IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ALAMEDA

BEFORE THE HONORABLE ROBERT FREEDMAN, JUDGE

DEPARTMENT NO. 20

---o0o---

DALE HOOPER Plaintiff, vs. CHEVRON U.S.A., Defendant.	No. RG-04171297

Pages 1774 through 1840

REPORTER'S TRANSCRIPT OF PROCEEDINGS

AUGUST 2, 2005; MORNING SESSION

1221 Oak Street, Oakland, CA

(Administration Building)

#040506-000514
imaged:
Trial Transcript
Style:
Contents:
Date:

APPEARANCES: (See inside)

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APPEARANCES

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MR. RIFF: Thank you, Your Honor.

DIRECT EXAMINATION

BY MR. RIFF:

Q. Are you Pamela Williams?

A. Yes, I am.

Q. I want you to pull the microphone a little closer to you. Try to keep your voice up, please.

Have you ever testified in a courtroom before?

A. No, I have not.

Q. Are you nervous?

A. Yes.

Q. Well, nothing I can do about that.

THE COURT: Unless you conclude your examination.

MR. RIFF: That might make her more nervous.

Q. **(By Mr. Riff)** Tell the jury what it is you do for a living, please.

A. Sure. Over the last six or more years I have been a practitioner in the field of exposure and risk assessment. What that typically entails is assembling and reviewing as much quantitative data and other source of information that you can find to evaluate and quantify exposures in risk to a particular chemical or agent in the environment.

Oftentimes in that process we have quite a bit of information available to do that to try to quantify exposures and risks for exactly the situation that we're interested in. Other times we have to make inferences based on the available data and apply that to our particular study if such data doesn't exist for the particular thing we're

interested in.

Q. Dr. Williams, who do you presently work for?

A. I am currently a principal health scientist for a private consulting firm called ChemRisk located here in the San Francisco area. As part of that work, I manage our Boulder, Colorado office. I work with a team there of about five or six other scientists who have multiple-disciplinary training in different fields including chemistry, toxicology, industrial hygiene exposures assessment, transport modeling, basically all different types of discipline that typically come together when we do exposure to risk analyses.

Q. Now, I keep referring to you as Dr. Williams. Do you have a doctorate?

A. Yes, I do.

Q. And we'll get to the schooling in a minute.

In what area of science have you obtained a doctorate?

A. I have both a master's and a doctorate degree from Harvard in their School of Public Health. My doctoral degree was awarded in two different departments. The Department of Environmental Health and the Department of Health Policy Management.

Q. We'll come back to that in a minute.

Nowadays at ChemRisk, doing whatever it is that you do, we'll talk more about that in a minute, tell the jury about some of your professional interests.

A. Well, I have many. I'd say one of my primary professional interests would be in the area of publishing on

different how-to approaches and methods, regardless of what chemical we're talking about. For example, how do you characterize exposures to children? Which might be very different from that of an adult. And what are all the parameters that you would want to consider when you're doing that assessment? I've published on that. This is work I normally do on my own time, it's not funded by any particular client.

It's just -- as part of the work I do, I really like to focus on the methods: How do you characterize exposures? How do you characterize risks?

I guess the second key area of interest to me would be actually doing the analyses for a particular situation; and in particular, what's called exposure reconstruction analyses. And that's where we, in a lot of the work I've done, we try to characterize exposures that might have occurred 50 or 60 years ago for a number of different job classes. Not necessarily individuals, but entire job classes for a 40- or 50-year period of time and take into account all of the tasks that might have occurred for those individual jobs for distinct periods of time.

MR. RIFF: Okay. Your Honor, may I approach in order to erase the board up here?

THE COURT: Yes.

Q. (By Mr. Riff) I want to spend a little time with you and the jury on who is Pamela Williams and what does she know? And I'm going to do that.

You used a term "risk assessment," did you not?

A. I believe I did.

Q. Would you tell the jury what risk assessment is to you?

A. Sure. Risk assessment is the process of trying to quantify and characterize a particular risk either to an individual or to a group of individuals within a population, given their exposure to a specific chemical or agent in the environment and given the toxicity of that agent and integrate those two conflicts together to characterize what the risks might be. I'll be happy to put up the key concepts of risk assessment to illustrate it.

Q. Before you do that, give us an example of a risk assessment that you're aware of, just so we know what you're talking about.

A. I'll just throw out a hypothetical one perhaps.

Q. Sure.

MR. HARLEY: Can we approach briefly?

THE COURT: Yes.

(Discussion at bench, not reported.)

Thank you, counsel.

Q. **(By Mr. Riff)** Here's what I want to ask you.

Did I ask you in this case ultimately to form an opinion concerning -- or set of opinions concerning Mr. Hooper's exposure to benzene and Firestone --

A. Did you ask have you asked me that?

Q. Have I asked you to do that?

A. Yes.

Q. And do you call that an exposure assessment?

A. Yes.

Q. Is exposure assessment something you do?

A. Yes, it is.

Q. Is exposure assessment part of the more general question of risk assessment?

A. It is a fundamental parameter in conducting a risk assessment, yes.

Q. Now, we're going to come back, obviously, to this. Where did you go to college?

A. I did my undergraduate training two years at the University of Hawaii and two years at San Diego State University. From there, as I mentioned, received my master's and doctorate degree at Harvard University.

Q. Okay. Now, in what year were you awarded your master's degree?

A. Nineteen ninety-six.

Q. You need your CV, don't you? See if I can find it. Let me put in front of you Exhibit 1320 and ask you what that is.

(Counsel handing document.)

A. That's a copy of my CV.

Q. All right. What year did you get your master's degree?

A. 1996.

Q. From?

A. Harvard School of Public Health.

Q. And what did you do next after obtaining your master's degree, but in terms of professional development or work or

training?

A. I then entered into the doctoral program.

Q. And did you obtain a doctorate in public health from Harvard?

A. Yes.

Q. What year?

A. Nineteen ninety-nine.

Q. As a technical matter, do you have a Ph.D.?

A. I have an Sc.D. It's a doctor of science degree.

Q. Capital S small C, period, capital D?

A. Correct.

Q. Is that the equivalent for that school of a Ph.D.?

A. That's correct.

Q. And what is it that you studied in school, at Harvard, that relates to exposure assessment?

A. Well, I took quite a number of courses that would relate to that, many of which were related to risk assessment, one component of which is exposure assessment. I've also taken a number of courses related to environmental health, properties of different contaminants, how different chemicals move through the environment? How do you quantify individuals and populations? Particularly airborne exposures. The Harvard School of Public Health is well known for their air pollution program.

Also, I participated in a number of courses in terms of serving as a teaching assistant for those courses. I help teach courses in environmental health the primary course in risk assessment that was taught at the university,

as well as other courses related to calculating risks and how a decision making is predicated on risk assessments and that sort of thing.

Q. Dr. Williams, have you ever heard of something called the ATSDR?

A. Yes.

Q. The Agency for Toxic Substance --

A. And Disease Registry.

Q. Is that an agency of the United States Government?

A. The ATSDR, the Agency for Toxic Substance and Disease Registry, it's basically a sister agency to the CDC, the Centers for Disease Control and Prevention.

Q. Did you work at the ATSDR as part of your professional development?

A. Yes, I did.

Q. Tell the jury about that.

A. I spent a summer as an intern working with the agency -- this might have been during my master's work, might have been between my master's and doctoral program. I'm not recalling the exact year.

I applied for that position and received permission, basically, to come and serve as an intern with the agency. I worked primarily in their health education division in which we put together safety sheets and other health education materials to try to communicate to the public about different ways in which they might be exposed to different agents and hazardous waste sites, what were all the exposure pathways they might encounter in a particular

substance, how could they prevent themselves from being exposed, and what the potential hazards and risks might be at these different sites.

Q. Have you ever heard of something called the Harvard Center for Risk Analysis?

A. Yes.

Q. What is it?

A. The Harvard Center for Risk Analysis is one of the research arms, if you will, of the Harvard School of Public Health. There's various research centers affiliated with every university. This one is -- I spent quite a bit of time forming research type work at the Harvard Center for Risk Analysis for a five-year period doing both my master's and doctoral training.

The main mission of the Harvard Center for Risk Analysis is to promote sound science, to evaluate public health problems and put forth sound methodologies to determine how to quantify exposures and risks to the public in various settings.

Q. You may have covered this already and I don't want to do it twice.

Have you already told the jury about your teaching experience in this area?

A. I think that I did.

Q. I do too.

Have you testified before the Congress of the United States?

A. Yes, I have.

Q. Tell us about that, briefly.

A. I was invited to come testify regarding an area of expertise of mine, which is in evaluating public exposures and risks to a chemical called methyl tertiary-butyl ether, MTBE -- some of you may have heard about that here in California.

I was invited to come speak at this particular hearing they had on hazardous substances in the environment and talk about what we know in terms of public exposures and risks to this chemical.

MR. RIFF: Not on our glossary?

Q. **(By Mr. Riff)** Have you -- In addition to this congressional testimony, have you been an invited speaker from time-to-time in the U.S. and abroad on areas of your expertise?

A. Yes, I have.

Q. Why don't you tell us a couple of those examples just for some flavor.

A. Well, there's two things in terms of presentations, one of which is giving presentations at technical and scientific conferences. I've given over 40 such presentations over the last six to seven years or so on a number of different chemicals in exposure and risk assessment methodologies. These are not invited per se. You submit an abstract to the conference, they have a program that evaluates that abstract and they decide whether it's worthy of giving a presentation on it or not. And so those are not officially invited, per se, but you do get

acceptance about whether you can give a presentation there. So I've done that.

The other side is I've been invited, probably more than a half dozen, maybe less than a dozen different occasions, to come to specific conferences on a subject such as fuels, would be one example; different fuels, different oxygenates used in those fields, what do we know? And this is a conference that would be put together in which experts would be asked to come give a presentation on their topic. I've been invited to do that in Singapore, on two different occasions, that were back-to-back trips. I went to one and sent a colleague on the other, so he was very thankful.

And other conferences for which I've given presentations would be primarily here in the U.S.

Q. Have you written articles for the professional journals in the area of risk assessment and exposure assessment?

A. Yes.

Q. And as necessary, please use your CV to refresh your memory, but relative to what I asked you to do in this case, tell the jury about any publications that you've written in the peer review journals that you think are relevant to your background and your qualifications?

A. Well, I'd say all of these are relevant in some way. They're not all relevant to this specific analyses that I conducted in this case, but they all are relevant in terms of the broader concepts of exposure and risk.

Q. Have you published on the topic of benzene exposure?

A. Yes, I have.

Q. Tell the jury about that.

A. In a paper that was published in 2003. It was entitled, "Reconstruction of Benzene Exposure for the Plio Film Cohort" (1936 to 1976) Using Monte Carlo Techniques." You've probably heard about the Plio Film Cohort on several occasions now. This was a paper that was published in the Journal of Toxicology and Environmental Health.

Q. Wait. You have to slow down just a tad in your speaking, please. Keep going now. Do you remember where you were? This was an article published in that journal. Go ahead.

A. This was one of the exposure reconstruction analyses that we just talked about a few minutes ago in which we quantified exposures to different types of jobs that -- different types of job categories of people that worked at this ply-a-film facility back from the mid to late 1930s all the way up to the mid 1970s.

And these were folks that were very highly exposed to benzene. They were using significant quantities of pure benzene in a number of the different production processes. This is the cohort of people upon which our current knowledge and the standards for benzene are based upon; looking at what these people were exposed to relative to what types of disease that they end up getting.

Q. Let me interrupt you to ask you whether you published an article in the Journal of Occupational Environmental Health on "Benzene Exposure Associated with Tasks Performed

On Marine Vessels?"

A. Yes. That was a paper that has just recently been accepted. It should be available in the published literature by November.

Q. Accepted a peer review journal?

A. That's correct. The Journal of Occupational and Environmental Hygiene.

Q. And your CV lists other publications in such journals, true?

A. Correct. There is another publication called "Characterizing Historical Industrial Hygiene Data: A Case Study Involving Benzene Exposures At A Chemical Manufacturing Facility' (1976 to 1987). And that was also recently published in the Journal of Occupational and Environmental Hygiene.

Q. And tell us the title of that one more time, please, a little slower?

A. "characterizing Historical Industrial Hygiene Data: A Case Study Involving Benzene Exposures At A Chemical Manufacturing Facility," parens, 1976 to 1987, end of parens.

Q. All right. In this case, in Mr. Hooper's case, have you characterized historical industrial hygiene data?

A. Yes.

Q. Have you written any book chapters?

A. I have. I've written three book chapters.

Q. Why don't you briefly tell us about those, please.

A. All relate, essentially, to risk assessment and risk

characterization. These are more the methods-type approaches we were talking about earlier. The first book chapter was entitled, "The Risk Analysis Framework, Risk Assessment, Risk Management and Risk Communication." It was in a book entitled, "The Indoor Air Quality Handbook." That was co-authored -- the book was edited, I'm sorry, my chapter, was not co-authored -- but the book was edited by at least one professor at the Harvard School of Public Health with my adviser, Dr. Jack Spangler.

And this basically serves as a handbook that is used quite extensively today in determining how to set the indoor environment ranges on quite a number of different topics. And my book chapter addresses how do you interpret and utilize some of that data when you characterize exposures and risks.

Q. I've always wanted to know the answer to this. Do you get royalties for book chapters?

A. I don't. The editors might.

Q. And then you have written a book chapter, co-authored with a Dr. Paustenbach, P-A-U-S-T-E-N-B-A-C-H, in 2002 on risk characterization?

A. That's right. That's a chapter that details how does one quantify and characterize human health risk.

Q. Is exposure assessment important in that concept?

A. Yes, it is.

Q. Well, let's see.

Well, have you served as a peer reviewer for any of these professional journals? Not jurors, journals?

A. Yes, I have. And the process is usually such that once you start publishing quite a bit in the peer review you're often asked to serve as a peer reviewer for other people's articles. And so I have done that.

Q. And that includes the Journal of Children's Health?

A. Yes.

Q. Journal of Environmental Forensics?

A. Yes, that's correct.

Q. Journal of Exposure Analysis and Environmental Epidemiology?

A. Correct.

Q. Are you a member or an affiliate of an organization called the International Society of Exposure Analysis?

A. Yes.

Q. And what's that?

A. I'm an active member of that organization.

Q. I'm sorry?

A. I'm an active member and participant in that organization.

Q. So, there is an international society of people who worry about exposure analysis?

A. Believe or not there is.

Q. Okay. And are you a member or an affiliate of the American Industrial Hygiene Association?

A. I am a member of that organization, yes.

Q. Is there something called the Society of Toxicology?

A. Yes.

Q. Are you a member of that organization?

A. I'm not a member currently of that organization. I have applied for membership and I routinely give presentations at that society. And then I'll add that last year I also organized a workshop related to children's health issues.

Q. Now, is there something called the Society for Risk Analysis, SRA?

A. That's correct.

Q. What is that?

A. Society for Risk Analysis, for which I'm a very active member, is basically a society that tries to get together multi-disciplinary teams of people that have specialties in all the types of areas that's required to do the field called risk analysis. These are professionals with expertise, similar to my own in terms of environmental health, but also in areas such as engineering, industrial hygiene, toxicology, modeling and a whole host of other different types of backgrounds.

Q. In 2004, were you the chair for the Society of Risk Analysis on a session for occupational exposures?

A. Yes, that's correct.

Q. In 2002, were you a chair for the Society of Risk Analysis for a group called The Exposure Assessment Specialty Group?

A. Yes, I was chair of that group.

Q. Okay.

MR. RIFF: The clock ticking as it is, rather than covering anymore of your qualifications at this point, I

will tender, Your Honor, Dr. Williams to the Court as an expert witness in exposure assessment.

THE COURT: And to opine specifically --

MR. HARLEY: I want to do some individual --

THE COURT: So that an informed decision can be made as to whether voir dire is required, can you identify the subjects to which Dr. Williams will be asked to opine.

MR. RIFF: Dr. Williams will be asked to opine on the exposure and cumulative dose received by Dale Hooper to benzene at Firestone between 1972 and 1975 based upon established methodologies for people in her scientific profession.

THE COURT: Do you wish to voir dire as to qualifications. That's a yes or no question.

MR. HARLEY: Yes.

THE COURT: All right. Excellent. We'll do that at 1:30 this afternoon.

Ladies and gentlemen, the usual admonitions applies. We'll see you at 1:30.

(The jurors exit the courtroom and the following proceedings were held:)

Counsel, anything for the record before we're fully in recess?

Anything for the record?

MR. RIFF: That's not an invitation.

MR. HARLEY: Yes, there was. I was just trying to remember what it was.

THE COURT: The sidebar discussion about the

retroactive --

MR. HARLEY: Yes.

