19 BY MR. WATERS:

20 Q I just want to ask you a couple of quick questions
21 about some documents that were produced by
22 Brown & Root as part of the discovery process in
23 this litigation. Brown & Root produced a June 1,
24 1963 document entitled "Administrative Procedure
25 Pertaining to Safety" -- "Basic Safety Rules." Are

1 you familiar with this document? Have you ever
2 seen it before?

3 A Let me take a look at it.

4 Q Yeah. I'll give you the whole thing.

5
6 MR. WATERS: Just for the record, the
7 total document is 59 pages long.

8
9 A I don't think I have seen it.

10
11 BY MR. WATERS:

12 Q Okay. Well, it is definitely before your time.
13 I've just got a couple quick questions for you
14 about it, about some policies.

15 A (Complying).

16 Q The document states on Page 4 the basic safety
17 rules to be followed by all employees of Brown &
18 Root and associated companies. And it states that,
19 No. 10, "Compliance with the company's safety
20 regulations, as well as the safety regulations
21 established by the owner as they apply to our work
22 by contractual agreement, is a condition of
23 employment." I think that this dovetails what --
24 your earlier testimony -- that is, your
25 understanding that Brown & Root employees, when

1 A I believe that's correct.

2 Q Okay. And does this document indicate, sir, that
3 the same policy has been in effect or was in effect
4 on June -- as of June 1, 1963?

5
6 MR. BROWN: If you know.

7
8 A I -- I don't know.

9
10 BY MR. WATERS:

11 Q All right. I thought you were about to say yes.
12 You're -- you're not sure?

13 A I was about to say let me take a look at it.

14 Q Okay. Why don't you do that? It's No. 10.

15 A Okay. And what is your question?

16 Q Is the policy that's stated in that 1963 document
17 essentially the same policy that you know to be in
18 existence today?

19 A This isn't stated as a policy. It's just stated as
20 a fact.

21 Q Well, it's listed under the -- under the basic
22 safety rules.

23 A Yeah. So it would be a safety rule.

24 Q Okay. All right. Is the safety rule that's
25 expressed here in 1963 the same as your

1 understanding of the safety rule at the present
2 time concerning following the rules and regulations
3 of premises owners?

4 A I believe so.

5 Q Okay. There is also some documentation at Page 45
6 that discusses in great detail contracting work
7 done for the United States Government. And my
8 question to you simply is -- no, strike that. I'll
9 withdraw that question.

10 I'm gonna read to you from a letter from
11 Mr. James W. Hammond. Do you know Mr. Hammond?

12 A No.

13 Q Okay. Mr. Hammond --

14
15 MR. BROWN: Wait. Do we need to mark
16 this?

17
18 MR. WATERS: You've got a copy of it. I
19 mean, I've -- You don't have it with you, but I've
20 sent you one.

21
22 MR. BROWN: I don't have a copy.

23
24 MR. WATERS: Okay. Well --

1 MR. BROWN: I don't have a copy.

2

3 MR. WATERS: All right. Well, we can
4 mark it. I don't mind. What was the next --

5

6 MR. BROWN: Just for identification.

7

8 MR. WATERS: What's our next number?

9

10 THE REPORTER: 4.

11

12 MR. WATERS: Okay. Why don't you put a
13 sticker on it so that way --

14

15 MR. BROWN: You don't have to put a
16 sticker on the copy if you don't want to. I'm just
17 saying let's -- let's just say it's gonna be No. 4.
18 We'll make a copy and then we'll put the sticker on
19 the copy.

20

21 MR. WATERS: 4, it is.

22

23 BY MR. WATERS:

24 Q 4 -- Exhibit 4 --

25

1 MR. BROWN: Is there a date on that one?

2
3 MR. WATERS: Yes, there is. It's a
4 letter from James Hammond dated August 17th, 1994
5 to Mr. Hans Siegel at the Health Services
6 Department for -- in -- for Exxon Company in
7 Houston, Texas.

8
9 BY MR. WATERS:

10 Q Do you know Mr. Siegal?

11 A I don't think so.

12 Q Okay. Let me represent to you and the evidence in
13 this case will show that Mr. Hammond was an
14 industrial hygienist employed by Exxon and its
15 predecessor, Humble Oil, from 1947 until 1978 at
16 the Exxon Baytown facility. You're familiar with
17 that facility, correct?

18 A I know it exists.

19 Q Okay. And you know that Brown & Root has done work
20 there, correct?

21 A Correct.

22 Q Mr. Hammond goes into great detail about the
23 cautions and regulations and requirements that
24 Exxon had in place at the Baytown facility starting
25 in 1947 to reduce and eliminate exposures to

1 asbestos. And he goes on --

2
3 MR. BROWN: That -- that's counsel's
4 interpretation of the document --

5
6 MR. WATERS: Right.

7
8 MR. BROWN: -- that's not been presented
9 to this witness.

10
11 MR. WATERS: That will be the evidence
12 that the jury will have.

13
14 MR. BROWN: From the letter, just so the
15 letter will speak for itself.

16
17 BY MR. WATERS:

18 Q I wanted to give you the benefit of some of the
19 background of the document so you could put some of
20 this in context.

21
22 MR. BROWN: Well, why don't you show it
23 to him and ask him a question rather than lecture
24 to him?

1 MR. WATERS: I'm not lecturing to
2 anybody.

3
4 BY MR. WATERS:

5 Q Mr. Hammond states, "The Humble company had its own
6 employees and insulators and did turnarounds
7 generally with its own employees. Brown & Root was
8 the largest contractor firm we dealt with and often
9 they would furnish the extra help as we might need
10 it for a particular type job. In every case, our
11 contractors, Brown & Root and other contractors,
12 were required to follow the same guidelines as
13 employees, to follow the same rules as our
14 employees in every regard as far as protection from
15 any exposure to asbestos or other hazardous
16 materials."

17 Is Mr. Hammond's statement consistent with
18 your understanding in the 1963 Brown & Root
19 document that indicates that Brown & Root follows
20 and is required to follow the guidelines and
21 requirements of the premises owners concerning
22 safety and health?

23
24 MR. BROWN: This is his understanding as
25 of today?

1
2 MR. WATERS: Sure.
3

4 MR. BROWN: You're asking him today what
5 his understanding is?
6

7 MR. WATERS: Yeah.
8

9 A I'd say the two statements, the one that you're
10 reading and the previous one, are similar.
11

12 BY MR. WATERS:

13 Q Okay. "Brown & Root, for instance, had a very
14 active safety department when I came to Exxon,"
15 which was in 1947. "And later, they employed a
16 staff of industrial hygienists." That would be
17 yourself. "But those specialists seldom visit our
18 operations because they respected our health and
19 safety programs for being superior." Do you have
20 an opinion as to whether or not Mr. Hammond is
21 correct in stating that the safety and health
22 program of Exxon was superior to that of Brown &
23 Root?

24 A No. That's --
25

1 MR. BROWN: You don't have an opinion.
2 Okay. Fine. I was gonna point out that he
3 probably wasn't even born in 1947.
4

5 THE WITNESS: Thank you. You're right.
6

7 MR. WATERS: I'm sure you'll tell the
8 jury that.
9

10 MR. BROWN: Well, I mean, it's -- you
11 know, it's five till 7:00. You've told me you'd
12 try to be through by 7:00.
13

14 MR. WATERS: And I will be.
15

16 MR. BROWN: All right.
17

18 BY MR. WATERS:

19 Q Continuing on, Mr. Hammond states, "Before they
20 began to work, we drew it to the attention of the
21 contractors that they would be required to maintain
22 and to comply with all of our safety and health
23 regulations in doing the work. And then we also
24 took on the supervisors as a group, if there was
25 more than one, and taught him or them the

1 principles that we expected to have enforced among
2 employees that he might have under his command."

3 When your supervisors go over to --
4 Brown & Root supervisors go over to work at Exxon
5 at the present time, are they indoctrinated by the
6 Exxon folks as to what the safety requirements are?

7 A I don't know.

8 Q "For example, we required that they also wear the
9 equivalent type of approved respirator wherever our
10 people were wearing respirators. They were
11 required to have these." Did you know or were you
12 aware that Brown & Root personnel, supervisors,
13 were required to use respirators around asbestos in
14 the 1940s?