During the redirect examination, or re- redirect examination of Dr. Corn, I forget which, he was asked about the 2003 ACGIH recommended TLVs for rubber solvents and gasoline. I objected first on relevance and then we had a sidebar.

My objection on relevance has to do with the time frame and the manner in which they were sought to be used. The manner was, number one, that the implication was because there was a rubber solvent standard in 2003 that there must be an abandonment of the 1972 approach -- by the way, an approach of which he was unaware before cross-examination.

And my objection was that we cannot use 2003 standards to judge 1972 techniques; that it was an objection as to relevance. And it wasn't just one question, it turned into a whole series of questions where he repeatedly did just that, of saying: Does that mean the Elkins' approach must not have been accepted and developed and what must have been abandoned?

And with little or no foundation he got affirmative answers to all of that.

THE COURT: All right. I think the record will reflect that the related chronology is you did object. The Court inquired as to whether the objection was based on time relevance. You responded in the affirmative and I sustained the objection.

And then on reflection the Court concluded that the

ruling was inappropriate. I called counsel to the sidebar, obtained clarification and confirmation of what it was that defense counsel was seeking to inquire about in this context. And that was the basis of the Court reconsidering on some motion its ruling.

And I think, just so the record is clear on this, just before this objection Dr. Corn had testified -- I forgot who he was referring to -- he testified "he used the total" -- "he", referring to some authority, "used the total hydrocarbon time-weighted average." He recommends 500 parts per million -- and then he volunteered -- "and that is the current approach I might say."

There was no objection or move to strike at that point. It was a reference to what the current status is. So, I think the subject matter was already in play.

But the basis of the Court's analysis is that although there is a time period, certainly which is relevant for the jury to determine what the state of the art is, you cannot ignore events which occurred after that fact as they shed light on what the state of the art was or it was not.

That was the basis of the Court's ruling. And as far as I'm concerned, counsel on both sides appropriately explored that concept.

Mr. Riff, anything you want to add?

MR. RIFF: No, Your Honor. It was Stokinger. Other than that, no.

THE COURT: Mr. Harley, anything further for the record?

MR. HARLEY: I don't believe there is though I -- I'm just -- I don't know where we're headed with Pamela Williams.

MR. RIFF: Well, come back at 1:30 and you'll find out.

THE COURT: Well, then we should reflect the sidebar discussion about the process of qualifying this witness. I thought we were about to get into some academic presentation without having yet focused what the subject matter of her testimony was; that's why I directed counsel to proceed in perhaps a different fashion than was contemplated.

I think we have the subject out now. Mr. Harley wishes to voir dire, and certainly you can do that.

MR. RIFF: If it gives the Court any solace, I was not going to make a very long detour. And I don't think I was going to make any detour at all, but I have no problem with shooting a little bit more directly, Your Honor.

THE COURT: Thank you. All right. See you all at 1:30.

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(Whereupon, the noon recess was taken.)

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ALAMEDA

BEFORE THE HONORABLE ROBERT B. FREEDMAN, JUDGE

DEPARTMENT NO. 20

---OOO---

DALE HOOPER,

PLAINTIFF,

VS. NO. RG04171297

BRIDGESTONE/FIRESTONE, INC., AS SUCCESSOR-IN-INTEREST TO FIRESTONE TIRE AND RUBBER COMPANY, ET AL.,

DEFENDANTS.

_____/

AND CROSS ACTIONS.

_____/

REPORTER'S DAILY TRANSCRIPT OF PROCEEDINGS

ADMINISTRATION BUILDING - 1221 OAK STREET
OAKLAND, CALIFORNIA 94612
TUESDAY, AUGUST 2, 2005 - P.M. SESSION

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TUESDAY, AUGUST 2, 2005
PROCEEDINGS - P.M. SESSION
---OOO---

(WHEREUPON, THE FOLLOWING PROCEEDINGS WERE HELD IN OPEN COURT, IN THE PRESENCE OF THE JURY PANEL.)

THE COURT: GOOD AFTERNOON, LADIES AND GENTLEMEN.

MR. HARLEY, YOU'VE ELECTED TO WAIVE VOIR DIRE AS TO HER QUALIFICATIONS?

MR. HARLEY: I WILL WAIT FOR CROSS-EXAMINATION.

THE COURT: THANK YOU.

MR. RIFF, YOU MAY RESUME YOUR EXAMINATION.

MR. RIFF: THANK YOU, YOUR HONOR.

THE COURT: I SHOULD NOTE FOR THE RECORD THAT THE COURT CONCLUDES THAT DR. WILLIAMS HAS AT LEAST THE MINIMUM QUALIFICATIONS NECESSARY TO OPINE ON THE SUBJECTS IDENTIFIED.

YOU MAY PROCEED.

MR. RIFF: THANK YOU, YOUR HONOR.

CONTINUED DIRECT EXAMINATION OF
PAMELA WILLIAMS

BY MR. RIFF:

Q. DR. WILLIAMS, IN ABOUT TWO MINUTES I'M GOING TO ASK YOU WHAT YOUR ASSIGNMENT WAS AND WHAT YOU DID IN THIS CASE, BUT I JUST WANT TO BACK UP A LITTLE BIT ON ONE POINT.

I WOULD LIKE TO HAVE YOU EXPLAIN THE BASIC

PARADIGM OR STRUCTURE OF RISK ASSESSMENT AND WHERE EXPOSURE ASSESSMENT FITS IN. DO YOU UNDERSTAND WHAT I'M ASKING YOU TO DO?

A. YES.

Q. AND WOULD IT ASSIST YOU IN EXPLAINING THAT TO THE JURY IF YOU DREW SOMETHING ON THE BOARD?

MR. HARLEY: I OBJECT. THAT IS BEYOND THE SCOPE.

THE COURT: OBJECTION IS OVERRULED.

MR. HARLEY: YOUR HONOR, CAN WE APPROACH?

THE COURT: YES.

(DISCUSSION AT THE BENCH, NOT REPORTED).

THE COURT: THANK YOU.

Q. (MR. RIFF:) DR. WILLIAMS, I WANT TO EMPHASIZE MY QUESTION. WHEN YOU GET UP TO THE BOARD, I WANT YOU TO FOCUS YOUR COMMENTS ON EXPOSURE ASSESSMENT, OKAY? AND WHAT I'M ASKING YOU TO DO IS BRIEFLY TO EXPLAIN WHERE THIS EXPOSURE ASSESSMENT CONCEPT THAT YOU AND I ARE GOING TO TALK ABOUT FOR ABOUT AN HOUR FITS IN, GENERALLY, INTO THE SCIENCE OF RISK ASSESSMENT. DO YOU UNDERSTAND WHAT I WANT YOU TO DO?

A. I THINK SO. I WILL TRY. IT IS HARD TO EXPLAIN ONE WITHOUT SOME OF THE OTHER CONCEPTS, BUT I WILL TRY TO DO THAT.

Q. GIVE IT A TRY, AND IF WE HAVE A PROBLEM, I'M SURE SOMEONE WILL SPEAK UP.

SO, GO AHEAD AND PLEASE KEEP YOUR VOICE UP. THERE ARE MARKERS UP THERE, AND PROCEED, PLEASE.

A. SO, EXPOSURE ASSESSMENT AS I MENTIONED EARLIER IS REALLY ONE OF THE KEY COMPONENTS OF A RISK ASSESSMENT. IT IS NOT THE ONLY COMPONENT OF A RISK ASSESSMENT, BUT IT IS ONE OF THE KEY COMPONENTS. AND THERE ARE FOUR PRIMARY STEPS IN WHICH ONE MUST TAKE BEFORE THEY CAN FULLY CONDUCT A RISK ASSESSMENT. AND I JUST WANTED TO PUT THOSE FOUR STEPS UP ON THE BOARD SO YOU ALL WOULD HAVE A BETTER UNDERSTANDING OF WHERE EXPOSURE ASSESSMENT COMES INTO PLAY IN THE BROADER RISK ASSESSMENT PROCESS.

Q. PLEASE DO THAT.

A. [DRAWING.]

OKAY. SO, THE RISK ASSESSMENT FRAMEWORK AS I MENTIONED EARLIER AT A VERY BROAD LEVEL IS THE PROCESS OF TRYING TO CHARACTERIZE THE WAYS IN WHICH SOMEONE MIGHT BE EXPOSED TO AN AGENT, WHAT THAT EXPOSURE LEVEL MEANS IN TERMS OF A HEALTH EFFECT, AND ALL OF THESE OTHER THINGS THAT MUST COME INTO PLAY WHEN YOU DO A RISK ASSESSMENT.

SO, BY DESIGN, THERE ARE METHODS OUT THERE THAT SHOW YOU CAN BREAK THESE OUT INTO A NUMBER OF DIFFERENT COMPONENTS SO IT DOESN'T SEEM SO OVERWHELMING. YOU DON'T HAVE TO CONSIDER ALL OF THE COMPONENTS AT ONCE. AND THEY FOLLOW A FAIRLY LOGICAL ORDER UNTIL YOU GET TO THE FINAL POINT WHERE YOU CAN SAY WHETHER SOMEONE IS AT RISK OR NOT.

SO, THE FIRST KEY STEP THAT IS IN THE PROCESS

BEFORE YOU CONDUCT ANY RISK ASSESSMENT IS THE PHASE

CALLED HAZARD IDENTIFICATION. AND WHAT THAT BASICALLY MEANS IS --

MR. HARLEY: YOUR HONOR, I THINK THIS IS MUCH BROADER THAN I ANTICIPATED. I STILL OBJECT THAT WE'RE TALKING ABOUT AN ENTIRE BACKGROUND OF RISK ASSESSMENT FOR WHICH SHE HAS NOT BEEN DEPOSED OR WRITTEN ANY REPORTS.

THE WITNESS: CAN I CLARIFY?

Q. (MR. RIFF:) ACTUALLY, YOU CAN'T.

THE COURT: JUST A MINUTE.

MR. RIFF: LET ME TRY ANOTHER QUESTION.

THE COURT: PLEASE.

Q. (MR.) RIFF: WOULD YOU PLEASE WRITE DOWN THE COMPONENTS AT ISSUE WITHOUT FURTHER COMMENT AT THIS POINT?

A. [DRAWING.]

I'M A LEFTY. YOU WILL HAVE TO FORGIVE MY PENMANSHIP HERE.

Q. YOU ARE DOING FINE.

OKAY. ALL RIGHT.

NOW, LET ME TRY TO LEAD HERE A LITTLE BIT WITH YOU. YOU HAVE WRITTEN FOUR ELEMENTS OF THE CONCEPT OF RISK ASSESSMENT, AND THEY ARE HAZARD IDENTIFICATION, DOSE RESPONSE ASSESSMENT, EXPOSURE ASSESSMENT, AND RISK CHARACTERIZATION, RIGHT?

A. YES.

Q. OKAY.

28 THE COURT: THE RECORD SHOULD REFLECT

THERE IS AN ASTERISK NEXT TO THE THIRD ITEM.

MR. RIFF: YES. THANK YOU, YOUR HONOR.

Q. AND WHY DID YOU WRITE AN ASTERISK NEXT TO THE THIRD ITEM, EXPOSURE ASSESSMENT?

A. BECAUSE THAT IS THE ONE YOU WANT ME TO FOCUS ON, SO I WANTED TO SINGLE OUT WHERE IT CAME IN THIS PROCESS.

Q. OKAY. TO GET US OVER THIS I AM GOING TO TRY TO LEAD, BUT DON'T LET ME PUT WORDS IN YOUR MOUTH, OKAY? IF I DON'T GET IT RIGHT, CLARIFY FOR US, PLEASE.

IN LESS THAN A SENTENCE, HAZARD IDENTIFICATION ASKS THE QUESTION OF A GIVEN AGENT, WHAT IS IT CAPABLE OF DOING, IRRESPECTIVE OF DUST.

A. THAT IS TRUE.

Q. AND DOSE RESPONSE ASSESSMENT, YOU ASK THE QUESTION: WELL, HOW MUCH DOES IT TAKE TO CAUSE THE ADVERSE HEALTH EFFECT OF THIS AGENT.

A. HOW MUCH EXPOSURE TO THAT AGENT, YES.

Q. OKAY. AND, THEN, IF YOU ARE TRYING TO LOOK AT AN INDIVIDUAL OR A GROUP OF PEOPLE TO SEE IF THEY ARE AT RISK, YOU HAVE TO FIGURE OUT WHAT IS THEIR EXPOSURE TO THE AGENT IN QUESTION.

A. YES.

Q. AND WITH THOSE THREE CONCEPTS IN MIND, THEN SOMEONE WHO IS IN THE RISK ASSESSMENT, SOMEONE SKILLED IN RISK ASSESSMENT SCIENCE AND ART CAN SAY SOMETHING

SCIENTIFIC ABOUT SOMEBODY'S RISK, AND THAT IS CALLED
RISK CHARACTERIZATION.

A. MORE OR LESS, YES.
Q. OKAY. FINE.
NOW, GO AHEAD AND HAVE A SEAT, PLEASE.
IN THIS CASE, MR. HOOPER'S, CASE, WHAT DID YOU UNDERSTAND YOUR ASSIGNMENT TO BE THAT I GAVE YOU?
A. I UNDERSTOOD THAT MY ASSIGNMENT WAS TO ATTEMPT TO EVALUATE ALL OF THE AVAILABLE INFORMATION THAT I HAD, INCLUDING MR. HOOPER'S DEPOSITION TESTIMONY, AS WELL AS SIX TO EIGHT BANKER BOXES FULL OF ADDITIONAL MATERIALS. AND ONCE I REVIEWED ALL OF THOSE MATERIALS, TO ESTIMATE WHAT MR. HOOPER'S LIKELY EXPOSURES TO BENZENE WOULD BE WHILE WORKING AT THE SALINAS FIRESTONE PLANT.
Q. BETWEEN WHAT YEARS AND WHAT YEARS, APPROXIMATELY?
A. BETWEEN THE FALL OF '72 TO THE FALL OF '74, AND FOR ONE MONTH IN JANUARY OF '75.
Q. OKAY. AND DOING THAT ASSIGNMENT THAT YOU JUST TOLD THE JURY ABOUT, IS THAT CONSIDERED AN EXPOSURE ASSESSMENT?
A. YES.
Q. THE SAME KIND OF EXPOSURE ASSESSMENT THAT IS ONE OF THE ELEMENTS OF RISK ASSESSMENT THAT YOU TOLD THE JURY ABOUT?
A. YES.
Q. OKAY. AND IN A BIT I'M GOING TO ASK YOU WHAT

YOUR OPINIONS ARE AND THE REST, BUT LET ME JUST GET SOME BACKGROUND.

FIRST OF ALL, WERE YOU ABLE TO COMPLETE YOUR ASSIGNMENT?

A. YES, I WAS.

Q. WERE THERE ADEQUATE DATA AVAILABLE TO YOU TO PERMIT YOU TO FORM AN OPINION ON THIS QUESTION?

A. ABSOLUTELY. THERE WAS EXTENSIVE DATA AVAILABLE, AND, IN PARTICULAR, ACTUAL AIR MEASUREMENTS OF BENZENE COLLECTED IN THE SALINAS FACILITY FOR PRODUCTION OPERATORS WHILE USING A BENZENE-CONTAINING SOLVENT.

Q. OKAY. AND IN DOING YOUR EXPOSURE ASSESSMENT THAT WE'RE GOING TO TELL THE JURY ABOUT IN A MINUTE OR TWO, WOULD YOU CONFIRM FOR US THAT YOU USED GENERALLY-ACCEPTED SCIENTIFIC METHODOLOGIES.

A. YES, I DID.

Q. AND DESCRIBE FOR THE JURY, GENERALLY, WHAT THE METHODOLOGY IS THAT YOU USED.

A. THE GENERAL EXPOSURE ASSESSMENT METHODOLOGY CONSIDERS THAT YOU TAKE INTO ACCOUNT A NUMBER OF DIFFERENT FACTORS. ONE OF THOSE KEY VARIABLES IS CONCENTRATION: WHAT IS THE CONCENTRATION OF THE CHEMICAL, IF YOU ARE LOOKING AT A CHEMICAL, IN THE ENVIRONMENT. SOMETIMES THAT IS REFERRED TO AS THE EXPOSURE POINT CONCENTRATION.

ANOTHER SIGNIFICANT VARIABLE IS CONSIDERED

DURATION: HOW -- DURATION AND FREQUENCY. HOW LONG IS SOMEBODY EXPOSED TO THAT PARTICULAR CONCENTRATION AND FOR HOW LONG EACH TIME THEY ARE EXPOSED TO THAT

CONCENTRATION.