15 A I don't know.

16 Q "As a result of all of the above, during my 31
17 years with Exxon, the contractor supervisors who
18 worked in our facility were educated by our safety
19 personnel of the hazards associated with the jobs
20 they were doing, including any potential exposures
21 to asbestos dust."

22 Have you ever been told or do you have any
23 knowledge that from 1947 to 1978 Brown & Root
24 supervisors were constantly being educated by Exxon
25 folks as to the hazards of asbestos?

1 A No.

2
3 MR. WATERS: I don't have any more
4 questions.

5
6 MR. BROWN: We have no questions.

7
8 MR. WATERS: If we can get -- I'm sorry.
9 You're absolutely right.

10
11 THE REPORTER: Off the record?

12
13 MR. WATERS: Off the record.

14
15 MR. BROWN: Well, we're gonna mark this.

16
17 THE VIDEOGRAPHER: 7:02.

18
19 (At this time, the instruments
20 referred to were marked Drysdale Exhibit
21 Nos. 3 and 4 for identification and are
22 attached hereto.)

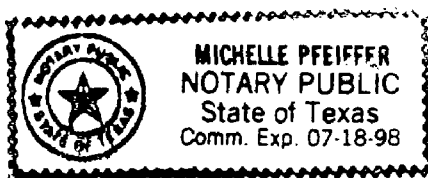
23
24 (Signature required.)
25

1
2 THE STATE OF TEXAS :

3 I, Michelle Pfeiffer, a Certified
4 Shorthand Reporter and the undersigned notary public in
5 and of the State of Texas, certify that the caption to
6 this video deposition correctly states the facts set
7 forth therein; that the examination of the witness named
8 in said caption was correctly reported in shorthand by
9 me at the time and place and under the agreement set
10 forth in said caption.

11 I further certify that this transcription
12 has been transcribed from shorthand into typewriting
13 through stenographically computer-aided transcription
14 and under my supervision in the foregoing transcript;
15 and that said transcript contains a correct record of
16 the proceedings had at said time and place.

17 Given under my hand and seal of office
18 this the 26th day of September, 1996.



Michelle Pfeiffer
Michelle Pfeiffer
Notary Public in and for
The State of Texas

My Commission Expires: 7-18-98

CHANGE/CORRECTION AND WITNESS SIGNATURE PAGE

Please indicate changes on this sheet of paper, giving the page and line number, the change and the reason for the change. Please sign each page of changes.

Reasons for changes are: (1) To clarify the record; (2) To conform to the facts; (3) To correct transcription errors.

PAGE	LINE	CHANGE FROM/CHANGE TO	REASON FOR CHANGE
------	------	-----------------------	-------------------

[illegible]

I, DALE DRYSDALE, have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted herein.

DALE DRYSDALE

THE STATE OF TEXAS :

SUBSCRIBED AND SWORN to before me this the _____
day of _____, 1996.

Notary Public in and for
The State of Texas

My Commission Expires: _____

NO. 31506

SHIRLEY HODGE, Individually : IN THE DISTRICT COURT OF
and as Personal :
Representative of the and :
Estate of A. J. Hodge, Jr., :
Deceased; GREGG A HODGE and :
ANGELA R. McClain, :

Plaintiffs, :

VS. : FANNIN COUNTY, T E X A S

TEXAS UTILITIES ELECTRIC :
COMPANY (d/b/a VALLEY POWER :
PLANT), et al :

Defendants. : 6TH JUDICIAL DISTRICT

CERTIFICATE FOR THE VIDEOTAPE ORAL DEPOSITION OF
DALE DRYSDALE
September 24th, 1996

Taxable Costs:

Charged to: Andrew Waters, Esq.
Bar Number: 20911450
For: Plaintiffs

I, Michelle Pfeiffer, a Certified
Shorthand Reporter for the State of Texas, hereby
certify, pursuant to the Rules and/or agreement of the
parties present, to the following:

That this deposition transcript is a true record of
the testimony given by the witness named herein, after
said witness was duly sworn by me;

_____ That signature was waived by the witness.

_____ That signature is in process of being obtained,
but filing was requested before time allowable for
signature.

_____ That the deposition transcript by way of _____
_____ was submitted on _____ to
_____ for examination,
signature and return to Q & A Reporting, Inc.

1 That attached is the signature page and
2 Change/Correction Sheet containing changes, if any, and
3 the reasons therefor, made by the witness.

4 That the deposition transcript and/or signature
5 page was not returned to the deposition officer by the
6 witness.

7 That the witness failed to appear to read and
8 sign the deposition.

9 That the original deposition transcript, or a
10 copy thereof, together with copies of all exhibits
11 provided to the reporter, was delivered on
12 _____ to the attorney or party who asked
13 the first question appearing in the transcript.

14 That a copy of this certificate is being sent to:
15 the following includes all parties of record:

16 FOR THE PLAINTIFFS:

17 Andrew Waters, Esq.
18 Attorney at Law
19 400 South Zang
20 Suite 1420
21 Dallas, Texas 75208
22 (214) 941-0532
23 and
24 J. Todd Kale, Esq.
25 Silber Pearlman, P.C.
 3110 Webb Avenue
 Dallas, Texas 75205
 (214) 528-2000

 FOR THE THORPE DEFENDANTS:

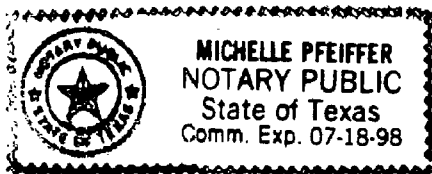
 David Fisher, Esq.
 Fairchild, Price, Thomas & Haley
 413 Shelbyville Street
 Center, Texas 75935
 (409) 598-3317

1 FOR THE BROWN & ROOT DEFENDANTS:

2 Phillip S. Brown, Esq.
3 Fanning, Harper & Martinson, P.C.
4 Third Floor Preston Commons West
5 8117 Preston Road
6 Dallas, Texas 75225
7 (214) 369-1300

8 THE STATE OF TEXAS:
9 COUNTY OF HARRIS:

10 SUBSCRIBED and SWORN TO on this the _____
11 day of _____, 1996.



Michelle Pfeiffer
Michelle Pfeiffer
Certification No. 3232
Cert. Expires: 12-31-96
Commission Expires: 7-18-98

Q & A Reporting, Inc.
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Houston, Texas 77056
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NO. 31506

SHIRLEY HODGE, Individually	:	IN THE DISTRICT COURT OF
and as Personal	:	
Representative of the and	:	
Estate of A. J. Hodge, Jr.,	:	
Deceased; GREGG A HODGE and	:	
ANGELA R. McClain,	:	
	:	
Plaintiffs,	:	
	:	
VS.	:	FANNIN COUNTY, T E X A S
	:	
TEXAS UTILITIES ELECTRIC	:	
COMPANY (d/b/a VALLEY POWER	:	
PLANT), et al	:	
	:	
Defendants.	:	6TH JUDICIAL DISTRICT

EXHIBITS TO THE

VIDEOTAPE

ORAL DEPOSITION OF DALE DRYSDALE

September 24th, 1996

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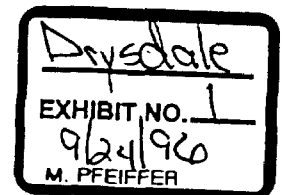


DATE DUE

A

AUG 1 1992			
AUG 2 1992			
PR 1 6 1990			

85896



Occupational Health

HAZARDS OF THE WORK ENVIRONMENT

May R. Mayers, M.D.

Formerly, Assistant Director,
Chief of Medical Unit and Editor of Publications
Division of Industrial Hygiene,
New York State Department of Labor



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in man. Many substances in the chemical and dye industries, which are capable of producing a hemorrhagic cystitis or methemoglobinemia, do not cause bladder cancer. The occupational diseases, with relatively few exceptions are not characteristically associated with occupational cancer.