AND THEN, OF COURSE, THE FIELD OF EXPOSURE ASSESSMENT IS MUCH BROADER BECAUSE YOU HAVE TO CONSIDER ALL THE DIFFERENT WAYS IN WHICH SOMEONE MIGHT BE EXPOSED. THAT IS TYPICALLY REFERRED TO AS DIFFERENT EXPOSURE PATHWAYS OR SOMETIMES IT IS CALLED ROUTE OF EXPOSURE, MEANING IS THIS SOMETHING THAT IS IN THE AIR AND SOMEONE IS INHALING IT, IS IT SOMETHING THAT IS IN FOOD AND YOU ARE CONSUMING IT OR IS IT SOMETHING THAT YOU COME INTO CONTACT WITH AND IT GETS ABSORBED THROUGH YOUR SKIN.

SO, THERE ARE MANY DIFFERENT WAYS YOU CAN BE EXPOSED TO DIFFERENT CHEMICALS IN AN ENVIRONMENT, AND PART OF AN EXPOSURE ASSESSOR'S JOB WOULD BE IDENTIFY WHAT THE CONCENTRATIONS IS IN THE DIFFERENT PLACES YOU ARE EXPOSED: WHAT IS THE CONCENTRATION IN FOOD, WHAT WOULD THE CONCENTRATION BE IN WATER, WHAT WOULD IT BE IN AIR, THAT SORT OF THING.

Q. OKAY. NOW, ULTIMATELY IN THIS CASE, DID YOU WRITE A REPORT THAT LISTED THE INFORMATION YOU CONSIDERED, YOUR ANALYSIS OF IT, THE MATHEMATICS, AND SCIENTIFIC REFERENCES THAT YOU RELIED UPON?

A. YES.

Q. OKAY. LET ME JUST PUT THIS IN FRONT OF YOU IN THE EVENT THAT YOU NEED TO REFER TO IT. IT IS EXHIBIT

26 1321.

27 ANOTHER PRELIMINARY QUESTION. TELL THE JURY

28 WHAT THE UNIT IS THAT YOU USED TO DESCRIBE THIS

1 CUMULATIVE EXPOSURE FOR MR. HOOPER. AND IF YOU NEED TO

2 WRITE SOMETHING TO HELP ILLUSTRATE THAT, FEEL FREE TO

3 DO THAT.

4 A. SURE.

5 I USED THE UNITS OF P.P.M.-YEARS, WHICH IS,

6 P.P.M. WOULD BE THE CONCENTRATION THAT WE JUST TALKED

7 ABOUT. IN THIS CASE, IT WOULD BE THE CONCENTRATION OF

8 BENZENE IN AIR.

9 AND THE YEARS COMPONENT DEALS WITH THE DURATION

10 AND FREQUENCY CONCEPTS WE TALKED ABOUT. IN THIS CASE,

11 HIS TOTAL YEARS WAS ON THE ORDER OF ABOUT TWO YEARS.

12 Q. OKAY. THE JURY HAS HEARD A BIT ABOUT

13 P.P.M.-YEARS. I GUESS I WOULD LIKE YOU TO PLEASE STEP

14 UP TO THE BOARD AND ERASE SOME OF YOUR HANDIWORK THERE.

15 OKAY. AND JUST WRITE FOR US, PLEASE, SHOW US WHAT THIS

16 UNIT P.P.M.-YEARS LOOKS LIKE IN WRITING.

17 A. [DRAWING.]

18 Q. I THINK YOU NEED A BETTER PEN.

19 A. I THINK SO TOO. LET'S SEE IF THIS WORKS.

20 Q. THERE YOU GO.

21 A. [DRAWING.]

22 Q. NOW, IS THAT A CUSTOMARY UNIT OF CUMULATIVE

23 EXPOSURE USED BY EXPOSURE ASSESSORS?

24 A. YES, IT IS.

Q. HOW DO YOU KNOW?
A. IT IS PUBLISHED QUITE FREQUENTLY IN THE PEER REVIEW LITERATURE, GOVERNMENT AGENCY REPORTS, AND OTHER SOURCES. AND THEY TALK ABOUT EXPOSURE DATA,

PARTICULARLY WHEN THEY ARE TALKING ABOUT SOMEONE'S CUMULATIVE EXPOSURES, MEANING THEIR EXPOSURES THAT OCCUR OVER THEIR LIFETIME FOR WHICH THEY ARE EXPOSED, THEN THESE ARE THE UNITS THAT THEY WILL TYPICALLY PUT THAT IN.
Q. OKAY. JUST TO ILLUSTRATE -- ULTIMATELY, WHEN YOU GIVE US YOUR OPINION ON MR. HOOPER'S CUMULATIVE EXPOSURE AT FIRESTONE TO BENZENE YOU ARE GOING TO EXPRESS IT IN THAT UNIT?
A. YES.
Q. LET'S JUST RUN THROUGH A COUPLE OF EXAMPLES OF HOW THIS UNIT WORKS SO THAT WHEN WE GET THAT NUMBER WE WILL UNDERSTAND WHAT IT MEANS. OKAY?
A. SURE.
Q. SO, LET ME GIVE YOU A HYPOTHETICAL, AND IF YOU CAN ANSWER IT, YOU TELL ME.
LET'S ASSUME YOU HAVE A WORKER WHO WORKS IN AN ENVIRONMENT WHERE ON AVERAGE OVER THE COURSE OF EIGHT HOURS THE BENZENE CONCENTRATION IS ONE-HALF OF A PART PER MILLION.
A. ALL RIGHT.
Q. ARE YOU WITH ME SO FAR?
A. UH-HUH.
Q. AND ASSUME THAT THAT WORKER WORKS FIVE DAYS A

WEEK FOR 50 WEEKS. ARE YOU WITH ME?
A. UH-HUH.
Q. IN OTHER WORDS, ONE YEAR OF WORK LIFE DURATION. DO YOU FOLLOW?

A. YES.
Q. AND USING THE LANGUAGE OF EXPOSURE ASSESSMENT, WHAT IS THAT WORKER'S CUMULATIVE EXPOSURE EXPRESSED IN P.P.M.-YEARS?
A. [DRAWING.]
Q. TELL US WHAT YOU WROTE FOR THE RECORD.
A. SO, WHAT YOU SAID, I THINK --
Q. I DID.
A. -- IS THAT THIS PERSON WOULD BE EXPOSED ON AVERAGE EIGHT HOURS -- FOR EIGHT HOURS A DAY, FIVE DAYS A WEEK, 50 WEEKS OUT OF THE YEAR, TO A CONCENTRATION OF .5 PARTS PER MILLION FOR ONE YEAR. HIS CUMULATIVE EXPOSURES WOULD END UP BEING 0.5 P.P.M.-YEARS.
Q. OKAY.
A. WHICH IS JUST THE PRODUCT OF THESE TWO VARIABLES.
[INDICATING.]
Q. NEXT HYPO. SAME WORKER, SAME ENVIRONMENT, BUT THAT WORKER IS THERE FOR FOUR YEARS. WHAT IS THAT WORKER'S CUMULATIVE EXPOSURE EXPRESSED IN P.P.M.-YEARS?
A. [DRAWING.]
SO, IT WOULD BE 2 P.P.M.-YEARS. IT IS THE SAME EQUATION. I HAVE JUST CHANGED THE NUMBER OF YEARS FOR

WHICH THAT PERSON WAS EXPOSED.

Q. ONE MORE. LET'S NOW SAY HYPOTHETICALLY SOMEONE IS EXPOSED IN A WORKPLACE ENVIRONMENT OF, SAY, 1-AND-A-HALF P.P.M. FOR FOUR YEARS. ARE YOU WITH ME?

A. YES.

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Q. SO WHAT IS THAT PERSON'S CUMULATIVE EXPOSURE EXPRESSED IN P.P.M.-YEARS?

A. [DRAWING.]

IF I DID MY MATH RIGHT.

Q. 1-AND-A-HALF TIMES 4?

A. 6 P.P.M.-YEARS. 6.0, I'M SORRY.

Q. OKAY. PLEASE HAVE A SEAT.

LET ME ASK YOU THIS: IN AN EXPOSURE ASSESSMENT, IS THE DURATION OF EMPLOYMENT OR THE DURATION OF EXPOSURE IMPORTANT?

A. YES.

Q. OKAY. AND WITHIN A WORKER'S DURATION OF EXPOSURE, ARE THE VARIOUS ACTIVITIES THAT THAT WORKER IS ENGAGED IN, IS THAT AN IMPORTANT VARIABLE?

A. YES.

Q. TELL THE JURY WHY.

A. BECAUSE THIS IS EMBEDDED IN THE CONCEPT THAT WE JUST TALKED ABOUT. YOU WOULD NEED TO KNOW WHAT CONCENTRATION ARE YOU EXPOSED TO AND FOR HOW LONG AND FOR HOW MANY YEARS, AND THAT ALL GOES INTO THE EQUATION.

SO, IF YOU ARE PERFORMING A TASK AND ONLY SOME OF THE TIMES YOU ARE EXPOSED FOR ONLY PART OF THE DAY

AND OTHER PARTS OF THE DAY YOU ARE NOT EXPOSED, YOU WOULD NEED TO CONSIDER BOTH THE TIME FOR WHICH YOU WERE EXPOSED AS WELL AS THE TIME THAT YOU WEREN'T EXPOSED TO COME UP WITH THIS SORT OF ESTIMATE.

Q. SO, FOR EXAMPLE, IN ALL OF THESE EXAMPLES WE

JUST DID I ASKED YOU TO ASSUME THAT I AVERAGED FOR EIGHT HOURS A DAY THERE WAS MORE OR LESS A UNIFORM CONCENTRATION OF .5 OR 1.5 PARTS PER MILLION, RIGHT?

A. THAT'S RIGHT.

Q. OKAY. BUT IN DOING AN EXPOSURE ASSESSMENT MIGHT YOU CONSIDER THAT A WORKER FOR THIS AMOUNT OF TIME WAS EXPOSED TO, SAY, 3 PARTS PER MILLION FOR THIS 20 MINUTE PERIOD, AND THEN FOR THIS 45 MINUTE PERIOD TO 0.005 PARTS PER MILLION AND THEN WENT TO LUNCH AND THEN CAME BACK AND THEN FOR ANOTHER HOUR WAS EXPOSED. IS THAT THE KIND OF AN ANALYSIS THAT AN EXPOSURE ASSESSOR MIGHT DO?

A. YOU COULD. DEFINITELY IT IS THE TYPE OF ANALYSIS AN EXPOSURE ASSESSOR MIGHT DO. YOU WANT TO GET TO THAT CONCEPT LEVEL OF DIFFERING OUT HOW THE CONCENTRATION MIGHT CHANGE EVERY MINUTE OF THE DAY OR TAKE AN AVERAGE CONCENTRATION FOR THAT WHOLE DAY.

Q. OKAY.

WHAT I GUESS I WANT YOU TO DO IS TO TELL THE JURY THE INFORMATION THAT YOU HAD AVAILABLE TO YOU WHEN YOU DID -- IN ORDER FOR YOU TO DO YOUR ASSIGNMENT. AND I GUESS BY WAY OF FOUNDATION, DID YOU LIST THAT

INFORMATION IN YOUR REPORT?

A. I DID.

Q. OKAY. WELL, USING THAT REPORT, IF NECESSARY TO REFRESH YOUR MEMORY, AND NOT SPEAKING TOO QUICKLY FOR OUR REPORTER, TELL THE JURY WHAT KINDS OF INFORMATION YOU CONSIDERED AND HAD AVAILABLE TO YOU.

A. CAN I JUST GO THROUGH THIS LIST?

Q. IF THAT IS THE BEST WAY TO DO IT, PLEASE DO IT THAT WAY.

A. WELL, I ORIGINALLY HAD THE PLAINTIFF'S -- A COPY OF THE COMPLAINT, WHICH HELPS ME HAVE AN UNDERSTANDING OF WHAT IT IS THAT THEY THINK THE PLAINTIFF IN THIS CASE WAS EXPOSED TO AND UNDER WHAT CONDITIONS. IT DOESN'T REALLY PROVIDE MANY DETAILS BEYOND JUST WHAT IS THE CASE ABOUT IN GENERAL.

I ALSO REVIEWED THE PLAINTIFF MR. DALE HOOPER'S DEPOSITION TESTIMONY. THIS WAS ABOUT 15 HOURS WORTH OF TESTIMONY TAKEN OVER A THREE-DAY PERIOD, SO THERE WERE THREE DISTINCT VOLUMES. AND THAT IS ALL THE INFORMATION THAT I HAD FROM THE PLAINTIFF AT THE TIME THAT I PERFORMED MY ANALYSIS.

I ALSO HAD DECLARATIONS, WHICH ARE JUST STATEMENTS UNDER OATH, BY SOME OF MR. HOOPER'S COWORKERS AS WELL AS HIS IMMEDIATE SUPERVISOR. THAT INCLUDED CURTIS MYRICK, CLAYTON RYAN, WHO I THINK YOU HEARD FROM, AS WELL AS JOE PARISE.

THERE WERE ALSO DECLARATIONS AVAILABLE FROM SOME OF THE DIFFERENT PRODUCT SUPPLIERS, SUCH AS

CHEVRON, UNOCAL, AND SHELL WHERE THEY TALKED ABOUT WHAT TYPES OF MATERIALS THEY SUPPLIED TO FIRESTONE DURING THAT '72 TO '75 TIME PERIOD AND HOW THEY SUPPLIED THEM, WHETHER IT WAS BY RAIL CAR OR IN A 55-GALLON DRUM OR WHATEVER THE SITUATION WAS. AND THAT INCLUDED DECLARATIONS BY CLARENCE COOK, CHRISTINE PETERSON,

ZOLTAN SAARY, ARTHUR WESP, AND ROSEMARY FALLABECK.

THEN I RECEIVED QUITE A BIT OF DEPOSITION TESTIMONY FROM FORMER EMPLOYEES AT FIRESTONE. THESE WERE -- I SAY QUITE A BIT, BECAUSE THERE WERE BOXES FULL OF DEPOSITIONS THAT WERE TAKEN IN FORMER CASES BUT ON THE SUBJECT MATTER OF WHAT WAS GOING ON AT SALINAS DURING THESE DIFFERENT PERIODS OF TIME: WHAT DID WE KNOW ABOUT INDUSTRIAL HYGIENE AT THE FACILITY, WHAT DID WE KNOW ABOUT SAFETY AT THE FACILITY, WHAT DID WE KNOW ABOUT THE TYPES OF PRODUCTS THAT WERE USED, AND WHAT THE SPECIFICATION WAS FOR BENZENE IN THOSE PRODUCTS. AND THAT INCLUDED DEPOSITION TESTIMONY BY GEORGE WILSON. HE WAS THE CORPORATE INDUSTRIAL HYGIENIST AT FIRESTONE. HE WAS NOT ON-SITE AT SALINAS, BUT HE HAD OVERSIGHT FOR THE FACILITY, INCLUDING SALINAS.

THAT ALSO INCLUDED DEPOSITION TESTIMONY BY -- WHO I HAVE SEEN REFERRED TO NOW AS SAFETY JONES. I KNEW OF HIM IN READING AS EUGENE JONES.

THERE WAS ALSO DEPOSITION TESTIMONY BY TWO OF THE FORMER CHIEF CHEMISTS AT THE FACILITY, A MR. ROBERT HELM AND MR. JAZWIN.

THEN THERE WAS ALSO DEPOSITION TESTIMONY BY SOME OF THE FORMER PEOPLE THAT WORKED AT FIRESTONE THAT WERE IN CHARGE OF THE PRODUCTS THAT CAME IN. THEY BASICALLY CHECKED TO SEE THAT THOSE PRODUCTS WERE WHAT THEY ORDERED AND WHAT WAS ON THE APPROVED LIST TO ORDER, AND THAT WOULD INCLUDE RICHARD ELSASS, AS WELL AS WILLIAM IRELAND.

THEN I REVIEWED THE DEPOSITION TESTIMONY OF THEODORE -- I WILL SPELL IT -- G-E-O-R-G-I-A-D-I-S. HE WAS ANOTHER INDUSTRIAL HYGIENIST WITH FIRESTONE. I BELIEVE HE WAS EITHER DURING THE SAME TIME OR AFTER THE TIME THAT GEORGE WILSON WAS THE INDUSTRIAL HYGIENIST.

I ALSO HAD THE DEPOSITION OF RICHARD CAVALLI, HE WAS A FORMER CHEVRON EMPLOYEE, AS WELL AS THE DEPOSITION OF WILLIAM ELLIS, THE DEPOSITIONS OF LINDA HADDOCK.

Q. LET ME JUST STOP YOU. DO YOU REMEMBER WHO WILLIAM ELLIS WAS?

A. THAT ONE IS NOT RINGING A BELL WITH ME. THAT IS WHY I DIDN'T ELABORATE ON IT.

Q. OKAY.

A. JUST IS NOT RINGING A BELL.

I THINK THAT MIGHT BE A FORMER CHEVRON EMPLOYEE AS WELL, BUT I'M NOT SURE.