CHARACTERISTIC SITES FOR OCCUPATIONAL CANCER

SKIN CANCER

Skin cancer is by far the commonest type of occupational cancer; and because precancerous lesions on the skin are readily visible, they are susceptible of early detection, and effective removal. Soot (which caused the early scrotal cancers in chimney sweeps), coal tar, shale oil, pitch, creosote, asphalt, fuel oils, crude mineral oil, and carbon black are all potentially carcinogenic to the skin. In the petroleum industry, wax pressmen and other workers exposed to petroleum fractions, with a boiling point above 700°F, can develop scrotal cancer, particularly when their trousers become saturated with the oil (3). Among other agents suspected of causing skin cancer are arsenic, and ultraviolet light. Skin cancer is not uncommon among farmers with heavy exposures to the sun. Workers exposed to external radiation, including X-ray and fluoroscopic equipment, can develop skin cancer unless adequately protected by proper shielding and other control measures discussed elsewhere (see Chapters 7 and 17, under Industry and Laboratories).

Skin cancers are usually squamous cell carcinomas, which develop slowly and cannot be differentiated, pathologically, from similar skin cancers, of non-occupational origin. A careful history of significant exposure is indispensable, therefore, for a differential diagnosis.

LUNG CANCER

The incidence of lung cancer is sufficiently great, in the general population, to be a matter of major concern, particularly because it has been steadily increasing in the last two or three decades. This increase has occurred during a period of tremendous technological development; when workers were being exposed to an increasing variety of chemical and physical agents, some of which are present, as irritant and toxic air contaminants, in the form of dusts, gases, fumes, mists, etc.; when community air pollution has gradually increased; and when smoking has become a universal habit. It is natural enough to speculate that these factors have been important in the increasing incidence of lung cancer. On the other hand, it is difficult to determine the respective contributions of each of these factors (4). Among the chemical carcinogens known to be capable of causing lung cancer, are certain of the

chromates, nickel carbonyl, asbestos and arsenic. Whenever one is dealing with carcinogenic air contaminants, one must bear in mind that the eyes, nose and upper respiratory passages may also be involved under certain circumstances. Occupational lung cancers are characteristically bronchogenic carcinomas, of the squamous cell type. Metaplasia of the bronchial epithelium appears to precede the appearance of the tumor. These tumors develop slowly, and may not be diagnosed for many years after cessation of exposure to the etiological carcinogenic agent.

Chromates

Both American and European experience has confirmed the etiological role of certain of the chromates in the production of lung cancer. As a result of the independent studies of Machle and Gregorius (5) and Baetjer (6), the chemical compounds believed to be responsible are the hexavalent chromium compounds, Na and K monochromate or dichromate, and zinc chromate, inhaled as dust. Most of these cases were found to be bronchogenic carcinoma. An exposure of 4 years appeared to have been sufficient in some cases. In most cases, however, there were a great many more years of exposure. A characteristic latent period, of varying duration, between cessation of exposure and the development of the lung cancer has been observed.

Asbestos

Bronchogenic carcinoma, originally thought to be associated solely with the disease, asbestosis, has now come to be accepted as due to the inhalation of asbestos dust, even in the absence of asbestosis. The tumor is usually found in one of the lower lobes, where asbestos fibers are most numerous (7). In other types of bronchogenic carcinoma, the upper lobes appear to be more characteristically involved (8). Tumors have also been found to develop elsewhere in the body, particularly in the pleura and peritoneum. These pleural and peritoneal tumors are mesotheliomata, a very rare type of cancer at the present time. The fact that they develop at sites remote from the initial sites of deposition of the asbestos fibers in the lungs, has raised interesting questions of transport and migration. All of these tumors, found in persons exposed to asbestos dust, usually develop after very long latent periods, but they may apparently also develop following a relatively limited exposure. Some are not diagnosed until many years had elapsed since the last exposure. The precise type of asbestos fiber appears to be of some importance as an etiological factor (see Chapter 4).

Reviewing the changing medical picture over the years, resulting from exposure to asbestos dust, Gilson (9) suggests that, in the early

days, exposures were high and workers died young, perhaps from complications such as pneumonia or pulmonary tuberculosis. As living and working conditions improved, however, and tuberculosis became less prevalent in the community, workers lived long enough to develop progressive pulmonary fibrosis, and other features of asbestosis, often ending in *cor pulmonali*. Under modern conditions of exposure, on the other hand, workers develop only moderate degrees of asbestosis, and live long enough to develop bronchogenic carcinoma. He suggests that, in the mesothelioma, we are witnessing the very long-range effects of low-grade exposure to asbestos dust. This is an interesting historical perspective. The pathogenesis of this disease is quite obscure at the present time, and many conjectural model constructs are under intensive investigation.

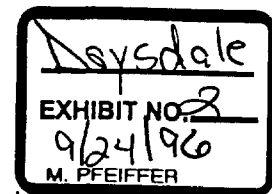
Environmental exposures to asbestos dust are apparently not confined to the workers exposed. Here we find so-called "neighborhood cases," analogous to those found in relation to beryllium exposure—the development of the disease in persons who had never worked with these substances; and even those who live within a considerable radius of the plants. Contact with the dust on workers' clothing, when they are brought home to be laundered, is believed to be a possible explanation in some cases, but not all. It has been suggested that other coexisting sources of community air pollution, which go unrecognized at the present time, may play contributing roles. There are apparently great differences in individual susceptibility not only among workers exposed to asbestos dust, but among persons living in the neighboring communities.

Ionizing Radiation

The lung cancers which develop in miners exposed to radioactive ores are believed to be caused primarily by the radon gas given off and its degradation daughters. This has been discussed in Chapter 14, under Mining.

BLADDER CANCER

As in the case of lung cancer, bladder cancer has been on the increase throughout the world during recent decades, and this has stimulated intensive research as to the etiological factors involved. In industry, the carcinogenic aromatic amines include beta-naphthylamine, para-amino diphenyl, auramine and magenta. Benzidine is still controversial. Alpha-naphthylamine which had long been suspected of being carcinogenic is no longer suspect. It is now believed that because it is a contaminant of beta-naphthylamine, it was improperly included among the bladder carcinogens. Aniline, which had also been suspect, is not carcinogenic. There are a number of chemical agents which can produce cancer of the bladder in animals, but not in man.

EXHIBIT "A"

The following items from Brown & Root's Industrial Hygiene Library are to be produced at each witness' deposition.
Please bring the following reference books or materials:

<u>TITLE OF PUBLICATION</u>	<u>PUBLISHER</u>	<u>AUTHOR/EDITOR</u>	<u>DATE</u>	<u>B/F/I/O</u>	<u>PGS</u>	<u>OWNER</u>	<u>LOCATION(S)</u>
✓ Air Contaminants - Perm. Exposure Limits	OSHA	OSHA	1989	B	78	CSH	03-117B
✓ Asbestos Alternatives				F		DTD	03-120/ File #1
✓ Asbestos Analyses				F		DTD	03-120/ File #1
✓ Asbestos Controls				F		DTD	03-120/ File #1
✓ Asbestos Federal Reg. & Guid. Doc.	UTHCal Tyler	UTHC at Tyler	1986	O	483	CSH	03-120
✓ Asbestos Information				F		DTD	03-120/ File #1
✓ Asbestos Information				F		DTD	03-120/ File #1
✓ Benzene				F		DTD	03-120/ File #1
✓ Carcinogens	Tech. Resources	DHHS	1991	B	481	CSH	03-1188
✓ Dust/Dust Controls				F		DTD	03-120/ File #1
✓ Epidemiology Man and Disease	Macmillian Company	Fox, Hall, Elveback	1970		339	DTD	03-120
✓ Health Effects of Exp. To Diesel Exhaust	NAP	NRC	1981	B	169	CSH	03-120
✓ Industrial Hygiene and Toxicology, Vol. 1-2	Wiley & Sons	Patty, F. A.	48-58	B	830	CSH	03-117A
✓ MMMF - TOX & EPI				F		DTD	03-120/ File #2
✓ Occupational Diseases	NIOSH	NIOSH	1977	B	606	CSH	03-120
✓ Recordkeeping Guide- lines for Occ. Injur.	OSHA	OSHA	1970	B	82	DTD	03-120
✓ Toxicological Profile for Asbestos	Clement Int. Corp.	Henriques/ Kiman	1993	B	200	CSH	03-117B

Probably a typo - should be
1984. OSHA didn't exist in 1970



Law Department

Brown & Root, Inc.Post Office Box 3
Houston, TX 77001-0003

And Associated Companies

Facsimile Cover Sheet

To: Dale Dripdale
Company: B&R Inc.
Phone: 676-5372
Fax: 676-8158

From: Lynnette G. Adams
Company: Brown & Root, Inc.
Phone: (713) 676-8358
Fax: (713) 676-5960

Date: September 18, 1996
Pages including this
cover page: 2

Note: If you should have any problems or questions concerning
this transmission, please call Della Solis at
(713) 676-5105.