Q. JUST TESTING YOUR MEMORY. THE JURY KNOWS. THEY HAVE HEARD FROM HIM.

A. IS THAT RIGHT?

Q. I JUST WANTED TO SEE IF YOU REMEMBERED. KEEP

GOING.

A. LINDA HADDOCK, I BELIEVE SHE WAS A CURRENT OR FORMER EMPLOYEE I WANT TO SAY AT UNOCAL, BUT I'M NOT POSITIVE.

THE DEPOSITIONS OF CURTIS MYRICK, WHO WAS A SUPERVISOR OF MR. HOOPER DURING HIS EMPLOYMENT.

THE DEPOSITION OF JOHN WILLETT, DAVID KOHLER,

ROBERT MC AMIS. AND I THINK THAT CONCLUDES IT FOR DEPOSITIONS.

THEN I ALSO HAD SEVERAL BOXES FULL OF JUST MISCELLANEOUS MEMORANDA, LETTERS, REPORTS, THINGS, CORRESPONDENCE, BASICALLY, BETWEEN THE FIRESTONE EMPLOYEES AND OTHER INDIVIDUALS OUTSIDE OF FIRESTONE OR WITHIN FIRESTONE. MAYBE IT WAS CORPORATE HEADQUARTERS TO THE ON-SITE SAFETY MANAGER OR VICE VERSA, AS WELL AS A NUMBER OF THE PRODUCT FORMULATION AND THE COMPOUND MASTER SHEETS, AND M.S.D.S. SHEETS WHICH YOU HAVE HEARD ABOUT. AND THIS INFORMATION BASICALLY PROVIDED ME WITH THE SENSE OF WHAT TYPES OF PRODUCTS WERE SUPPLIED TO THE SALINAS PLANT DURING THE PERIOD OF TIME OF INTEREST AND WHAT THE BENZENE CONTENT, IF ANY, WAS OF THOSE PRODUCTS.

SOME OF THESE COMPOUND MASTER SHEETS ARE THE ORIGINAL INGREDIENTS, IF YOU WILL. IT IS LIKE -- THAT SAY WHAT GOES INTO EACH OF THESE DIFFERENT PRODUCTS, LIKE THE 356 THAT YOU HAVE HEARD ABOUT.

I HAVE ALSO REVIEWED THE PUBLISHED LITERATURE

IN GENERAL OUTSIDE OF THE MATERIALS THAT I RECEIVED IN THIS CASE ON THE BENZENE CONTENT OF PRODUCTS SUCH AS KEROSENE, BECAUSE MR. HOOPER HAD SAID HE SAW "KEROSENE" STAMPED ON THE DRUMS THAT HE SAID WERE IN THE CATALYTIC SHOP AND I WANTED TO KNOW WHAT THE WORLD KNOWS ABOUT THE BENZENE CONTENT OF KEROSENE.

THEN THERE WAS MATERIALS THAT WERE SENT TO ME THAT WERE WHAT WAS CALLED BULK SOLVENT ANALYSES, AND

THESE ARE TESTS THAT HAVE BEEN DONE ON DIFFERENT CHEMICALS TO FIND OUT WHAT THE CONCENTRATION IS OF THE INGREDIENTS OF THOSE CHEMICALS, INCLUDING BENZENE, AND THERE WERE SEVERAL STUDIES IN THAT REGARD.

I REVIEWED THE PUBLISHED LITERATURE ABOUT THE VAN ERT STUDY THAT YOU HEARD ABOUT IN TERMS ABOUT AIR, ACTUAL AIR MEASUREMENTS THAT WERE COLLECTED AT THE SALINAS PLANT IN JULY OF 1975, AS WELL AS SOME OF HIS OTHER WORK IN WHICH HE PUBLISHED IN THE PEER REVIEW LITERATURE, A PAPER THAT DESCRIBED WHAT THE BENZENE AND OTHER CHEMICAL CONCENTRATIONS WERE IN 10 OTHER TIRE MANUFACTURING FACILITIES ACROSS THE ENTIRE UNITED STATES FROM 1973 TO 1977.

Q. LET ME JUST STOP YOU THERE, BECAUSE I WANT TO FOCUS YOU ON THIS. THE SALINAS DATA OF VAN ERT THAT YOU CONSIDERED WAS ACQUIRED BY VAN ERT WHEN, AS FAR AS YOU CAN TELL?

A. THE SALINAS STUDY YOU ASKED?

Q. YEAH, THE DATA. HIS DATA FOR SALINAS WAS WHEN?

A. IT WAS COLLECTED IN JULY OF 1975.

Q. OKAY. AND YOUR UNDERSTANDING IS THAT MR. HOOPER LAST WORKED AT THE PLANT WHEN?
A. JANUARY OF 1975.
Q. SO, ABOUT FIVE MONTHS LATER.
A. RIGHT.
Q. OKAY. AND THE OTHER VAN ERT DATA YOU WERE REFERRING TO THAT WAS PUBLISHED IN THE PEER REVIEW LITERATURE COVERED WHAT TIME PERIOD?

A. I BELIEVE IT WAS 1973 TO 1977.
Q. OKAY. AND HOW MANY DIFFERENT TIRE BUILDING FACILITIES DID VAN ERT COLLECT DATA FROM?
A. THEY SAID THEY COLLECTED DATA ON 14 TIRE PLANTS, BUT THE REPORTED DATA SEEMED TO BE ON ONLY 10 OF THOSE PLANTS.
Q. OKAY. '73 TO '77, IS THAT WHAT YOU JUST SAID?
A. YES.
Q. OKAY. SORRY TO INTERRUPT YOU.
A. I'M ALMOST DONE.
Q. YOU ARE DOING FINE. COMPLETE YOUR ANSWER.
A. THERE ARE A LOT OF THINGS TO REVIEW.
SO, BESIDES THE AIR DATA THAT WERE COLLECTED IN THIS FACILITY OR SIMILAR TYPES OF FACILITY, I LOOKED, YOU KNOW, OUTSIDE OF THE MATERIALS THAT WERE SENT TO ME, TO THE PUBLISHED LITERATURE TO FIND OUT WHAT THE BENZENE AIR CONCENTRATIONS ARE THAT ARE ASSOCIATED WITH THE LOADING OR UNLOADING OF MATERIALS THAT CONTAIN BENZENE. AND THIS IS BECAUSE MR. HOOPER SAID THAT HE

ASSISTED IN THIS PROCESS AT FIRESTONE. THAT HE ASSISTED IN THE UNLOADING OF THE RAIL CARS AS THEY CAME IN AND WE DIDN'T HAVE ANY DATA FOR SALINAS OR TIRE PLANTS IN GENERAL, SO I LOOKED TO THE PUBLISHED LITERATURE ON WHAT DOES THE WORLD KNOW ABOUT BENZENE AIR CONCENTRATIONS FOR A WORKER WHO IS EITHER LOADING OR UNLOADING, YOU KNOW, HANDLING THIS -- ANY KIND OF MATERIAL THAT CONTAINS BENZENE. THE LITERATURE IS MOSTLY FOR GASOLINE, AND JUST SO I COULD USE THAT DATA

IN TERMS OF ESTIMATING WHAT MR. HOOPER MIGHT HAVE BEEN EXPOSED TO WHILE HE PERFORMED THIS TASK.

AND, FINALLY, I LOOKED TO GUIDANCE DOCUMENTS THAT ARE PUBLISHED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND OTHER PUBLISHED LITERATURE THAT HAS BEEN PEER REVIEWED ABOUT DIFFERENT TYPES OF MODELS, SIMPLISTIC MODELS FOR HOW YOU CAN CALCULATE AIR CONCENTRATIONS IF YOU DIDN'T HAVE ACTUAL AIR MONITORING DATA.

SO, FOR EXAMPLE, MR. HOOPER SAID HE WORKED IN THE CATALYTIC SHOP AND OTHER WORKERS WERE SOMETIMES CLEANING THEIR TOOLS IN THAT SHOP WITH WHATEVER MATERIAL WAS AVAILABLE. HE SAID MIGHT HAVE BEEN -- OR THE BARRELS SOMETIMES CONTAINED THE WORD "KEROSENE". PERHAPS IT WAS JUST THE SAME MATERIALS USED BY THE TIRE WORKERS, I -- WE DIDN'T HAVE DATA FOR THE CATALYTIC SHOP OR WHILE SOMEONE IS CLEANING THEIR TOOLS, SO I LOOKED AT THE LITERATURE AND USED A VERY SIMPLE MODEL TO CALCULATE WHAT YOUR AIR CONCENTRATIONS WOULD BE IN A

ROOM IF YOU WERE USING A SOLVENT TO CLEAN YOUR TOOLS THAT CONTAINED SOME AMOUNT OF BENZENE.

Q. LET ME STOP YOU, PLEASE.

I HAVE HEARD YOU DESCRIBE MEASURED DATA, VAN ERT'S, AND MEASURED DATA FROM THE PUBLISHED LITERATURE. YES?

A. YES.

Q. OKAY. THEN I HEARD YOU SAY THAT YOU ALSO LOOKED IN THE LITERATURE FOR A, QUOTE, "MODEL", END

QUOTE. RIGHT?

A. DIFFERENT TYPES OF MODELS, YES.

Q. OKAY. JUST EXPLAIN TO THE JURY THE DIFFERENCE TO AN EXPOSURE ASSESSOR OF -- LET ME SAY IT DIFFERENTLY. HOW DOES AN EXPOSURE ASSESSOR USE DATA MEASURED, ON THE ONE HAND, VERSUS A MODEL, ON THE OTHER HAND?

A. WELL, THE GOLD STANDARD IN OUR PROFESSION IS TO USE MEASURED DATA WHENEVER IT IS AVAILABLE. IT IS NOT ALWAYS PERFECT AS I SAID IN THE BEGINNING. IT IS NOT ALWAYS FOR THE EXACT SITUATION, YOU KNOW, THE EXACT TASK, THE EXACT PERSON THAT YOU WANT. AND, IN FACT, WE RARELY HAVE DATA ON AN INDIVIDUAL THAT WE THEN LATER WANT TO KNOW ABOUT, SO YOU GO TO THE LITERATURE. YOU GO TO UNPUBLISHED DATA SETS. YOU GO TO THE GOVERNMENT AND LOOK IN THEIR DOCKETS, AND YOU TRY TO FIND WHATEVER MEASUREMENTS EXIST, BECAUSE BY FAR THAT IS THE BEST DATA THAT YOU HAVE AVAILABLE TO YOU. THEY ARE REAL

MEASUREMENTS, ESPECIALLY IF THERE ARE MANY MEASUREMENTS.

THERE IS A DIFFERENCE BETWEEN HAVING ONE MEASUREMENT AND HAVING HUNDREDS OF MEASUREMENTS. IN THIS CASE WE HAD LIMITED DATA ON THE SALINAS PLANT. I THINK THERE WERE ONLY 22 MEASUREMENTS, BUT WE HAD VERY CONSISTENT DATA THAT WERE COLLECTED ACROSS 10 OTHER TIRE PLANTS AND THAT CONSISTED OF HUNDREDS OF MEASUREMENTS, SO THAT IS A GREAT DATA SET. WE OFTEN DON'T HAVE THAT MUCH INFORMATION TO GO ON WHEN THEY ARE

DOING THESE TYPES OF ASSESSMENTS.

IN THOSE SITUATIONS WHERE YOU DON'T HAVE ANY DATA AT ALL, THEN YOU OFTEN RELY ON MODELS. SOMETIMES YOU MIGHT ALSO USE A MODEL FOR OTHER REASONS, BUT IT IS USUAL SECONDARY IF YOU HAVE THE REAL MEASUREMENTS.

YOU WOULD USE A MODEL. THEY CAN BE VERY SIMPLE. THEY CAN BE VERY COMPLEX. THEY HAVE DIFFERENT PARAMETERS YOU HAVE TO PUT IN, SUCH AS IN THIS CASE: WHAT IS THE BENZENE CONCENTRATION OF THE PRODUCT, WHAT ARE YOUR ASSUMPTIONS ABOUT THAT. YOU HAVE TO MAKE ASSUMPTIONS ABOUT WHAT IS THE SIZE OF THE ROOM THAT YOU ARE DEALING WITH, BECAUSE THAT IS IMPORTANT.

Q. LET ME INTERRUPT YOU, BECAUSE WHEN WE GET TO THE CATALYTIC SHOP OPINION YOU ARE GOING TO EXPLAIN MORE ABOUT THIS.

A. SURE.

Q. I JUST WANT TO GET THIS -- I JUST WANT TO, AS A FOUNDATION MATTER, ASK THIS QUESTION: WHERE DOES

SOMEBODY LIKE YOU, EXPOSURE ASSESSOR, GO TO FIND THE APPLICABLE MODEL TO USE IN A GIVEN SITUATION?

A. THERE ARE MANY AVAILABLE MODELS, PARTICULARLY. I NORMALLY USE THE MODELS THAT HAVE BEEN DEVELOPED OR APPROVED BY THE E.P.A., ENVIRONMENTAL PROTECTION AGENCY.

Q. WHY? WHY DO YOU DO THAT?

A. BECAUSE SOMETIMES THEY ARE SIMPLER MODELS TO USE. THEY HAVE BEEN AROUND FOR A LONG TIME. PEOPLE CAN UNDERSTAND THEM BECAUSE A LOT OF PEOPLE HAVE BEEN

USING THEM.

SOMETIMES THERE ARE MUCH MORE COMPLICATED MODELS THAT MIGHT BE A BETTER -- A MORE PRECISE JOB, BUT THEY ARE SO COMPLICATED THAT THE REST OF US DON'T KNOW WHAT WE ARE DOING, OR THEY ARE ON SOMEONE'S INDIVIDUAL COMPUTER BECAUSE THEY DID THE PROGRAMING THEMSELVES, WHEREAS THE E.P.A. MODELS, ANYONE CAN DOWNLOAD AND USE THEM. IT IS VERY TRANSPARENT WHAT THE CODE WAS TO WRITE THE PROGRAM, AND, SO, THAT IS WHY WE TYPICALLY USE THOSE MODELS.

Q. OKAY. NOW, BEFORE I DERAILED YOU, YOU WERE TALKING ABOUT MATERIALS THAT YOU USED IN THE CASE AND LET ME JUST ASK YOU ABOUT THOSE.

YOU CAREFULLY REVIEWED MR. HOOPER'S DEPOSITION TESTIMONY IN THIS CASE, SOME 15 HOURS WORTH OF TESTIMONY.

A. I DID, REPEATEDLY.

Q. OKAY. DID I ASK YOU IN ADDITION, ONCE THIS TRIAL STARTED, TO REVIEW HIS TRIAL TESTIMONY GIVEN IN THIS COURTROOM?

A. YES.

Q. AND THE COURT REPORTER TRANSCRIBED IT AND I SENT IT TO YOU AND YOU READ THAT CAREFULLY.

A. YES.

Q. OKAY. HAVE YOU ALSO READ -- WELL, WERE YOU ALSO PRESENT IN COURT AT MY REQUEST DURING A PORTION OF THE TESTIMONY OF KENNETH COHEN?

A. YES.

Q. AND DID YOU READ THE COMPLETE DIRECT AND CROSS-EXAMINATION OF KENNETH COHEN IN THIS TRIAL THAT I SENT YOU?

A. I DID. AND I ALSO READ HIS DEPOSITION IN THE CASE.

Q. OKAY. ALL RIGHT.

AND AT MY REQUEST DID YOU READ THE HYPOTHETICAL QUESTION THAT MR. HARLEY ASKED DR. INFANTE IN THIS TRIAL?

A. YES.

Q. ALL RIGHT. NOW, NEXT TOPIC.

DESCRIBE GENERALLY, PLEASE, WHAT INFORMATION YOU HAD AVAILABLE -- LET ME BACK UP AND START ALL OVER.

DR. WILLIAMS, ULTIMATELY YOU ARE GOING TO TELL THE JURY WHAT YOU THINK MR. HOOPER'S CUMULATIVE BENZENE EXPOSURE WAS, RIGHT?

A. YES.

Q. DID YOU MAKE ANY DISTINCTION IN YOUR OPINION AS TO WHETHER THAT BENZENE EXPOSURE OF HIS WAS DUE TO CHEVRON STUFF VERSUS ANY OTHER CHEMICAL SUPPLIERS MATERIALS?

A. NO, I DID NOT.

Q. WHAT KIND OF INFORMATION DID YOU HAVE AVAILABLE TO YOU WITH RESPECT TO THE BENZENE CONCENTRATIONS OF THE KINDS OF SOLVENTS THAT MR. HOOPER SAID HE WORKED WITH AND AROUND?

A. WELL, SOME OF THAT I COVERED IN THIS LIST, BUT I WILL MENTION THEM AGAIN.

Q. WELL, LET ME -- YOU DID, SO WE WON'T DO THAT AGAIN. LET ME ASK YOU THIS: DID YOU AS PART OF YOUR TASK IN THIS CASE TRY TO BREAK OUT INTO A TABLE INFORMATION LISTING THE FIRESTONE CODE PRODUCT, THE PERCENTAGE OF BENZENE IN THAT PRODUCT FOR CHEVRON, THE CHEVRON PRODUCT THAT MET THE FIRESTONE CODE, AND THE SOURCE MATERIAL, THAT IS TO SAY, THE LETTER, MEMO OR M.S.D.S., WHATEVER IT IS THAT GAVE YOU THAT INFORMATION? DID YOU DO THAT?

A. I DEVELOPED A PARTIAL LIST. IT DOESN'T INCLUDE ALL THE SOURCES OF THAT INFORMATION, BUT IN MY REVIEW OF SOME OF THESE MANY BOXES WORTH OF MATERIALS, I STARTED GENERATING THIS LIST SO I WOULDN'T HAVE TO KEEP GOING BACK AND LOOKING AT THE SAME DOCUMENT TWICE.

Q. OKAY.

A. SO THAT IS A PARTIAL LIST, YES.

Q. ALL RIGHT.

LET ME SHOW YOU WHAT I HAVE MARKED AS EXHIBIT 1322, AND ASK YOU --

MR. HARLEY: TO SHORTEN THE PROCESS, I DON'T HAVE AN OBJECTION TO ITS ADMISSION.

MR. RIFF: I APPRECIATE THAT VERY MUCH.

THE COURT: IS 1322 BEING OFFERED?

MR. RIFF: YES, YOUR HONOR.

THE COURT: EXHIBIT 1322 IS ADMITTED.

(DEFENDANT'S EXHIBIT NO. 1322 ADMITTED INTO EVIDENCE.)

THE COURT: SPEAKING OF RISK ASSESSMENT,

THIS IS ONE OF THE RISKIEST PARTS OF THE WHOLE TRIAL PROCESS.

MR. RIFF: WE HAD A CLOSE ENCOUNTER.

THE COURT: YES.

MR. RIFF: LET'S SEE. IS THIS 1322?

THE WITNESS: YES.

Q. (MR. RIFF:) LET ME DISPLAY A BLOWUP OF WHAT HAS BEEN MARKED, WHAT HAS BEEN ADMITTED AS DEFENDANT'S 1322. AND, BRIEFLY, IF YOU WOULD, TELL US WHAT WE'RE LOOKING AT.

DO YOU UNDERSTAND WHAT I WANT YOU TO DO?

A. TELL YOU WHAT I'M LOOKING AT.

Q. WELL, EXPLAIN TO THE JURY THE INFORMATION CONCERNING BENZENE CONTENT THAT YOU COLLECTED IN THAT EXHIBIT AND GENERALLY HOW YOU USED IT IN YOUR ANALYSIS.

A. WELL, AS I SAID, I HAD A BUNCH OF DIFFERENT

BINDERS THAT CONTAINED DIFFERENT MEMOS AND LETTERS AND CORRESPONDENCE, WHAT WERE CALLED THESE TECHNICAL SERVICE REPORTS, MATERIAL SAFETY DATA SHEETS, THE M.S.D.S. SHEETS, MATERIAL INFORMATION BULLETINS. THIS DOESN'T INCLUDE ANY OF THE DEPOSITION TESTIMONY OR ALL OF THE LETTERS OR MEMOS. IT WAS AS I WAS GOING THROUGH CERTAIN BINDERS I STARTED TAKING THESE NOTES AND THEN ENDED UP BEING IN THIS TABLE FORMAT REGARDLESS OF TIME PERIOD, SO THIS COVERS A WIDE SPECTRUM OF DIFFERENT YEARS.

AND I REFERRED TO WHAT THE PRODUCT NAME WAS THAT FIRESTONE USED. THEY TEND TO USE THIS NUMBERING

SYSTEM THAT YOU PROBABLY HEARD ABOUT. AND UNDERNEATH THAT I HAVE WRITTEN IN QUALITATIVE WORDS WHAT THAT NUMBERING SYSTEM REFERS TO. SO, FOR EXAMPLE, FIRESTONE CODE 356 IS WHAT IS CALLED THE RUBBER SOLVENT.

HERE I LISTED THE SOURCE OF THAT INFORMATION AS I SAW IT, WHETHER IT WAS A MEMO OR LETTER FROM SOMEBODY AT CHEVRON OR WHETHER IT WAS A LETTER OR MEMO OR SOMETHING FROM SOMEONE AT FIRESTONE. AND THEN MAYBE WHAT THE SPECIFIC NAME, I GUESS, IF YOU WILL, OF WHAT CHEVRON CALLS THAT PRODUCT. SO, FIRESTONE WOULD CALL SOMETHING AS 356, BUT CHEVRON MIGHT -- THEIR VERSION OF 356 MIGHT BE THIS THINNER 200 OR THE THINNER 183. AND, SO, I JUST LUMPED THEM IN ALL CHEVRON IN MY MIND, LUMPED THEM AS 356.

Q. CONCENTRATE ON THE COLUMN LABELED "PERCENT

BENZENE."

A. THIS IS WHAT THAT LETTER OR MEMO OR REPORT SAID WAS THE BENZENE CONTENT OF THIS PRODUCT OR IF IT WAS TESTED AT THAT TIME. IT IS MY UNDERSTANDING THAT SOMETIMES A MATERIAL SAFETY DATA SHEET WILL CONTAIN WHAT THE AVERAGE TYPICALLY IS FOR THAT PRODUCT. I DON'T KNOW IF THEY ALWAYS DERIVED A NEW M.S.D.S. SHEET EVERY SINGLE TIME THEY TAKE A NEW SAMPLE, BUT I'M NOT AN EXPERT ON THAT. THIS IS BASICALLY WHAT WAS REPORTED ON WHATEVER MATERIAL THAT I HAD.

Q. OKAY. PARDON ME FOR CUTTING YOU OFF, BUT PLEASE HAVE A SEAT. AND I NOW WANT TO ASK YOU ABOUT ANOTHER BIT OF INFORMATION THAT YOU CONSIDERED.

YOU HAD INFORMATION ABOUT WHAT MR. HOOPER'S WORK WAS FROM, AMONG OTHER SOURCES, MR. HOOPER, RIGHT?

A. THAT WAS MY PRIMARY SOURCE OF INFORMATION.

Q. OKAY. AND DID YOU --

LET'S SEE. LET ME SEE IF I CAN JUST GET THIS IN, 1334.

LET ME PUT IN FRONT OF YOU, EXHIBIT 1334.

AND, YOUR HONOR, CAN I EXAMINE FROM UP HERE FOR JUST A MOMENT?

THE COURT: YES, CERTAINLY.

Q. (MR. RIFF:) LOOK AT 1334. TELL THE JURY WHAT IT IS, GENERALLY.

A. THIS IS A TABLE THAT I PREPARED TO SHOW WHAT MR. HOOPER SAID IN HIS DEPOSITION IN TERMS OF HOW MUCH TIME HE SPENT IN DIFFERENT LOCATIONS IN THE PLANT.

Q. OKAY. WHAT DID YOU LABEL THAT?
A. TABLE 1, MR. HOOPER'S WORK LOCATIONS AT THE FIRESTONE SALINAS PLANT, PARENS (1972 TO 1975).
MR. HARLEY: AND --
Q. (MR. RIFF:) TAKE MY PEN AND PLEASE CHANGE THAT TITLE TO READ "PER HIS DEPOSITION TESTIMONY."
MR. HARLEY: CORRECT.
THE WITNESS: AND I DO HAVE A FOOTNOTE THAT SAYS THAT, JUST SO YOU KNOW. OKAY.
MR. RIFF: MR. HARLEY AND I HAD A WHISPER DEAL ON THIS AND I'M GOING TO LIVE UP TO IT.
MR. HARLEY: AND I HAVE NO OBJECTIONS TO THE ADMISSION OF 1332 AS PRESENTLY TITLED.

MR. WAGNON: NO, 1324.
THE COURT: 1334; IS THAT CORRECT?
MR. HARLEY: THEN THAT IS THE ONE I HAVE NO OBJECTION TO.
THE WITNESS: MINE SAYS 1324.
THE COURT: IT IS 1324. THAT IS THE NUMBER ON THE TAG. THAT WILL BE THE EXHIBIT AND IT IS ADMITTED AS AMENDED.
THE CLERK: YOUR HONOR, 13 --
THE COURT: 24.
THE CLERK: THANKS.
(DEFENDANT'S EXHIBIT NO. 1324 ADMITTED INTO EVIDENCE.)

MR. HARLEY: I DON'T CARE IF YOU CHANGE THE ENLARGED CHART.

MR. RIFF: I'M A TECHNICIAN.

[DRAWING.]

Q. "PER HIS" --

A. I THINK I WROTE "DEPOSITION TESTIMONY."

Q. NOW, THE COLUMN THERE -- WELL, THE COLUMN ON THE FAR LEFT IS "PLANT LOCATION." THESE ARE AREAS THAT HE DESCRIBED IN HIS DEPOSITION WHERE HE WORKED, CORRECT?

A. YES.

Q. THEN THERE IS A "PERCENTAGE" COLUMN RIGHT NEXT TO IT, AND WHERE DID THAT COME FROM?

A. THAT WAS BASED ON WHAT HE SAID.

Q. OKAY. AND THE COLUMN TO THE RIGHT OF THAT ALSO SAYS "PERCENTAGE." WHAT IS THAT BASED ON?

A. HE PRESENTED A RANGE IN TWO INSTANCES OR A LESS-THAN NUMBER AND I JUST WANTED TO GIVE EVERYTHING A WHOLE NUMBER, SO IT IS HIS -- IT IS THE UPPER END OF HIS RANGE IF HE GAVE A RANGE OR IT IS JUST THAT VALUE IF HE GAVE LESS THAN THAT VALUE.

Q. ON THAT SECOND COLUMN LABELED "PERCENTAGE," WHEN YOU ADD IT ALL UP IT EQUALS 64 PERCENT.

A. THAT'S RIGHT.

Q. OKAY. AND HAVING GONE TO HARVARD, DID YOU NOTICE THAT 64 PERCENT IS NOT 100 PERCENT?

A. I DID NOTICE THAT.

Q. WHAT DID YOU DO ABOUT THAT?

A. WELL, THE QUESTION THAT WAS POSED TO MR. HOOPER WAS ASSUME THAT ALL THE TIME YOU SPENT AT THE PLANT WAS 100 PERCENT AND TELL US -- DIVVY OUT WHERE YOU SPENT TIME THROUGHOUT THE PLANT AND GIVE A PERCENTAGE NUMBER FOR EACH OF THOSE. AND, SO, HE HAD A LOT OF LOCATIONS TO LIST AND IT SEEMED TO ME THAT HE DIDN'T HAVE A CHANCE TO GO BACK AND ADD UP THAT THAT WOULD ALL EQUAL 100 PERCENT, SO I GUESS I DID IT FOR HIM, IF YOU WILL, AND THAT IS THE NEXT COLUMN, BY JUST TAKING A STRAIGHT RELATIONSHIP, PRESERVING THE RELATIVE DIFFERENCE BETWEEN THE DIFFERENT AREAS THAT HE SAID.

SO, IN OTHER WORDS, IF HE SAID I SPENT MORE TIME IN THE TIRE PRESS TUNNELS THAN ANYWHERE ELSE, I WANTED TO MAKE SURE THAT THAT WOULD BE REFLECTED IN THE

SAME RELATIVE PERCENTAGE TO THE OTHER PLACES IF ONE ADDED THAT UP TO 100 PERCENT. AND THE ONLY REASON FOR DOING THIS WAS WHEN I DID THE EXPOSURE CALCULATIONS, I WANTED TO MAKE SURE I WAS ACCOUNTING FOR AT LEAST EIGHT HOURS A DAY AND IF I USED HIS NUMBERS I WOULD BE ACCOUNTING FOR LESS THAN EIGHT HOURS A DAY AND I KNEW HE WAS AT THE PLANT FOR AT LEAST EIGHT HOURS A DAY, SO THAT IS WHY I NEEDED TO TAKE THOSE NUMBERS AND INCREASE THEM ALL SO THAT IT ENDED UP 100 PERCENT.

Q. OKAY. LET ME JUST CATCH UP WITH YOU -- WITH MYSELF HERE, PLEASE.

OKAY. NOW, BY THE WAY, IN YOUR EXPOSURE ASSESSMENT FOR MR. HOOPER HOW MANY DAYS A WEEK DID YOU

ASSUME HE WORKED?

A. I ASSUMED EIGHT HOURS A DAY FOR SIX DAYS A WEEK.

Q. WHY SIX DAYS A WEEK?

A. BECAUSE HE SAID HE WORKED A LOT OF OVERTIME AND I FELT THERE WERE PROBABLY WEEKS IN WHICH HE ONLY WORKED FIVE DAYS A WEEK, EIGHT HOURS. THERE WERE PROBABLY WEEKS THAT HE WORKED FIVE DAYS A WEEK FOR NINE OR 10 HOURS A DAY. THERE WERE PROBABLY WEEKS THAT HE WORKED SIX DAYS A WEEK. MAYBE THERE WERE OTHER DAYS HE WORKED SEVEN DAYS A WEEK. BUT ON AVERAGE, I FELT THAT WHEN SOMEONE SAID THEY WORKED OVERTIME, 40 HOURS A WEEK FOR EVERY WEEK FOR THAT YEAR WAS A REASONABLY CONSERVATIVE THING TO DO.

Q. OKAY.

I HOPE I'M NOT GETTING AHEAD OF MYSELF, BUT -- I SEE ON THIS EXHIBIT BEFORE US THERE IS NO REFERENCE TO MR. HOOPER CLEANING TOOLS. OF COURSE THAT IS BECAUSE THAT IS -- I WITHDRAW THE QUESTION. LET ME START OVER.

WHAT ASSUMPTION DID YOU MAKE IN DOING YOUR ANALYSIS WITH RESPECT TO WHETHER MR. HOOPER DID OR DID NOT CLEAN HIS TOOLS?

A. I MADE THE ORIGINAL ASSUMPTION THAT HE DID NOT CLEAN HIS TOOLS BECAUSE HE SAID HE DIDN'T RECALL DOING THAT. BUT HE DID SAY HE RECALLED OTHER PEOPLE CLEANING THEIR TOOLS WHEN HE WAS IN THE CATALYTIC SHOP, SO FOR THE TIME THAT HE SAID HE WAS IN THE CATALYTIC SHOP,

THAT -- I DID CALCULATE WHAT HIS EXPOSURES MIGHT BE IN THAT ROOM WHILE SOMEONE WAS CLEANING THEIR TOOLS.

Q. OKAY. WHAT ASSUMPTION DID YOU MAKE WITH RESPECT TO WHETHER HE DID OR DID NOT UNLOAD RAIL CARS?

A. HE SAID HE UNLOADED RAIL CARS. HIS SUPERVISOR, MR. MYRICK, SAID THAT WASN'T --

MR. HARLEY: WELL, OBJECT, HEARSAY.

THE COURT: SUSTAINED.

MR. RIFF: YOUR HONOR, I'M NOT OFFERING IT FOR THE PROOF OF IT. I'M OFFERING IT FOR HOW SHE DID HER ANALYSIS.

THE COURT: I THINK YOU HAVE TO APPROACH IT IN A DIFFERENT FASHION, PERHAPS WITH A HYPOTHETICAL QUESTION.

MR. RIFF: OKAY.

Q. WELL, LET ME GET TO THE BOTTOM LINE.

ULTIMATELY, AS PART OF YOUR ANALYSIS, DID YOU INCLUDE HIS UNLOADING RAIL CARS AS PART OF YOUR ANALYSIS?

A. YES, I DID.

Q. OKAY. I THINK THAT IS PROBABLY --

NOW, WHAT DID YOU ASSUME WITH RESPECT TO AN EXPOSURE TO MR. HOOPER ON SUNDAYS FROM HIS BEING PRESENT WHEN JANITORS WERE USING SOMETHING TO CLEAN THE FLOORS?

A. I DIDN'T MAKE ANY PARTICULAR DISTINCTION FOR THAT. I ASSUMED THAT HE WORKED SIX DAYS A WEEK. ONE

OF THOSE DAYS MIGHT HAVE BEEN A SUNDAY, IF NOT THE SATURDAY.

Q. OKAY. NOW, DO YOU UNDERSTAND FROM THE MATERIALS THAT YOU RECEIVED THAT AT LEAST ONE DAY A WEEK THE PLANT WAS, QUOTE, "DOWN," END QUOTE, NOT IN PRODUCTION?