RE: _____

Comments: Exhibit "A"

26 MAY 1987

~~DCB~~ → DTD → ~~DS~~ → KFB
(LUNG FILE)

ARTHUR L. FRANK, MD, PhD

OCCUPATIONAL CANCERS OF THE RESPIRATORY TRACT

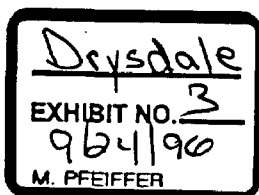
Lung cancer today accounts for greater than 125,000 deaths yearly; less than 50 years ago it was considered a rare disease. Taken together with other cancers of the respiratory tract, such as nasal sinus cancers, laryngeal cancers, and mesotheliomas, more than 5% of all deaths in the United States are attributed to these diseases. Of some note is that in 1985 lung cancer replaced breast cancer as the leading cause of cancer deaths in females. While cigarette smoking clearly plays a large role in the etiology of lung cancer, among particular occupational groups there are exposures of importance in the development of lung cancer, and the interaction with cigarette smoking is a biological phenomenon of some note.

Occupational lung diseases have long occupied the interest of individuals concerned with workers' health. In 1556, Agricola's treatise on mining, *De Re Metallica*, was published and reviewed the health hazards to the lung in miners and smelters of ores.³ He particularly wrote of a condition called "miner's phthisis," a wasting disease affecting the lungs which was thought by many to be due to exposure to dust or other agents. Paracelsus wrote similarly in 1567.⁷⁰ The true etiology of this disease in many individuals was solved by Harting and Hesse, who in 1879 wrote of the deaths of the miners of Schneeberg.³⁴ It was at the mines of Schneeberg, which had been opened in the early 15th century, that miners had been developing this wasting disease for many years. In 1879 it was determined that many of these miners were dying of lung cancer. The full explanation became clearer some years later, when the pitchblend taken from these mines yielded a new agent, radium, as described by Marie Curie. With the understanding of radioactivity, the true etiologic reason for the lung cancers in the miners of Schneeberg became known.

At the beginning of the 20th century, lung cancer was still remarkably uncommon. With the advent of the automatic cigarette-making machine and the generosity of the American Red Cross in sending cigarettes to soldiers in Europe, the widespread habit of cigarette smoking began in the second decade of the century. At the present time approximately 87,000 males die each year of lung cancer, as well as 39,000 females.⁵ The rate of increase has been greater in females over the past three decades than among men, and most of the increase in total cancer mortality in the United States is accounted for by the increase in lung cancer. On a worldwide basis, the incidence of lung cancer varies greatly but in many countries it is the leading cause of cancer deaths.

From the Department of Preventive Medicine and Environmental Health, University of Kentucky College of Medicine, Lexington, Kentucky.

Reprint requests to Dr. Frank, Department of Preventive Medicine and Environmental Health, University of Kentucky College of Medicine, Lexington, KY 40536-0084.



Fowler's solution. Multiple cancers of one or many organs have been noted among many individuals who develop arsenical cancers,⁸² and there has been a report that lung cancers related to arsenic exposure are more commonly found in the upper lobes.⁴⁶

ASBESTOS

The occupational carcinogen that has been most widely publicized has been asbestos. Asbestos is a term that is used to designate several varieties of fibrous hydrated silicate minerals. These minerals share common properties, in that the fibers can be easily woven or fabricated, are chemically resistant, and are useful as insulators against heat, cold, and electricity. Asbestos minerals can be divided into two classes, the amphiboles and the serpentine form of asbestos. Among the amphiboles are amosite, crocidolite, anthophyllite, and tremolite, while the single member of the serpentine class is chrysotile. More than 90% of all asbestos used in the United States has been chrysotile, and the potential health problems related to asbestos were known early in this century. In the second decade of the 20th Century, a major life insurance company refused to write policies on some asbestos-exposed workers.

Lung cancer associated with asbestos exposure was first reported by Lynch and Smith, who in their paper of 1935 suggested that exposure to asbestos may have a role in the development of lung cancer.⁵⁷ In his treatise, *Occupational Tumors and Allied Diseases*, Hueper wrote in 1942 that he considered asbestos an occupational lung carcinogen.³⁷ Doll in 1955 published the first major epidemiological study demonstrating the relationship between occupational exposure to asbestos and the development of lung cancer.²¹ In a series of 105 consecutive autopsies from an asbestos textile works, approximately 17% of the workers had died of lung cancer, whereas only 4% were expected to die. Reports in occupational settings going back more than 50 years have not been as well appreciated as they might have been, leading to the current widespread concern in both occupational and non-occupational settings with regard to asbestos-related cancers.

In addition to asbestosis affecting the parenchyma and pleura of the lung, there is a wide range of cancers that are now known to be related to asbestos exposure. These includes lung cancer, mesothelioma, laryngeal cancer, and a variety of gastrointestinal tract cancers, including cancer of the esophagus, stomach, colon, and rectum.⁹³ Among heavily exposed asbestos insulators, approximately 20% of all deaths are from lung cancer, compared to about 5% in the general population, and between 5–10% of such workers can be expected to die of mesothelioma. Overall, approximately 45–50% of asbestos insulators can be expected to die of some form of cancer, a rate about twice that of the general population.

Cell-type distribution in relation to cases of lung cancer had been well studied by Churg and Kannerstein^{16, 41} some years ago and more recently by Suzuki.⁹⁶ All such studies have noted that the cell-type distribution is similar to that for all

BERYLLIUM

Although there continues to be scientific debate as to the carcinogenicity of beryllium, the available evidence suggests that beryllium should be considered a substance capable of producing lung cancer.^{17, 32, 61, 87} In addition to producing acute and chronic beryllium disease, lung cancer excess appears to be a risk for the more than 30,000 workers who are exposed at the workplace. Complicating the study of beryllium-related cancers is the fact that with the development of acute beryllium disease many workers will die and therefore not enter the cohort of beryllium-exposed individuals who have a risk for developing lung cancer many years later.

CHLOROMETHYL ETHERS

Following the work of Van Duuren, who published on the carcinogenicity of the chloromethyl ethers in animals,⁹⁷ reports of workers exposed to these substances who developed lung cancer found their way into the literature.^{26, 84} Two of the ethers are of particular importance, chloromethyl methyl ether (CMME) and bis(chloromethyl)ether (BCME). Both are highly volatile colorless liquids, and CMME is produced by the reaction of methanol, formaldehyde, and anhydrous hydrogen chloride, while BCME is produced by saturating a solution of paraformaldehyde in cold sulfuric acid with hydrogen chloride. Small amounts of BCME will contaminate CMME.⁴⁹ BCME is a more potent carcinogen than CMME, and as little as 0.1 ppm of BCME has been shown to produce large numbers of bronchogenic carcinoma in mice. In one series of cases the mean age at diagnosis was 45, with a range from 35 to 55 years of age. Also in this group, the majority of lung cancers were of the oat cell type.³⁶ As a general rule, when an unusual distribution of cell-type pattern is seen among a group of individuals, it should give rise to some thought about a specific occupational origin for such malignancies.