A. IT IS MY UNDERSTANDING THAT WAS ON SUNDAYS.

Q. OKAY. AND THE OTHER DAYS IT WAS UP AND RUNNING; IS THAT TRUE?

A. THAT IS CORRECT.

Q. AND IN DOING YOUR WORK AND ASSUMING THESE SIX DAYS OF WORK FOR MR. HOOPER, DID YOU REDUCE THAT SUNDAY WORK AT ALL FOR THE PLANT BEING, QUOTE, "DOWN," END QUOTE, WITH RESPECT TO HIS EXPOSURE?

A. NO.

Q. YOU JUST ASSUMED THE THING WAS CHUGGING AWAY

SIX DAYS A WEEK?

A. OR THAT MR. HOOPER WAS STILL EXPOSED TO SOMETHING, NO MATTER WHAT WAS GOING ON.

Q. FINE. OKAY. LET'S MOVE ON.

NOW, DID YOU COLLECT OUT FROM THE MATERIALS THAT WE SENT YOU THE MEASURED AIRBORNE CONCENTRATIONS OF BENZENE BY DEPARTMENT AT THE SALINAS PLANT IN 1975 FROM VAN ERT'S WORK? DID YOU COLLECT THAT OUT AND PUT IT ON A TABLE?

A. YES, I DID.

Q. OKAY. AND LET ME SHOW YOU WHAT HAS BEEN MARKED AS 1325 AND ASK --

I GUESS I'M SHOWING COUNSEL TO SEE IF I CAN SIMPLY OFFER THIS.

MR. HARLEY: I HAVE NO OBJECTION TO IT BEING USED PROVISIONALLY. I MAY HAVE A MOTION TO STRIKE AFTER CROSS-EXAMINATION.

THE COURT: ALL RIGHT. THEN YOU MAY DISPLAY THE EXHIBIT IF YOU WISH TO AND THE COURT WILL RESERVE ON THE ULTIMATE ADMISSIBILITY ISSUE AS TO 1325.

MR. RIFF: THANK YOU, YOUR HONOR.

Q. 1325 IS NOW BEFORE YOU, AND LET ME SEE IF I HAVE MY BLOWUP OF THAT.

THESE BLOWUP SEEMED LIKE A GREAT IDEA BACK IN THE HOTEL ROOM.

THE COURT: THAT IS WHY WE USE THE NOMAD.

I'M NOT PICKING ON MR. RIFF. EVERYBODY THAT DEALS WITH THESE LARGE BLOWUPS HAVE THESE PROBLEMS IN

OUR CONFINED SPACE.

Q. (MR. RIFF:) OKAY. AND, BRIEFLY, IF YOU WOULD, TELL THE JURY WHAT WE'RE LOOKING AT IN 1325.

A. THESE ARE THE DATA, THE FAMOUS DATA NOW THAT YOU HAVE HEARD ABOUT THAT WERE COLLECTED BY DR. VAN ERT DURING THE JULY 1975 WALK-THROUGH THAT HE DID OF THE SALINAS PLANT IN WHICH HE COLLECTED A NUMBER OF DIFFERENT MEASUREMENTS OF BENZENE AND OTHER COMPOUNDS AND REPORTED WHERE HE COLLECTED THEM, WHAT DEPARTMENT, ANY OTHER DESCRIPTION ABOUT WHAT WAS GOING ON IN THAT DEPARTMENT WHEN HE COLLECTED THE SAMPLES, WHAT THE

SAMPLE DURATION WAS FOR THAT PARTICULAR SAMPLE, AND WHAT THE CONCENTRATION WAS OF BENZENE IN THAT SAMPLE.

THE LAST COLUMN I THINK MIGHT -- I DON'T RECALL IF HE REPORTED THAT OR WHETHER I JUST AVERAGED THE VALUES FOR EACH OF THOSE DEPARTMENTS.

Q. WHY DON'T YOU TAKE A COUPLE OF EXAMPLES TO SEE WHAT WE'RE LOOKING AT HERE. THE VERY FIRST ENTRY THERE -- PROBABLY NOT EVERYBODY ON THE JURY CAN READ -- IT SAYS "CEMENTERS ON 10-INCH TREAD TUBER LINE."

THEN IT SAYS "SAMPLE DURATION 37 MINUTES AND CONCENTRATION AND PARTS PER MILLION 1.98."

DO YOU SEE THAT?

A. YES.

Q. AND INTERPRET THAT. PUT THAT IN ENGLISH FOR US IN A COUPLE OF SENTENCES. WHAT IS YOUR UNDERSTANDING OF WHAT IS BEING REPORTED THERE?

A. WELL, THE WORKER AT THIS -- THE EXTRUDER AREA,

WHICH IS THE TUBER AREA, DEPARTMENT 126, IT IS MY UNDERSTANDING THAT THIS SAMPLE WAS COLLECTED WHEN HE IS DIPPING IN WHAT HAS BEEN TERMED SOMETHING COMPARABLE TO A PAINT BRUSH. YOU WOULD DIP IT IN THIS CEMENT-TYPE MIXTURE THAT CONTAINS SOLVENT AND THEN YOU WOULD APPLY IT OVER THE TREAD, WHICH IS JUST PART OF THE RUBBER THAT IS GOING TO BE USED AS THE TREAD ON THE FINAL TIRE.

AND WHILE HE IS ENGAGED IN THIS PROCESS DOING HOWEVER MANY TREADS ONE DOES WITHIN A 37 MINUTE WINDOW, THAT IS THE AVERAGE CONCENTRATION OF BENZENE MEASURED

IN HIS BREATHING ZONE, HE IS WEARING A SAMPLER ABOUT RIGHT HERE.

[INDICATING.]

Q. ON HIS LAPEL?

A. THAT IS WHAT IS CALLED ON YOUR LAPEL. AND THAT IS THE AVERAGE CONCENTRATION OF BENZENE, 1.98 OVER THAT ENTIRE 37 MINUTE PERIOD FOR WHICH HE IS ON MULTIPLE OCCASIONS DIPPING HIS BRUSH IN THIS CEMENT SOLVENT-LIKE MIXTURE AND APPLYING IT ON TO THE RUBBER MATERIAL.

Q. NOW, WOULD YOU EXPECT, BASED ON YOUR EXPERIENCE AND KNOWLEDGE IN THE FIELD, THAT DURING THAT 37 MINUTES THAT THAT PERSON IS DOING THAT TASK, THAT, IN FACT, THERE IS GOING TO BE PEAKS AND VALLEYS IN THAT PERSON'S EXPOSURE TO BENZENE FROM THE SOLVENT?

A. SURE. DEFINITELY.

Q. OKAY. AND WE WILL JUST DO A COUPLE MORE EXAMPLES JUST TO MAKE SURE WE ARE COMMUNICATING HERE.

LET'S JUST LOOK AT THE VERY NEXT ONE. IT IS A CEMENTER AT THE 8- TO 10-INCH TUBER LINE. HERE IS AN EXAMPLE OF 64 MINUTES WITH A BENZENE CONCENTRATION OF 0.37. RIGHT?

A. YES.

Q. OKAY. LET'S SEE. IN THE BEAD DIP AREA -- THIS IS THE SECOND COLLECTION OF DATA, BEAD DIP TANK AREA, THERE IS A 34 MINUTE SAMPLE WITH A MEASUREMENT OF 1.8 PARTS PER MILLION ON AVERAGE DURING THAT TIME PERIOD, TRUE?

A. YES.
Q. ONE MORE JUST FOR THE HECK OF IT, ABOUT MIDWAY THROUGH IN THE PASSENGER TIRE BUILDING, THE PASSENGER TIRE BUILDER, THIS IS THE TIRE BUILDER AT MACHINE NUMBER E-9 FOR 35 MINUTES. THERE IS A CONCENTRATION OF 0.4 PARTS PER MILLION. DID I GET THAT RIGHT?
A. YES.
Q. WHAT IS YOUR UNDERSTANDING, VERY BRIEFLY, OF HOW A TIRE BUILDER USES SOLVENT?
A. IT IS MY UNDERSTANDING THAT A TIRE BUILDER IS USING SOLVENT PERHAPS ON MULTIPLE OCCASIONS TO SERVE AS WHAT IS TERMED TACKIFIER, I HOPE I'M SAYING THAT CORRECTLY, TO TRY TO MAKE THE RUBBER MORE STICKY OR TACKY. AND HE HAS ALL OF THESE COMPONENTS OF THE TIRE THAT HAVE COME TOGETHER IN HIS STATION THAT HE HAS GOT TO PUT TOGETHER AND SOME OF THEM MAY HAVE BEEN LOST OF THEIR TACKINESS AND THAT IS HOW THEY GET THESE VARIOUS TREADS AND PLIES AND ALL THESE PIECES TO STICK

TOGETHER. AND SOMETIMES HE MIGHT USE -- I THINK THE TERM THAT HAS BEEN USED HERE IS A SWAB. JUST A PIECE OF CLOTH OR STEEL MESH IS MY UNDERSTANDING ATTACHED TO A STICK-LIKE STRUCTURE AND HE WILL DIP THAT INTO A CONTAINER, A SOLVENT AND THEN SORT OF SWAB THE SURFACE AREA OF THE TIRE OR THE PIECE THAT HE IS DEALING WITH TO GET IT TO BECOME MORE STICKY.
Q. OKAY. SO THAT IS THE SALINAS DATA THAT YOU CONSIDERED IN YOUR ANALYSIS IN THIS CASE.
A. THAT IS CORRECT.

Q. NOW, LET ME ASK YOU -- YOU ALSO CONSIDERED VAN ERT'S DATA FROM THE REPORTED LITERATURE OF 10 OTHER TIRE PLANTS, TRUE?
A. TRUE. I WANTED TO SEE IF THAT DATA WAS CONSISTENT WITH THIS DATA SET.
Q. OKAY. SO, I'M GOING TO PERHAPS DISPLAY EXHIBIT 1326.
MR. HARLEY: I'M GOING TO OBJECT TO THAT AS HEARSAY.
MR. RIFF: OKAY.
Q. THEN LET ME DO IT A LITTLE MORE FORMALLY.
LET ME PUT IN FRONT OF YOU EXHIBIT 1326 AND ASK YOU JUST WHAT IS IT. DON'T TELL US THE CONTENT OF IT. JUST DESCRIBE THE DOCUMENT, PLEASE.
A. THIS IS A TABLE SIMILAR TO THIS ONE IN THAT IT REPORTS THE NUMBER OF SAMPLES IN THE MEAN CONCENTRATION OF BENZENE FOR THOSE SAMPLES COLLECTED IN DIFFERENT DEPARTMENTS AT THESE 10 DIFFERENT TIRE PLANTS ACROSS

THE UNITED STATES FROM THE '73 TO 1977 TIME PERIOD.
Q. OKAY. AND FOR THOSE -- AND THE SOURCE OF THIS DATA IS VAN ERT'S PUBLISHED STUDY?
A. IT IS A LATER PUBLISHED STUDY BY VAN ERT.
Q. LATER PUBLISHED STUDY --
A. IT WASN'T PUBLISHED UNTIL 1980, BUT THE DATA WAS COLLECTED BETWEEN '73 AND '77.
Q. OKAY. AND DID YOU CREATE THE TABLE THAT IS THAT EXHIBIT?

A. I CREATED THIS TABLE BASED ON WHAT WAS PUBLISHED IN THAT PAPER.

Q. OKAY. AND YOU CONSIDERED THAT DATA FOR THE PURPOSES OF THE ASSIGNMENT IN MR. HOOPER'S CASE.

A. CORRECT.

MR. RIFF: WELL, I'M GOING TO OFFER, YOUR HONOR, 1326.

MR. HARLEY: I OBJECT. IT IS HEARSAY. IT IS VERBATIM DATA FROM A PUBLISHED STUDY.

THE COURT: ALL RIGHT. I'M GOING TO RESERVE ON THE OFFERED EXHIBIT. I THINK THIS IS AN ISSUE WE DISCUSSED PREVIOUSLY ON THE MC DONALD AND LAND CASE AND IT IS RESERVED.

MR. RIFF: OKAY. WOULD IT BE PERMISSIBLE, YOUR HONOR, TO DISPLAY IT WITH A LIMITING INSTRUCTION THAT IT IS NOT BEING OFFERED FOR THE TRUTH OF THE MATTER, BUT TO SHOW WHAT THE WITNESS HAS RELIED UPON AND CONSIDERED IN FORMING HER OPINIONS?

THE COURT: ANY OBJECTION TO THAT,

MR. HARLEY?

MR. HARLEY: YES, YOUR HONOR.

THE COURT: ALL RIGHT. FOR THE TIME BEING, NO, WE WILL REFRAIN FROM DOING THAT.

Q. (MR. RIFF:) LET ME ASK YOU THIS: DID THE DATA FROM VAN ERT'S STUDY THAT IS IN 1326, THESE 10 OTHER TIRE PLANTS, GENERALLY SPEAKING, WAS IT CONSISTENT WITH THE DATA THAT WE SAW FROM SALINAS OR WAS IT INCONSISTENT?

A. IT WAS VERY CONSISTENT WITH THE DATA.
Q. AND WHAT IS THE SIGNIFICANCE OF THAT TO YOU AS AN EXPOSURE ASSESSOR?
A. WELL, IT CERTAINLY INCREASES MY CONFIDENCE LEVEL THAT THE SALINAS DATA ARE PROVIDING A REPRESENTATIVE PICTURE OF WHAT THE BENZENE CONCENTRATIONS WERE IN A TIRE -- IN THIS TIRE PLANT DURING THIS PARTICULAR PERIOD OF TIME. AND THAT VERY SIMILAR CONCENTRATIONS HAVE BEEN MEASURED IN 10 OTHER PLANTS ACROSS THE UNITED STATES DURING A SIMILAR TIME PERIOD IN WHICH THEY ARE ALSO USING BENZENE-CONTAINING SOLVENTS. SO, IT INCREASES MY COMFORT LEVEL THAT THIS DATA SET, WHICH I THINK IS 22 SAMPLES, IS A GOOD DATA SET AND VERY CONSISTENT WITH WHAT ELSE HAS BEEN PUBLISHED IN THE LITERATURE THAT CONTAIN SEVERAL HUNDRED SAMPLES.
Q. OKAY. NOW, WHAT I'M GOING TO DO IS I'M GOING TO CLEAR THE DECK A BIT, AND WE'RE GOING TO GET TO YOUR OPINION ABOUT MR. HOOPER.

IN THINKING ABOUT MR. HOOPER AND HIS EXPOSURE TO BENZENE AT THE FIRESTONE PLANT, HOW MANY DIFFERENT EXPOSURE SCENARIOS DID YOU CONSIDER?
A. THREE GENERAL CATEGORIES.
Q. TELL THE JURY WHAT THOSE THREE GENERAL CATEGORIES WERE, PLEASE.
A. THE FIRST GENERAL CATEGORY RELATED TO MR. HOOPER'S GENERAL WORK AS A PIPEFITTER THROUGHOUT

THE PLANT. HE SAID IN HIS DEPOSITION TESTIMONY THAT HE SPENT A LARGE AMOUNT OF TIME AS A PIPEFITTER WORKING ON PIPES, WORKING ON VALVES THAT ARE ATTACHED TO THOSE PIPES, AND, IN PARTICULAR, WORKING ON STEAM PIPES. SINCE THERE ARE MANY STEAM PIPES GOING THROUGH THIS FACILITY, HE SPENT QUITE A BIT OF HIS TIME HE SAID WORKING ON STEAM PIPES, AND PARTICULARLY IN THE TIRE PRESS AREA.

SO, MY FIRST GENERAL SCENARIO WAS WHAT WOULD HIS CONCENTRATION OR WHAT WOULD HIS EXPOSURE TO BENZENE BE WHILE WORKING THROUGHOUT THIS PLANT ON A DAILY BASIS WHILE HE IS GOING TO DIFFERENT AREAS WORKING ON THESE STEAM PIPES, FOR EXAMPLE.

Q. OKAY. AND WE'RE GOING TO GET TO THAT. TELL US WHAT THE SECOND CATEGORY OF MR. HOOPER'S WORK THAT YOU CONSIDERED.

A. THE SECOND CATEGORY I CONSIDERED WAS THE TIME HE SAID HE SPENT IN THE CATALYTIC SHOP. AND HE MENTIONED THAT ON SOME OCCASIONS OTHER PIPEFITTERS OR OTHER WORKERS IN THAT SHOP MIGHT BE USING A

BENZENE-CONTAINING SOLVENT OR SOME MATERIAL TO CLEAN THEIR TOOLS, AND THAT WAS THE SECOND GENERAL SCENARIO I CONSIDERED.

Q. WHAT WAS THE THIRD GENERAL CATEGORY?

A. THE THIRD CATEGORY AS WE TALKED ABOUT WAS WHEN HE SAID HE ASSISTED IN THE UNLOADING OF PRODUCTS THAT CAME IN FROM RAIL CAR.

Q. OKAY.

YOUR HONOR, I PRESUME YOU WILL INTERRUPT ME WHEN YOU ARE READY TO TAKE OUR BREAK.

THE COURT: YES, I WASN'T SURE ABOUT YOUR COMMENT JUST A MOMENT AGO, WHETHER YOU WERE ABOUT TO CONCLUDE OR WHETHER YOU HAVE SUBSTANTIALLY MORE.

MR. RIFF: I'M NOT ABOUT TO CONCLUDE, BUT I DON'T THINK I HAVE SUBSTANTIALLY MORE, BUT NOT BEFORE A BREAK.

THE COURT: ALL RIGHT. LET'S GO AHEAD SINCE WE HAVE PAUSED ANYWAY. LET'S GO AHEAD AND TAKE OUR BREAK.

10 MINUTES, LADIES AND GENTLEMEN.

(WHEREUPON, COURT WAS IN RECESS.)

---OOO---

(WHEREUPON, THE FOLLOWING PROCEEDINGS WERE HELD IN OPEN COURT.)

THE COURT: THANK YOU.

MR. RIFF, YOU MAY RESUME WITH YOUR EXAMINATION.

MR. RIFF: THANK YOU.

Q. WE HAD A QUESTION ABOUT EXHIBIT 1325, WHICH I

HAVE PROPPED UP NEXT TO YOU. I THINK YOU CAN SEE IT.

OUR COLUMN ON THE RIGHT SAYS "AVERAGE CONCENTRATION," AND TO THE LEFT IT SAYS "CONCENTRATION P.P.M." ARE YOU WITH ME?

A. YES.

Q. WHAT DOES THE COLUMN "AVERAGE CONCENTRATION" REFER TO IN THAT EXHIBIT?

A. THIS WAS JUST MY ATTEMPT TO AVERAGE ACROSS THE INDIVIDUAL CONCENTRATION VALUES FOR EACH OF THESE PARTICULAR DEPARTMENTS.

Q. SO, FOR EXAMPLE, FOR THE TUBER AREA, THE AVERAGE CONCENTRATION OF THE SAMPLES TAKEN BY VAN ERT IN '75, THE AVERAGE OF 1.98, 0.37, 0.7 AND 0.25, IS 0.83.

[DRAWING.]

A. THAT IS CORRECT.

Q. WHAT IS THE RELATIONSHIP OF THAT AVERAGE CONCENTRATION FIGURE TO THIS CONCEPT WE'RE TALKING ABOUT OF A 8-HOUR TIME WEIGHTED AVERAGE, IF ANY?

A. THEY ARE NOT THE SAME AS THIS AVERAGE IS BEING USED BECAUSE THE INDIVIDUAL SAMPLES HERE WERE FOR 37 -- BETWEEN 30 AND 60 MINUTES, FOR EXAMPLE, SO MY AVERAGE IS JUST AN AVERAGE OF THOSE SAMPLES COLLECTED OVER THAT SHORT AMOUNT OF TIME. I DIDN'T ATTEMPT TO SORT OF STACK THEM TOGETHER TO COME UP WITH AN 8-HOUR T.W.A. SO, THIS IS STILL AN AVERAGE OVER A 30 TO 60 MINUTE SAMPLE, BASICALLY.

Q. OKAY. IT IS AN AVERAGE OVER THAT DURATION, 30

TO 60 MINUTES, OF PEOPLE DOING THAT JOB.

A. OF THESE DIFFERENT JOBS WITHIN THE TUBER AREA.

Q. OKAY.

A. IT WAS THE AVERAGE OF THESE FOUR MEASUREMENTS IN THE TUBER AREA.

Q. OKAY. NOW, JUST HYPOTHETICALLY TO TEST THE PREMISE, LET'S SAY THAT A TUBER WORKER, THE CEMENTER AT

THE 10-INCH TUBER LINE RATHER THAN BEING THERE FOR 37 MINUTES, THAT PERSON THAT DAY NEVER LEFT THAT LOCATION FOR EIGHT HOURS. NEVER WENT TO THE BATHROOM. NEVER WENT TO LUNCH. JUST WAS THERE EIGHT HOURS DOING THAT SAME THING DAY IN FOR THAT WHOLE PERIOD OF TIME.

COULD WE THEN CONCLUDE THAT ON AN 8-HOUR TIME WEIGHTED AVERAGE, MORE OR LESS, HIS EXPOSURE WOULD BE 1.98?

A. YES, AND ACTUALLY DR. VAN ERT CAME TO THAT SAME CONCLUSION IN HIS WRITE-UP.

Q. OKAY. FOR THAT WORKER WHO DOES STEP AWAY, GOES TO LUNCH, GOES TO THE BATHROOM, THE MACHINE SHUTS DOWN, WHAT IS GOING TO HAPPEN TO THAT NUMBER ON AN 8-HOUR TIME WEIGHTED AVERAGE?

A. WELL, IF HE IS NOT DOING -- WHEN HE IS NOT PERFORMING THAT TASK THAT UTILIZES THE SOLVENT, IF HE IS DOING SOMETHING ELSE, LIKE HAVING LUNCH IN THE CAFETERIA, THAT NUMBER WILL GO DOWN.

Q. FOR THE 8-HOUR TIME WEIGHTED AVERAGE.

A. FOR THE 8-HOUR TIME WEIGHTED AVERAGE.

Q. FOR THE PURPOSES OF YOUR ANALYSIS OF

MR. HOOPER'S TIME SPENT IN THE PLANT AS A PIPEFITTER -- NOT IN THE CATALYTIC SHOP, NOT AT THE RAILROAD SITE, BUT IN THE PLANT, WHAT DID YOU ASSUME AS AN OVERALL AVERAGE CONCENTRATION OF BENZENE IN THE BREATHING ZONE?

A. .2 PARTS PER MILLION.

Q. I'M GOING TO -- 0.2 P.P.M.?

A. THAT WAS MY INITIAL ESTIMATE, YES.
Q. INITIAL BASED ON WHAT?
A. TWO DIFFERENT ESTIMATES. ONE WAS BASED ON HIS TESTIMONY THAT HE DIDN'T WORK DIRECTLY WITH THE MATERIAL AND THAT HE WASN'T DIRECTLY IN THE VICINITY OF THE MATERIAL BEING USED. THAT HE HAD -- HE WOULD BE EXPOSED TO A CONCENTRATION, SOME FRACTION OF THAT, OF WHAT THE OPERATORS WOULD BE EXPOSED TO, THE TIRE BUILDERS, WHILE THEY WERE USING THE SOLVENT THEMSELVES.

THEN I MADE A SECOND CALCULATION ABOUT EVEN IF HE WAS EXPOSED TO THE SAME AVERAGE CONCENTRATION THAT THESE TIRE BUILDERS WERE EXPOSED TO, WHAT WOULD HIS EXPOSURE BE. SO, I SORT OF DID A TYPICAL AND UPPER-BOUND TYPE SCENARIO.

Q. FOR THAT SECOND CALCULATION, IF YOU ASSUME HE HAD THE SAME BENZENE IN HIS BREATHING ZONE AS A TIRE BUILDER, WHAT CONCENTRATION DID YOU ASSUME?
A. 1 PARTS PER MILLION.
Q. OKAY. NOW, IN REACHING OR USING THIS 1 PARTS PER MILLION FIGURE FOR A TIRE BUILDER, DID YOU DRAW UPON VAN ERT'S CONCLUSIONS IN SOME WAY?
A. YES.

Q. TELL THE JURY HOW WHAT VAN ERT CONCLUDED RELATES TO WHAT YOU USED FOR THIS 1.0 FIGURE FOR TIRE BUILDERS.
A. VAN ERT CONCLUDED -- AND THIS WAS A CONCLUSION REACHED IN THAT MULTI-TIRE PLANT ANALYSIS AS WELL -- THAT FOR INDIVIDUAL DEPARTMENTS AND INDIVIDUAL WORKERS

YOU WOULD HAVE A RANGE OF BENZENE EXPOSURE CONCENTRATIONS DURING THAT TASK THAT THEY WERE PERFORMING, WHICH WAS DURING THE USE OF A SOLVENT THAT CONTAINED BENZENE, BUT THAT ON AVERAGE IF YOU TOOK ALL OF THAT DATA IN TOTALITY, THAT THE AVERAGE EXPOSURE FOR THIS TYPE OF -- FOR ANY TYPE OF WORKER IN THE PLANT WOULD BE ON THE ORDER OF 1 PART PER MILLION. SO, NOT EVERY WORKER, NOT EVERY DEPARTMENT, BUT ON AVERAGE, 1 PART PER MILLION WAS A GOOD ESTIMATE OF AN AVERAGE EXPOSURE LEVEL.

Q. OKAY. NOW, WHY DID YOU THINK IT WAS APPROPRIATE IN YOUR FIRST CALCULATION WITH MR. HOOPER TO USE A FIGURE OF 20 PERCENT OF A TIRE BUILDER'S EXPOSURE RATHER THAN A FULL TIRE BUILDER'S EXPOSURE?

A. MY EXPERIENCE IN THE FIELD, AS WELL AS THE EXPERIENCE OF OTHERS IN THE FIELD, WHICH HAS BEEN REPORTED ON IN THE PUBLISHED LITERATURE, IS THAT IF YOU ARE NOT DIRECTLY WORKING IN THE IMMEDIATE VICINITY OF A SOURCE -- AND IN THIS INSTANCE A SOURCE IS DEFINED AS THE SOLVENT THAT CONTAINS BENZENE -- IF YOU ARE NOT THE PERSON STANDING THERE, YOU KNOW, APPLYING THIS MATERIAL WITH YOUR LAPEL CAPTURING THAT -- YOUR LAPEL SAMPLE

CAPTURING THAT AIR CONCENTRATION VALUE WHILE YOU ARE APPLYING IT AND YOU ARE STANDING SOME DISTANCE AWAY FROM THAT IN THE FACILITY WHERE THERE ISN'T SUCH A SOURCE, THAT YOUR CONCENTRATION DECREASES DRAMATICALLY DEPENDING ON HOW FAR AWAY THAT YOU ARE.

Q. CAN YOU THINK OF AN EXAMPLE FROM OUR EVERYDAY LIFE THAT ILLUSTRATES THAT PRINCIPLE?
A. IT IS NOT EXACTLY THE SAME, BUT AN ANALOGY MIGHT BE IF YOU WERE STANDING NEAR SOMEONE THAT WAS WEARING COLOGNE OR PERFUME AND YOU WERE STANDING RIGHT NEXT TO THEM, YOU WOULD PROBABLY GET A MUCH STRONGER WHIFF THAN IF YOU STOOD FIVE FEET AWAY OR 10 FEET AWAY OR EVEN FURTHER THAN, THAT YOU PROBABLY WOULDN'T SMELL ANYTHING. SO THAT WOULD BE A COMPARABLE ANALOGY ABOUT HOW THE FURTHER YOU ARE FROM THE SOURCE OF SOMETHING THAT IS EMITTING VAPORS, THE CONCENTRATION WILL DIFFER IN SPACE.
Q. OKAY. NOW, LET ME ASK YOU SORT OF AN ULTIMATE OPINION AND THEN WE CAN BACK OUT HOW YOU GOT THERE.
TELL THE JURY, PLEASE, FIRST, WHETHER YOU FORMED AN OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY AS TO WHAT MR. HOOPER'S LIKELY RANGE OF CUMULATIVE BENZENE EXPOSURE WAS DURING THE 25 OR SO MONTHS HE WAS AT THE FIRESTONE FACILITY WHILE HE WAS WORKING DOING TASKS IN THE PLANT. NOT IN THE CATALYTIC SHOP. NOT RAILROAD UNLOADING.
SO, FIRST OF ALL, DID YOU REACH SUCH AN OPINION?

A. YES, I DID.
Q. OKAY. WHY DON'T YOU TELL US THEN, WITH THAT COMPONENT, WHAT YOUR OPINION IS, PLEASE.
A. WELL, IN THE FIRST EXAMPLE OF WHICH I ASSUME THAT THERE WAS SOME -- HE HAD SOME FRACTION OF

EXPOSURE, SOME FRACTION OF WHAT THE TIRE BUILDERS HAD, THAT IS THE .2 P.P.M. SCENARIO, I CALCULATED A CUMULATIVE EXPOSURE OF 0.3 P.P.M.-YEARS.

Q. NOW, IF YOU DON'T MIND, STEP UP TO THE BOARD AND SHOW US THE MATH.

A. CAN I TAKE THIS?

Q. AND YOU CAN ERASE THAT BOX IF YOU PREFER, IF YOU CAN REACH IT.

A. [DRAWING.]

THIS SMELLS A LOT BECAUSE I'M STANDING RIGHT HERE.

SO, I HAVE 0.2 P.P.M. IS THE EXPOSURE POINT CONCENTRATION THAT I ASSUMED FOR MR. HOOPER WHILE HE WAS WORKING ON STEAM PIPES AND SUCH THROUGHOUT THE PLANT. AND THEN THERE ARE A COUPLE OTHER VARIABLES THAT HE WITH TALKED ABOUT THAT I HAVEN'T PUT YET ON THE BOARD.

I ASSUMED THAT HE WAS EXPOSED SIX OUT OF FIVE DAYS PER WEEK, AND WE TALKED EARLIER ABOUT JUST ASSUME, YOU KNOW, IT WAS 5 OUT OF FIVE DAYS A WEEK. I WILL GO BACK TO THAT. THIS IS BECAUSE FOR A WORKER WE JUST TYPICALLY ASSUME EIGHT HOURS A DAY, FIVE DAYS A WEEK UNLESS YOU KNOW OTHERWISE. SO, IN THIS CASE I ASSUMED

SIX DAYS A WEEK. BECAUSE THE SIX IS OVER THE FIVE, I WILL BE INCREASING HIS EXPOSURE VALUE THAN IF I JUST ASSUMED HE WORKED FIVE DAYS A WEEK.

Q. SO YOU GAVE HIM THE EXTRA DAY.

A. I GAVE HIM AN EXTRA DAY BECAUSE HE SAID HE WORKED OVERTIME.

Q. UNDERSTOOD. OKAY.

A. WHICH SHOULD BE RIGHT HERE BUT I WILL PUT IT HERE BECAUSE I FORGOT IT.

[DRAWING.]

SO, THEN, OUT OF THE 8 HOUR DAYS THERE WAS SOME PART OF THE TIME HE JUST WORKED THROUGHOUT THE PLANT VERSUS THE OTHER PART OF THE TIME WHERE HE WAS IN THE CATALYTIC SHOP OR UNLOADING OR WHATEVER, AND SO BASED ON THAT TABLE WE SAW EARLIER WHERE I APPORTIONED HIS TIME TO 100 PERCENT OF THE DAY, ALL OF THOSE AREAS THAT HE WORKED IN THAT WERE OUTSIDE OF -- WHEN HE WASN'T UNLOADING, WHEN HE WASN'T IN THE CATALYTIC SHOP, WHEN HE DIDN'T HAVE LUNCH, LEFT US WITH 4.8 HOURS PER DAY TO BE WORKING ON AVERAGE -- TO BE WORKING THROUGH THE PLANT, WORKING ON THE PIPES, SO THEN THAT IS PART OF THE EQUATION AS WELL.

AND THEN I'M GOING TO CARRY ON OVER HERE, BUT IT STILL SHOULD BE PART OF THE SAME LINE. WE HAVE JUST 50 OUT OF 50 WEEKS PER YEAR. THIS IS A TYPICAL, WHAT WE CONSIDER TYPICAL IN THE OCCUPATIONAL WORLD. WE ASSUME THAT SOMEBODY TAKES TWO WEEKS OF VACATION, SO THIS IS SORT OF A FIXED VALUE 50. AND I ASSUME THAT

MR. HOOPER WORKED EVERY WEEK OUT OF THE YEAR EXCEPT FOR THE TWO WEEKS THAT HE MAY HAVE BEEN OFF FOR VACATION OR HOLIDAY, SO 50 OUT OF 50 JUST CANCELS ITSELF OUT.

[DRAWING.]

THEN TIMES THE 2.08 YEARS, WHICH IS TWO YEARS PLUS THE ONE MONTH IN JANUARY. AND ALL OF THAT GIVES ME 0.3 P.P.M.-YEARS, BECAUSE A BUNCH OF THESE UNITS CANCEL OUT.

[DRAWING.]

I MUST BE MISSING SOMETHING HERE.

ANYWAY, THE UNITS CANCEL OUT SOMEWHERE AND ENDS UP BEING 0.03 P.P.M.-YEARS.