CHROMIUM

Hunter cited the first reported case of malignancy associated with chromium exposure, that of Newman, who in 1890 reported on the development of an adenocarcinoma in the nose of a middle-aged man with a history of 20 years exposure to chromates.³⁹ In this century, Pfeil made note of two cases of lung cancer occurring in the same German chromium manufacturing facility, one in 1911 and one in 1912, but he did not report them in the scientific literature until 1935.⁷³ Additional work by others in the United States,^{58, 62} Europe,²⁸ and Japan¹ have confirmed the risk of lung cancer associated with chromate exposure. Chromates and chromium, which are derived primarily from chromite ore, are used in the production of various pigments, alloys, and in refractories. Over 100 job categories

bladder cancer, and leukemia, there appears to be an elevated risk for developing lung cancer in certain job classifications, especially in the curing area of rubber plants.^{27, 66} Printers also have been shown to have an excess risk for developing bronchogenic carcinomas, and they are exposed to carbon black and a variety of solvents.^{10, 30} In addition to an excess of scrotum cancers seen in workers exposed to cutting oils, a recent study has demonstrated the risk of excess secondary primary tumors among such workers, notably with lung cancers.¹⁰² The Japanese have reported on a possible excess risk of lung cancer among workers in a benzoyl chloride plant.⁸⁵ Hueper has reported on the excess risk of lung cancer in the small isopropyl alcohol industry.³⁸ It appears as if there may be as much as a 20-fold increased risk of developing lung cancer following exposure to isopropyl oil, which is made into the alcohol.

Among miners it has been demonstrated that hematite, that is, iron ore, miners have an increased risk of lung cancer. Heuper has reviewed this in some detail.³⁸ Other studies from Europe have also noted an excess of lung cancer in iron ore miners, and in addition investigators claim that these lesions most often occur in the upper lobe in peripheral areas and may be related to areas of pneumoconiosis. With regard to other mining activities, there is the continuing question of the relationship of coal mining to the development of lung cancer. At present most evidence points to cigarette smoking among coal miners as the major determinant of the development of lung cancer, and recent American⁶ and British⁷⁹ studies have not found any relationship between coal mining and the development of lung cancer.

MUSTARD GAS

Bis(beta-chloroethyl)sulfide, also known as mustard gas, was one of the poison gasses widely used in World War I. In addition to the acute toxic effects of this material, exposure lead to many cases of chronic respiratory disease. Case and Lea had suggested that there was an association between mustard gas exposure and the development of lung cancer among British soldiers gassed during World War I that were subsequently followed by them.¹⁴ Yamada reported in 1959 about the excess risk of lung cancer among Japanese industrial workers who had manufactured mustard gas during World War II, although it was never used during the conflict.¹⁰⁵ He had reviewed the medical records of the small group of workers who had produced mustard gas on one of the smaller Japanese islands and found that the lung cancer rate among exposed manufacturing workers was 16%, compared with less than 1% expected in an appropriate control group. Subsequently, Wada published further on the mortality experience of this group and noted that the latent period was generally greater than 20 years and that in about one half of all cases the cell type was that of squamous cell carcinoma.⁹⁸ Laboratory models for the study of mustard gas and related compounds exist, and there continues to be a small ongoing study of former British soldiers who had been exposed. Of

mining in the United States.¹⁰¹ Also, there has been a similar experience at a fluorospar mine in Newfoundland, where the mine was contaminated with radon daughters.¹⁹

Oat cell carcinomas of the lung predominate in cases of radiation-induced lung cancers.⁷ Similar to the experience with asbestos, cigarette smoking is synergistic in the production of lung cancer,⁹ but it has also been well documented that non-smoking miners, namely Navajo Indians who have worked on the Colorado plateau, have an elevated risk of lung cancer even in the absence of smoking.^{8, 86} Saccamanno and his colleagues have done much work on this group of individuals, and much of what is now known about cytologic investigations for lung cancer has come from the work of these investigators.⁸³ Such cytologic testing has been applied to other groups with known occupational lung cancer hazards, such as among asbestos workers³¹ and nickel processing workers.⁶⁵

MISCELLANEOUS COMPOUNDS

In addition to the agents noted above, a variety of other agents are suspected of being occupational lung carcinogens in man. Among these is vinyl chloride, which has been definitively shown to cause the development of angiosarcomas in both animals⁵⁹ and man.¹⁸ Surveys among vinyl chloride-exposed workers have shown that a large number have abnormal x-rays,⁵¹ and recent scientific information from Maltoni's laboratory in Italy has demonstrated an increase in cellular abnormalities and dysplasias in the respiratory tract.⁶⁰ Although not yet clearly proven, it has been suggested that humans have a higher risk of developing lung cancer following exposure to vinyl chloride, in addition to the risk for developing angiosarcomas.¹⁰³

In addition to asbestos, other fibrous materials have a documented carcinogenic potential. Noted earlier, fibrous zeolites have been implicated in the development of mesothelioma, and animal studies have demonstrated that various preparations of fibrous glass can produce mesotheliomas in animals.⁹⁴ A study among fibrous glass workers done at a relatively early stage in this industry, without sufficient time for malignancies to be well documented, has shown an increased risk for deaths from chronic respiratory diseases, but the question of excess lung cancers remains unsettled.¹² This issue is important, however, since asbestos is increasingly being eliminated from society and substitutes are being used. One must be cautious that the substitute does not replace a known carcinogenic risk for one that is not yet well appreciated.

Synthetic rubber is made from the monomer chloroprene. A study among Russian workers has identified this material as a lung carcinogen,⁴⁴ and there has been some work among American workers exposed to this substance.⁵³

Although it is well recognized that an important class of pulmonary diseases can be caused by vegetable dusts such as bagasse, cotton, flax, tea, and various fungi, these hypersensitivity diseases of the lung are not directly related to cancer. However, there have been reports of lung cancers among brewery workers,⁶⁷ grain

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August 17, 1994

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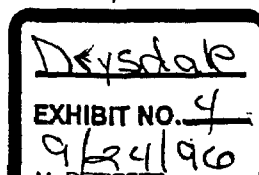
Mr. Hans Siegel
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Dear Mr. Siegel:

In response to your inquiry, I have set out below my background and experiences before I came to Exxon, the industrial hygiene program I found in place upon my arrival, the engineering controls and technology we used to safeguard workers from dust exposures in the field, the medical surveillance we implemented to double check the effectiveness of our controls, and the interrelation of the medical, industrial hygiene, and safety aspects of protecting workers' occupational health. I have also described our relationship with contractors who also worked on our property, and I explain how the association of mesothelioma with asbestos exposure changed our view of asbestos hazards, while the advent of OSHA regulation in the early 1970's brought few changes to our state-of-the-art program which had been in place for decades.

My educational background primarily consists of basic and applied science: after taking bachelor's degrees in chemistry and physics and chemical engineering from Mississippi State University in 1935, I took a masters of science degree in biological chemistry and toxicology from Louisiana State University with a scholarship.

I worked more than four years for the Chemical Engineering Division of the University of Tennessee, left that job in 1941, and joined the Industrial Hygiene Division of the United States Public Health Service (USPHS) with the rank of Captain. Then through the USPHS, I was assigned to the Massachusetts Division of Occupational Diseases, which was a part of the Department of Labor in Massachusetts and Boston, where I was able to augment my industrial hygiene studies at Harvard. I left Massachusetts in 1942 and was assigned to South Carolina, with the title of Chief Industrial Hygienist for South Carolina's Department of Health. In 1947, I became a member of Exxon Medical Division.



Now I am retired from the School of Public Health, University of Texas in the Medical Center here in Houston. I was an Associate Professor of Industrial Hygiene in that institution for about nine years.

But for most of my career (from 1947 to 1978) I was an industrial hygienist and sanitary engineer for Exxon (or its predecessor companies, including Humble, Esso, and Enjay). I hired on as Industrial Hygienist, and was elevated up to Chief Industrial Hygienist and then became Director of Industrial Hygiene for what would later become Exxon Company, U.S.A. While these promotions effected my salary and title, my professional duties and the goal of a healthful work environment for workers never varied during my 31 years with the Company.

In the first third of this century the control measures with regard to hazardous dusts were that of isolation of the exposure to the material, exhausting the dust away from the breathing atmosphere, capturing the dust by filtration or removal, by wetting the dust-generating material so that the dust wouldn't be generated, housekeeping or housecleaning by using the vacuum hoses or vacuum cleaners, and educating the employees in methods for producing the least amount of dust in their work. I believe that there are many different procedures, and they were all being used in some degree by 1940 in Humble and Esso generally.

In Standard Oil Company of New Jersey (Esso), the Chief of Safety Inspectors, named Mr. Roy S. Bonsib, had developed a particular interest in dust and dust-producing operations from his earlier work with mines; even later in his career he was appointed to some hazardous dust-related committees of the American Petroleum Institute. As early as the mid-1930's he was interested enough in the matter of dust exposure that he got Esso and Affiliates to approve his making measurements of the particular dust-producing operations in Esso refineries and chemical plants. He went into many of the areas where dust could be generated and made observations. Then he made quantitative measurements of the amount of dust that was being produced, and under what conditions they were being produced. And after taking these measurements during 1936, he published his findings and recommendations in July, 1937 as "Dust-Producing Operations in the Production of Petroleum Products and Associated Activities", a Medico-Safety survey by Roy S. Bonsib, M.A., E.M., Chief Safety Inspector of Standard Oil Company of New Jersey. His publication was made available to the petroleum industry world-wide, public libraries, The National Safety Council, schools and foundations.

The first paragraph of Bonsib's book suggests that it is among the first, if not the first, such survey of dust hazards in refineries setting: "Because it is the duty of industry to protect its employees and because no comprehensive survey of the hazards incident to occupational dust problems had yet been made, it was felt that here was an opportunity to render a service to the petroleum industry and its employees by making such a survey."

Bonsib's findings and recommendations were made public to the industry and anyone who was interested; in fact, I saw this publication in the medical department library ten years after it was initially published, and when I asked Mr. N. V. Hendricks, who was the Chief Industrial Hygienist for the Standard Oil Company at that time, to send me a copy, he sent me the copy I still have to this day, my original copy with the buckslip on it. It met fully the "state of the art" for good industrial health practices for 1937 - 1947.

This publication describes safety measures Esso Oil employed at the time, and it also sets out guidelines and standards for safe handling of asbestos materials, based on all available technology and information at the time. So for instance, he describes designing the plant for dust control, providing proper building ventilation, storing potentially dusty materials in dust-tight bins, enclosing material handling equipment, isolating the dusty processes. Furthermore, not have men in the area who were not necessary for that operation, providing wet methods of operation, designing equipment to control dust, providing exhaust systems, establishing maintenance and good housekeeping procedures, and, where these measures are inadequate, providing respirators and other personal protective measures. They included periodic clinical medical examinations, x-ray of chest annually or more often.

Before my arrival at Humble in 1947, industrial hygiene matters had been dealt with in the Company under the umbrella of a safety engineer with the title of Industrial Safety Director for the refinery. Also, during that time the Texas Department of Health made inspections in the Humble plant from time to time at our request.

The best knowledge available at that time concerning unsafe levels of exposure to hazardous dusts was published by the United States Public Health Service in collaboration with the investigating committee for the American Conference of Government Industrial Hygienists. The American Conference of Government Hygienists is a group that is still looked to in setting M.A.C.s or T.L.V.s or T.W.A.s. With regard to potential exposures to dust containing asbestos fibers, the standard recommended by these bodies was to keep prolonged occupational exposures to dust containing asbestos below a concentration of 5 million particles per cubic foot.

This standard and standards for other toxic substances were published mainly, I think, in the journals of the American Industrial Hygiene Association, engineering support groups, and medical societies. It was a very practical standard. These standards were adopted by West Germany, Japan, France and England. They looked to the A.C.G.I.H. for that guidance. The standards were also reported in publication of U. S. Department of Labor, USPHS report, state's labor and health standards.

When I joined the Company in 1947, there was a well-established program for hazardous dust control ongoing for at least 10 years based upon the program outlined by Bonsib: I did not have to be day-to-day involved with evaluating the problem,

because of the nature of the program that was already well established and in place in the safety engineering support team, and medical departments. That was fortunate for me because in addition to asbestos exposures I had over 300 potentially hazardous substances to be concerned about in my work throughout the company's operations.

Part of our ongoing industrial hygiene program involved routine air sampling and dust monitoring and special situation monitoring. If some problem appeared or there appeared to be a problem, we would investigate it. And if I had a peculiar problem, for example at the Baytown, Texas Refinery, I could request the assistance of the Texas Department of Health, if it was an issue that they could serve better than I, and they would come take a survey at my request. And I had no hesitation about contacting the State for assistance, because we had no secrets where health hazards were concerned.

Shortly after I reported to work I went to my director and asked him about the question of how much information I would be privileged to present or to give in public papers and other appearances. And we went to the Board of Directors of Humble Oil and Refining Company at that time, and they gave us the policy that there are no secrets in regard to any health or safety matters that I might know or discover that would not be made available to everyone, including our competition.

In 1947, Humble was already well established with the program and knew, based on repeated routine sampling, what the potential levels of dust were in the areas where we could not completely control the dust and all workers would have to use respirators. So, we had the knowledge to require workers to wear respirators when there was any potential exposures, and the safety inspectors on the job daily, who would be observing, would make sure they did.

The routine air sampling during that 10-year period between 1937 (Bonsib's report) and 1947 (my arrival) was accomplished with a device called a midget impinger, which had been developed and was being developed and mentioned in the report by Bonsib, and that became available about 1937 or 1938. It was a hand-operated little aluminum pump that didn't have any static electricity sparks to it; and it operated at one-tenth of a cubic foot per minute rather than one cubic foot per minute. And it was operated like an organ grinder and you wore it around your neck and you turned it and you collect your sample in that manner by either having the employee wear the filter up on his lapel or you held it close to his nose, or breathing level.

This monitoring allowed you to evaluate the workers potential exposure and take any precautions that would be necessary, whether it be wet methods of operation or some other procedure, you would also make sure that these people were supervised to stay in line with what practices you recommended. And our safety inspectors did that. They patrolled all units and work areas daily.

We took the attitude that if there was a substantial chance of a hazardous dust potential, then we would not wait until they got above 5 million particles per cubic foot or even 1 million particles before we would require "dust control measures and" respiratory protection. This was on a case by case basis, based on the judgment of the industrial hygienist and the safety people. For example, we had not been requiring men who handled asbestos insulation packages in the warehouse to wear respirators and respiratory protection unless there were broken sacks because many times those sacks came in on pallets and we removed them out of the boxcars into the room and they never were disturbed and that required nothing more than just care to make sure they didn't break them. But if they broke them, they had to wear respirators because there was no way to take care or clean up that spill without potential dust exposure.

When making mortar, it was a general practice to prevent any dust by injecting water into the sack and wetting it before you opened it then when you dumped it out into the pan or whatever mixture pot you were making up the mortar in it was already wet and generated no dust.

In the early years of my employment with the company, many times we took men right out of the labor pool and made insulators out of them by training them, and part of their training was the safety aspect of it, including the proper use of respirators. In 1947 the respirator program was very organized: It meant that when you were assigned to a position or a job that you may need a respirator, you were supplied a new one in a box; and then, when you used that respirator on the job, - and the safety inspectors made sure you did use it when you should - then you were to put it in the rack, which was picked up daily, returned to the respiratory protection warehouse, and the respirator then was washed, sterilized, dried, and examined for any misfit or any broken parts and a change of filters.

We had a respirator warehouse where all the respirators were brought after they had been used. We issued new ones or reissued only those that had been cleaned. We only used a type that had been approved by the Bureau of Mines tests. After using a respirator, the workers turned in the used respirators daily at the end of their shift or at the end of the work where they had to use them. These respirators were then cleaned, including washing and sterilizing and then dried; and they were examined for any breakage or any need of repair. They were repaired by the operator of the warehouse respiratory section and placed back in the box or placed in the package that would go back to that particular individual's unit. So, the next shift that you came out, there would be a clean sterilized respirator as might be needed for you wherever your work station was.

When we had a potentially continuous exposure, we would swap out employees, since we could not expect them to wear a respirator for hours on end, and we could not let them have any unprotected potential exposures.

Before I came, the technical support group for the Baytown Refinery had purchased sampling equipment such as the midget impinger and laboratory counting operations. They made basic tests throughout the Refinery to find out what the levels were. Moreover, they had gone outside the Refinery fences and studied the air pollution concentrations outside.

We did monitor the air as often as needed to determine if there was exposure at a point we had enough confidence in our results from past experience with certain activities, materials, sites, and work conditions that we were able to anticipate the potential for exposures. In some cases, it was sufficient to periodically monitor to review and confirm our prior experience and findings.

To clean up a spill wherein we had a broken sack of asbestos, we put respirators on the men. Temporarily in cleaning it up we may have had more than the 5 million particles per cubic foot. But this was not of concern to us because the men cleaning up the spill were protected.

In work practices, we always lowered asbestos exposures to the lowest value that we could. If it was in a temporary operation, then we would put respirators on the workers so they would not be exposed to any dust.

The safety inspectors would know when a particular job was going to potentially expose the men, based on past experience, they had the men wear respirators. The men were under constant supervision of the safety inspectors who enforced the use of protective equipment.

In 1930-1940, when we did our dust counts, we were counting the total number of particles that you could see with the microscope of about 450 magnification. Generally, most of the particles we counted were non-asbestos particles.

Mr. Bonsib's counts in the 1930's were similar in that they were done for the total amount of dust particles collected --he did not differentiate between asbestos and other particles.

And since the maximum allowable concentration values that the A.C.G.I.H. published in 1947 spoke to the particles of asbestos per cubic foot of air, at Exxon we were stricter than that standard. Also, we did not use any of the disposable paper-type masks: We used a Comfo M.S.A., filter mask approved by U. S. Bureau of Mines standard.

It is also important to note that we never permitted asbestos dust to create visible concentration in the air. We put respirators on workers before they entered that level. Whenever that possibility could occur, we had respirators on the workers.

I had dealings and conversations with them weekly actually going through the plants themselves. Sometimes we had occasion to be concerned about some operation. For example, if they were bringing in new materials that they had not used before or if they were taking down some particular unit that had not been previously disassembled, industrial hygiene had input into the materials to be used and health protection required.

We had the experience of finding that workers will comply fully with our insistence on using respirators if we first showed them that we did everything reasonable—such as wet methods—to control the dust before we required a respirator. But where they did need respirators, then they were convinced that we had done our job and they needed to cooperate and they were required to do so. We furnished only the most comfortable approved type of protection.

Education of employees began with employees being introduced into operations where asbestos might be. They were educated or were trained in the precautions that were required to work with these materials. The Safety Department made sure that the equipment that might be needed in the way of personal protective equipment was in stock. The operating supervisor understood how to go about controlling the dust from a practical standpoint on the job. And they would strictly enforce those procedures for all employees. And the old employees were already indoctrinated, and they felt a sense of responsibility to the new ones and made sure that they continued to practice all of those features of the program. And they were supervised by the safety inspectors who patrolled constantly and observed and enforced these safety regulations. Jobs could be stopped immediately if not in line with our safety guidelines.

Equally important to our engineering of dust controls was our medical surveillance program with regard to asbestos. Medical monitoring through examinations of employees began before I came to Exxon. New employees as well as those that may be old employees new to a craft involving asbestos were given a thorough physical examination, a clinical examination to make sure they were in good condition so far as it might relate to any occupational disease brought on by dusty conditions or by asbestos. even in 1947 the Humble medical program included pre-employment physicals for the employees; because to apply it to industrial hygiene you would be concerned that you did not let the susceptible employee go to work at the wrong location and be exposed to the wrong materials.

Medical exams included a chest x-ray which was read carefully by a radiologist; and this became part of the permanent record of every employee. Annually or more frequently they were re-examined, including x-rays, to maintain the surveillance of the employee's good health and lung condition.

I saw it 10 years after Mr. Bonsib had recommended it that the x-rays were still being taken at least annually for all of the insulators or other employees who had

potentially dusty exposures and they were being read by a trained radiologist. We had Dr. David Earle, a radiologist, a specialist who also taught this science at Baylor School of Medicine. And he was a consultant and a specialist who read for us on a weekly basis. All x-rays which had been collected at any of the facilities of Humble were read by him and reported back to us.

It was the way that gave us a double insurance that we did have the program in hand. So, for example, I had several conferences a week with Dr. R. W. Pipkin, who was the refinery chief physician at Baytown Refinery during much of my career with the Company. He informed me of any suspicious findings in the clinical examinations or x-ray examinations for any of our employees that might be associated to occupational exposures.

In this connection, I recall that Dr. Kenneth Lynch, whom I had known in South Carolina (1942-1946) before I joined the Company, had autopsied the asbestosis victims cases that had come from the textile mill there in Charleston. He had spoken on that matter; and his associate Dr. Henry Zerbst told me that Dr. Lynch said that he had never seen a case of cancer in these lungs unless the cancer was superimposed on top of the asbestosis. His message was that if you control asbestosis then you will have controlled the cancer problem. Our x-ray program insured that we would be able to detect any asbestos-related changes in workers' lungs.

Also, it continued to be the policy through my tenure at Exxon to pursue follow-up studies, medical studies, on people who have retired from the refinery. Every retiree was followed through until a death certificate is accepted and read. This helped us determine whether we were safeguarding our workers from occupational health hazards.

There was a general safety manual approved by the Director of Safety given to every employee every year or as frequently as it was re-issued. Although I did not take a direct responsibility for writing the safety manual, it reflected the programs that I had implemented, and the Safety Director, who was aware of that, had conferences with me regarding what we were doing. The safety manual had a section on dust control that would include the nuisance dusts as well as the toxic dusts, treated under one section, together with a section on the use of respiratory protective equipment. The manuals were distributed widely and to any who asked for it.

Normally, an employee for a certain unit or craft would be trained specifically for that operation. All of the potential occupational problems associated with that operation are explained fully. In this way, workers could focus on the potential health concerns in the area and materials they were actively working with.

The Company had safety meetings periodically for all its employees at its Refineries, conducted by the Safety Departments, and covering all problems

associated with safety and related health issues. These meetings were typically general in nature, for example, dust disease prevention per se probably would not have come up as such, unless a question was raised. I myself spoke at some of these safety meetings on specific occupational health hazards.

We considered the medical program including industrial hygiene as one. But we have the safety department, and they basically are very strong in the employee relations training field. It was a joint responsibility between the medical department, including industrial hygiene, and the safety department, but ultimately safety was responsible for enforcing safety standards and rules in the plants. The safety inspectors stayed out in the field, were on the job where every unit was, whether it was the cracking coils or cat crackers or the light ends. There was a safety inspector assigned to that area and he patrolled his units throughout the day.

The Company safety manuals were not provided to each of the employees of contractors who worked in the Baytown refinery, but were provided to the supervisors of the contract workers. They were available to the individual if he wanted one, but we seldom required that they study it.

The safety manual was not provided to the contractors just as an attachment to the contract documents and the specifications. It was a separate action of giving it to them before they began work for us by the Operating Manager or his representative of the safety department in the refinery, gas plant or chemical unit.

The Humble company had its own employees as insulators , and did turnarounds generally with its own employees. Brown & Root was the largest contractor firm we dealt with, and often they would furnish the extra help as we might need it for a particular type job. But insofar as pipe cleanup and things of that nature, that was that primarily done by Exxon workers and very seldom did we need any extra help.

NG 47
→ In every case our contractors, Brown & Root and other contractors, were required to follow the same guidelines as employees, to follow the same rules as our employees in every regard as far as protection from any exposure to asbestos or other hazardous materials. Brown & Root, for instance, had a very active safety department when I came to Exxon, and later they employed a staff of industrial hygienists. But these specialist seldom visit our operations because they respected our health and safety programs for being superior.

Before they began to work, we drew it to the attention of the contractors that they would be required to maintain and to comply with all of our safety and health regulations in doing the work. And then, we also took on the supervisors as a group - if there were more than one - and taught him or them the principles that we expected to have enforced among employees that he might have under his command.

For example, we required that they also wear the equivalent type of approved respirator wherever our people were wearing respirators or needed to wear respirators or we thought that they might need to wear respirators. They were required to have those; if they didn't have them, we would in a neighborly way lend them the respirators to do the job if it was short term. If they were going to be rather permanently contracted by us in that type operation, we expected them and required them to furnish their own personal protective equipment.

These same supervisors were watched by our safety inspectors; and if they were not keeping in line or keeping up with our requirements, they were informed immediately, even to have them stop work and get adjusted to the right practices or the right equipment that they would need to do the work. Safety inspectors had the authority to close down the job or have the contractors removed from the job.

As a result of all the above, during my 31 years with Exxon the contractors' supervisors who worked in our facilities were educated by our safety personnel of the hazards associated with the jobs they were going to be doing, including any potential exposures to asbestos dust, where that might have occurred. So, for example, to the extent that the job might involve tearing off asbestos insulation, our safety people routinely would advise them of the hazards that would be associated with that and what they needed to do about it.

They would make no exception regardless of what job they were going to do. They'd tell them about all of the problems that were associated with any job they were going to do.

About 1962 we were aware that down in South Africa they had discovered mesothelioma among the asbestos workers. Then we had no mesothelioma. We had never had any cases of mesothelioma. That was because the mesothelioma was being generated or produced by a the mineral crocidolite. Crocidolite is only produced in countries like South Africa, and those are the only ones that had any mesothelioma. We knew that the chrysotile which was 95 percent of the products that the Americans were using, came out of Canada; and there was no evidence of any mesothelioma among their employees or workers even after they knew about the South Africans. They reviewed that. They didn't find any. So, we knew we had some time lapse; but we also did not know how we were going to keep this crocidolite out of our products completely and guarantee it unless we eliminated all of the asbestos.

We decided that if that was a potential mesothelioma problem and mesothelioma was being brought about by unknown quantities of asbestos, we did not have a practical goal to shoot for except zero. This concerned me because of my insistence that I did not want anyone working with any of the products that I would not feel completely safe working with over a 40-year career.

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NO. A-134,614

FRENCH HICKS, ET AL * IN THE DISTRICT COURT OF
VS. *
* JEFFERSON COUNTY, TEXAS
*
BETHLEHEM STEEL *
CORPORATION, ET AL * 58TH JUDICIAL DISTRICT

NO. A-144,426

GLADYS FORRESTIER, ET AL * IN THE DISTRICT COURT OF
VS. *
* JEFFERSON COUNTY, TEXAS
*
AC&S INC., ET AL * 58TH JUDICIAL DISTRICT

NO. B-126,986

RUSSELL ALLEN, ET AL * IN THE DISTRICT COURT OF
VS. *
* JEFFERSON COUNTY, TEXAS
*
AMERICAN PETROFINA, ET AL * 58TH JUDICIAL DISTRICT

DEPOSITION OF

JAMES W. HAMMOND, SR.

September 8, 1995 - Doubletree Hotel
September 12, 1995 - Hyatt Hotel
Houston, Texas

Reported by:

B. IRENE MEGUESS, CSR, RPR
Texas CSR No. 2429
Nell McCallum & Associates, Inc.
2615 Calder, Suite 111
Beaumont, Texas 77702/(409) 838-0333

* * * * *

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FILED

NO. 31506

SHIRLEY HODGE, Individually : IN THE DISTRICT COURT OF
and as Personal :
Representative of the and :
Estate of A. J. Hodge, Jr., :
Deceased; GREGG A HODGE and :
ANGELA R. McClain, :
: Plaintiffs, :
VS. : FANNIN COUNTY, T E X A S
: TEXAS UTILITIES ELECTRIC :
COMPANY (d/b/a VALLEY POWER :
PLANT), et al :
: Defendants. : 6TH JUDICIAL DISTRICT

CERTIFICATE FOR THE VIDEOTAPE ORAL DEPOSITION OF
DALE DRYSDALE
September 24th, 1996

Taxable Costs: \$791.42
Charged to: Andrew Waters, Esq.
Bar Number: 20911450
For: Plaintiffs

I, Michelle Pfeiffer, a Certified
Shorthand Reporter for the State of Texas, hereby
certify, pursuant to the Rules and/or agreement of the
parties present, to the following:

That this deposition transcript is a true record of
the testimony given by the witness named herein, after
said witness was duly sworn by me;

_____ That signature was waived by the witness.

_____ That signature is in process of being obtained,
but filing was requested before time allowable for
signature.

✓ That the deposition transcript by way of _____
Courier was submitted on 9-27-96 to
Phillip S. Brown, Esquire for examination,
signature and return to Q & A Reporting, Inc.

1 ✓ That attached is the signature page and
2 Change/Correction Sheet containing changes, if any, and
3 the reasons therefor, made by the witness.

4 That the deposition transcript and/or signature
5 page was not returned to the deposition officer by the
6 witness.

7 That the witness failed to appear to read and
8 sign the deposition.

9 ✓ That the original deposition transcript, or a
10 copy thereof, together with copies of all exhibits
11 provided to the reporter, was delivered on
12 10-22-96 to the attorney or party who asked
13 the first question appearing in the transcript.

14 ✓ That a copy of this certificate is being sent to:
15 the following includes all parties of record:

16 FOR THE PLAINTIFFS:

17 Andrew Waters, Esq.
18 Attorney at Law
19 400 South Zang
20 Suite 1420
21 Dallas, Texas 75208
22 (214) 941-0532
23 and

24 J. Todd Kale, Esq.
25 Silber Pearlman, P.C.
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Dallas, Texas 75205
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FOR THE THORPE DEFENDANTS:

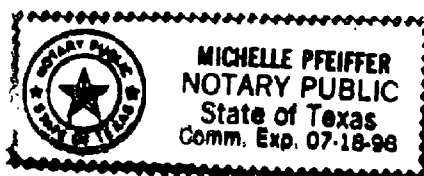
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1
2 FOR THE BROWN & ROOT DEFENDANTS:

3 Phillip S. Brown, Esq.
4 Fanning, Harper & Martinson, P.C.
5 Third Floor Preston Commons West
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7 Dallas, Texas 75225
8 (214) 369-1300

9 THE STATE OF TEXAS:
10 COUNTY OF HARRIS:

11 SUBSCRIBED and SWORN TO on this the 22nd
12 day of October, 1996.



Michelle Pfeiffer
Michelle Pfeiffer
Certification No. 3282
Cert. Expires: 12-31-96
Commission Expires: 7-18-98

Q & A Reporting, Inc.
2700 Post Oak Boulevard
Suite 1540
Houston, Texas 77056
(713) 439-7441

CHANGE/CORRECTION AND WITNESS SIGNATURE PAGE 1 of 2

Please indicate changes on this sheet of paper, giving the page and line number, the change and the reason for the change. Please sign each page of changes.

Reasons for changes are: (1) To clarify the record; (2) To conform to the facts; (3) To correct transcription errors.

PAGE	LINE	CHANGE FROM/CHANGE TO	REASON FOR CHANGE
10	12	Add: "Certification also requires a minimum	
		of five years' experience as a practicing	
		hygienist."	(1,2)
30	1-2	Delete: "I don't know if they're related	
		to asbestos."	(2)
34	14	Change answer to: "There was an industrial	
		hygiene specialist or technician."	(1,2)
36	2-3	Change "IHA" to "AIHA."	(3)
40	8	Change answer to "Yes."	(1,2)

I, DALE DRYSDALE, have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted herein.

Dale Drysdale
DALE DRYSDALE

THE STATE OF TEXAS :

SUBSCRIBED AND SWORN to before me this the 18
day of October, 1996.

Geraldine A. Hogue
Notary Public in and for
The State of Texas

My Commission Expires: 6-13-98

CHANGE/CORRECTION AND WITNESS SIGNATURE PAGE 2 of 2

Please indicate changes on this sheet of paper, giving the page and line number, the change and the reason for the change. Please sign each page of changes.

Reasons for changes are: (1) To clarify the record; (2) To conform to the facts; (3) To correct transcription errors.

PAGE	LINE	CHANGE FROM/CHANGE TO	REASON FOR CHANGE
57	18	Change answer to "Yes."	(1,2)
64	22	Change spelling to "Conte."	(2)
69	6	Insert "and" between "construction" and "engineering."	(3)
82	20	Change answer to : "I've never done any direct research with asbestos; only literature research."	(1,2)
		=====	
		=====	

I, DALE DRYSDALE, have read the foregoing deposition and hereby affix my signature that same is true and correct, except as noted herein.

Dale Drysdale
DALE DRYSDALE

THE STATE OF TEXAS :

SUBSCRIBED AND SWORN to before me this the 18
day of October, 1996.

Seraldine A. Hogue
Notary Public in and for
The State of Texas

My Commission Expires:

6-13-98