Q. OKAY. IF YOU ARE WRONG, DR. WILLIAMS, AND, IN FACT, MR. HOOPER'S EXPOSURE WAS FIVE TIMES HIGHER THAN YOU THOUGHT -- ARE YOU WITH ME? ARE YOU STILL WORRIED ABOUT YOUR UNITS?

A. YEAH, I SHOULDN'T HAVE BEEN CROSSING OUT LIKE THIS BECAUSE THEORETICALLY IT IS ALL SIX DAYS WEEK INSTEAD OF FIVE DAYS A WEEK AND IT ALL CANCELS OUT.

Q. ULTIMATELY, YOU END UP WITH A PARTS PER MILLION YEAR UNIT.

A. THAT IS CORRECT.

Q. OKAY. BUT IF YOU ARE WRONG AND RATHER THAN MR. HOOPER HAVING ABOUT 20 PERCENT OF THE EXPOSURE OF A TIRE BUILDER WHO IS APPLYING THIS SOLVENT AS WE HAVE DESCRIBED, IF YOU ARE WRONG AND IT IS ACTUALLY FIVE TIMES HIGHER THAN THAT, SO THAT HIS AVERAGE EXPOSURE WAS 1 PART PER MILLION, LIKE THOSE TIRE BUILDERS, THEN

WHAT IS YOUR OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY WITH RESPECT TO HIS CUMULATIVE DOSE OF BENZENE WHILE WORKING AT FIRESTONE DOING TASKS

IN THE PLANT?

A. WELL, I DID THAT CALCULATION AS AN UPPER BOUND. AS I SAID, FOR THAT VERY REASON, USING THE TIRE BUILDER DATA AS REPRESENTATIVE OF WHO THE MOST HIGHLY EXPOSED PEOPLE IN THE PLANT WOULD BE AND SAYING THAT MR. HOOPER WOULDN'T BE EXPOSED TO ANYTHING HIGHER, BUT LET'S JUST SAY FOR SAKE OF ARGUMENT HE WAS EXPOSED TO THE SAME LEVELS. THEN, HIS CUMULATIVE EXPOSURE I ESTIMATED TO BE 1.5 P.P.M.-YEARS.

Q. SO THE MATH THERE IS PRETTY SIMPLE. IF THIS IS ONE-FIFTH, THEN YOU MULTIPLY THAT BY 5, 0.3 TIMES 5 IS 1.5.

A. RIGHT. AND ALL THE OTHER VARIABLES HERE STAY THE SAME.

Q. ALL RIGHT.

NOW, THE SECOND COMPONENT IS IN THE CATALYTIC SHOP, RIGHT?

A. YES.

Q. NOW, FOR THIS YOU TELL US YOU UTILIZED A MODEL. YES?

A. YES.

Q. AND JUST TELL US THE NAME OF THE MODEL THAT YOU USED OR DESCRIBE IT.

A. THIS WAS A SIMPLE -- THERE WERE TWO TYPES OF MODELS: A SIMPLE EMISSIONS MODEL AND A BOX MODEL. ON

ONE HAND, YOU HAVE TO ESTIMATE HOW MUCH -- AN EMISSIONS MODEL, YOU WANT TO ESTIMATE HOW MUCH OF THE BENZENE IS COMING OFF OF THE SURFACE OF THE LIQUID. AND THEN YOU

WANT TO APPLY THE BOX MODEL TO SAY, OKAY, WHAT SIZE ROOM IS THAT EMISSION COMING OFF IN AND THE OTHER VARIABLES SUCH AS AIR TURNOVER IN THE ROOM AND OTHER PARAMETERS TO SAY WHAT WOULD THE CONCENTRATION BE IN THAT PARTICULAR ROOM.

Q. OKAY. SO, WHAT INFORMATION DID YOU HAVE WITH RESPECT TO HOW MANY HOURS OR MINUTES PER DAY MR. HOOPER WAS IN THE CATALYTIC SHOP DOING WHATEVER HE WAS DOING?

A. AT .6 HOURS PER DAY.

Q. AND THAT PIECE OF INFORMATION CAME FROM WHOM?

A. WELL, THE ORIGINAL NUMBER CAME FROM HIS DEPOSITION TESTIMONY AND I INCREASED THAT NUMBER IN RELATIVE TERMS TO COME UP TO 100 PERCENT OF HIS WORKDAY.

Q. SO, THAT PIECE OF DATA COMES FROM MR. HOOPER'S TESTIMONY IN HIS DEPOSITION, SCALED UP TO 100 PERCENT.

A. YES.

Q. GOT IT.

AND WHAT EMISSIONS WERE YOU ASSUMING EXISTED IN THAT CATALYTIC SHOP WHILE HE WAS PRESENT?

A. WELL, AGAIN, I MADE TWO CALCULATIONS, ONE OF WHICH WAS BASED ON THE ASSUMPTION IF HE USED SOMETHING LIKE KEROSENE. AND I WENT TO THE LITERATURE TO SEE WHAT THE BENZENE CONTENT OF KEROSENE WAS, AND IT IS VERY LOW.

Q. LIKE HOW LOW?

A. AROUND .02 PERCENT, I BELIEVE.

Q. LET'S JUST --
A. AND THAT IS WHEN IT IS REPORTED. SOMETIMES IT IS REPORTED AS NOT CONTAINING ANY MEASURABLE QUANTITIES.
Q. .02 PERCENT.
A. CORRECT.
Q. AS COMPARED WITH 356, WHICH IS 1.5 PERCENT. I DON'T KNOW IF I CAN DO THE MATH, BUT KEROSENE WOULD BE -- A WHOLE LOT LESS.
A. THANK YOU.
Q. I WAS A HISTORY MAJOR.
A. YEAH.
Q. OKAY. YOU WERE TALKING ABOUT EMISSIONS IN THE CATALYTIC SHOP AND YOU WERE TALKING ABOUT KEROSENE.
A. WELL, I DID TWO CALCULATIONS. ONE, IF IT WAS SOMETHING LIKE EITHER KEROSENE, LIKE KEROSENE, AND HAD A SMALL AMOUNT OF BENZENE IN IT SUCH AS .02 PERCENT, AND THEN I DID A SECOND CALCULATION, IF, FOR EXAMPLE, THEY WERE USING THE RUBBER SOLVENT TO CLEAN THEIR TOOLS AT 1.5 PERCENT.
Q. WHAT ASSUMPTIONS DID YOU MAKE ABOUT WHETHER MR. HOOPER WAS USING THE STUFF TO CLEAN HIS TOOLS?
A. SINCE HE DID NOT RECALL DOING THAT, BASED ON HIS TESTIMONY, I DIDN'T ASSUME THAT HE DID THAT.
I DID DO YET A THIRD CALCULATION THAT WHAT WOULD HIS DERMAL EXPOSURES BE, FOR EXAMPLE, IF HE WAS

CLEANING THE TOOLS HIMSELF.
Q. OKAY. THAT IS WHAT I WAS WAITING TO HEAR. SO,

DID YOU MAKE A CALCULATION THAT DID ASSUME THAT HE, IN FACT, WAS CLEANING TOOLS?

A. ONLY FOR THE DERMAL COMPONENT, BECAUSE THE OTHER COMPONENT IS JUST DEALING WITH THE GENERAL AMBIENT CONCENTRATIONS IN THE ROOM.

Q. OKAY. WE HAVEN'T COVERED THIS WITH ANY OTHER WITNESS MUCH. HYDROCARBONS CAN BE ABSORBED IN THE BODY THROUGH SKIN?

A. YES.

Q. AND THE RATE AT WHICH THEY ARE ABSORBED IS KNOWN TO SCIENCE?

A. WELL, THERE IS SOME UNCERTAINTY, BUT THERE IS PUBLISHED DATA AND REPORTS ON WHAT THE RATE MIGHT BE, YES.

Q. OKAY. AND THE AMOUNT OF BENZENE THAT WILL ENTER THE BODY IN A HYDROCARBON MIXTURE LIKE THIS, LIKE A 356, THAT IS INFORMATION THAT YOU CAN DERIVE FROM SCIENTIFIC LITERATURE.

A. IT IS INFORMATION -- I RELIED UPON THE SCIENTIFIC LITERATURE THAT REPORTED SOME OF THOSE VALUES. I DID NOT DERIVE A NEW VALUE MYSELF.

Q. RIGHT, NO. BUT WHAT I'M SAYING IS YOU DIDN'T MAKE IT UP.

A. RIGHT SURE.

Q. YOU WENT TO THE LITERATURE AND FOUND DATA ON THIS.

A. THAT IS CORRECT.

Q. OKAY. SO, THE THIRD CALCULATION IN THE CATALYTIC SHOP INCLUDED A DERMAL ABSORPTION THROUGH MR. HOOPER'S SKIN, ASSUMING HE WAS ACTUALLY CLEANING TOOLS WITH THE STUFF, RIGHT?

A. IF HE HAD DONE THAT, YES.

Q. OKAY. AND THE STUFF -- DID YOU ASSUME THE 1-AND-A-HALF PERCENT?

A. I DID IT UNDER BOTH --

Q. ALL RIGHT.

A. -- SCENARIOS, EITHER .02 OR 1.5 PERCENT.

Q. OKAY. SO, TELL US YOUR OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY AS TO WHAT YOU THINK MR. HOOPER'S CUMULATIVE DOSE OF -- CUMULATIVE EXPOSURE OF BENZENE WAS DURING THAT COMPONENT OF HIS TIME AT FIRESTONE WHILE HE WAS IN THE CATALYTIC SHOP, PLEASE.

A. IF THE SCENARIO IS THAT THE SOLUTION CONTAINED 0.02 P.P.M. BENZENE, LIKE KEROSENE, THEN THE CALCULATION WAS 0.004 P.P.M.-YEARS. THIS IS WITHOUT ANY DERMAL COMPONENT.

Q. ALL RIGHT. AND?

A. AND IF THE SCENARIO WAS SUCH THAT HE USED SOMETHING LIKE RUBBER SOLVENT AND THAT RUBBER SOLVENT CONTAINED 1.5 PERCENT BENZENE, THEN HIS CUMULATIVE EXPOSURES WOULD BE .3 P.P.M.-YEARS.

Q. 0.3?

A. CORRECT.

Q. GOT IT.

A. AND THIS, OF COURSE, ASSUMES THE MAXIMUM LEVEL

OF BENZENE IN THE SOLUTION AND IT ASSUMES THAT IT WOULD ALWAYS BE AT 1.5 PERCENT.

Q. I SUPPOSE IF THEY WERE ACTUALLY USING THE 374, WHICH IS 0.1 PERCENT BENZENE, RATHER THAN 356, WHICH IS 1.5 PERCENT BENZENE, IT IS 15 TIMES LESS BENZENE IN SOLUTION, RIGHT?

A. WELL, I DON'T KNOW WHETHER 374 IS POINT -- BUT IF YOU TELL ME IT WAS --

Q. LET ME ASK YOU TO ASSUME THAT THE 374 SOLVENT IS 0.1 PERCENT BENZENE. OKAY?

A. THEN WHAT YOU SAID WOULD BE TRUE.

Q. IT WOULD BE 15 TIMES LESS BENZENE. BUT YOU USED THE 356 FOR PURPOSES OF YOUR OPINION, TRUE?

A. ANY SOLVENT THAT CONTAINED 1.5 PERCENT BENZENE.

Q. FAIR ENOUGH.

NOW, THE THIRD SCENARIO HAS HIM IN THE CATALYTIC SHOP DOING WHATEVER HE IS DOING PLUS CLEANING TOOLS, RIGHT, SO THERE IS A DERMAL COMPONENT.

A. THE DERMAL COMPONENT, YES.

Q. TELL US ABOUT THAT.

A. AGAIN --

Q. WHAT IS YOUR OPINION TO A REASONABLE DEGREE --

A. I HAVE TWO VALUES.

Q. LET ME FINISH IT, PLEASE. WHAT IS YOUR OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY ON THAT POINT?

A. WELL, THERE ARE TWO VALUES. THE FIRST AGAIN IS

IF THE PRODUCT CONTAINED .02 PERCENT BENZENE, AND THAT WOULD BE .001 P.P.M.-YEARS.

Q. .001 -- OKAY. GOT IT.

A. IF, INSTEAD, THE SOLVENT CONTAINED 1.5 PERCENT BENZENE, THEN THE DERMAL EXPOSURE WOULD EQUATE TO .1 P.P.M.-YEARS.

Q. 0.1 P.P.M.-YEARS, RIGHT?

A. RIGHT.

Q. OKAY. AND THIS IS DERMAL.

OKAY. THEN THE THIRD SCENARIO IS THE RAIL CAR UNLOADING, RIGHT?

A. YES. AND I WOULD LIKE TO JUST CLARIFY THAT. THE OTHER -- FOR THE CATALYTIC SHOP, ALL OF THOSE VALUES CONSIDER THIS EXPOSURE OCCURRING FOR .6 HOURS PER DAY OUT OF AN 8-HOUR DAY, BUT STILL FOR SIX DAYS A WEEK.

Q. OH.

A. AND 50 WEEKS A YEAR FOR THE WHOLE 2.08 YEARS.

Q. GOOD. THANK YOU FOR CLARIFYING THAT.

MR. HARLEY: WELL, I DIDN'T UNDERSTAND WHAT SHE JUST SAID. SHE ASSUMED .6 HOURS.

THE COURT: I'M NOT SURE THAT IS AN OBJECTION, MR. HARLEY.

MR. HARLEY: I'M SORRY.

THE COURT: YOU CAN COME BACK ON CROSS-EXAMINATION.

MR. RIFF: LET ME SEE IF I UNDERSTOOD IT.

Q. YOUR ASSUMPTION CONCERNING MR. HOOPER BEING IN

THE CATALYTIC SHOP ON A DAILY BASIS WAS WHAT ON THIS POINT THAT YOU WERE JUST CLARIFYING?

A. THAT HE WORKED IN THE SHOP EVERYDAY SIX DAYS A WEEK FOR 50 WEEKS OUT OF THE YEAR DURING HIS ENTIRE EMPLOYMENT PERIOD FOR .6 HOURS A DAY.

Q. OKAY. AND THAT .6 HOURS A DAY COMES FROM WHERE?

A. FROM HIS DEPOSITION TESTIMONY WITH MY ADJUSTMENTS -- MY UPWARD ADJUSTMENTS TO IT TO MAKE IT EQUAL 100 PERCENT OF THE DAY.

Q. GOT IT. OKAY.

GOOD QUESTION. WHAT ASSUMPTION DID YOU HAVE WITH RESPECT TO THE DURATION OF TIME ON THE DERMAL CONTACT?

A. THAT IS A GOOD QUESTION.

LET ME SEE. THAT THAT WAS FOR THE ENTIRE .6-HOURS A DAY, SO THE ENTIRE TIME THAT HE WAS IN THE SHOP.

Q. SO, FOR THAT PERIOD YOU ARE ASSUMING THAT THE WHOLE TIME HE IS SITTING IN THERE CLEANING HIS TOOLS.

A. THAT HE HAS SOME DERMAL CONTACT.

Q. GOT IT.

NOW, LET'S GO TO THE RAIL CAR UNLOADING SCENARIO. FIRST OF ALL, WHAT DID YOU ASSUME CONCERNING A DURATION OF TIME?

A. 1.3 HOURS PER DAY.

Q. WHERE DID THAT COME FROM?

A. THE SAME THING, HIS DEPOSITION TESTIMONY SCALED

UPWARDS TO 100 PERCENT.
Q. OKAY. AND WHERE DID YOU GET THE DATA WITH RESPECT TO THE BENZENE CONCENTRATION IN A WORKER'S BREATHING ZONE DURING RAIL CAR UNLOADING OPERATIONS?
A. FROM THE PUBLISHED LITERATURE.
Q. OKAY. AND YOU HAVE LISTED THE SOURCES IN YOUR REPORT.
A. THAT IS CORRECT.
Q. MR. HARLEY HAS HAD YOUR REPORT SINCE AT LEAST YOUR DEPOSITION.
A. YES.
Q. OKAY. AND IN A BALLPARK KIND OF WAY, WHAT KIND OF EXPOSURE CONCENTRATIONS OF BENZENE DO WE SEE IN, FOR EXAMPLE, GASOLINE WORKERS UNLOADING GASOLINE FROM RAIL CARS OR LOADING AND UNLOADING FROM RAIL CARS?
A. AT THE TIME THAT I PULLED TOGETHER THE LITERATURE I DIDN'T HAVE VERY MANY PAPERS THAT WERE SPECIFIC TO RAIL CARS, SO I ALSO INCLUDED DATA FOR TANKER TRUCKS. AND THERE WAS QUITE A BIT OF VARIABILITY IN THE DATA, BUT -- WHICH WOULDN'T BE UNUSUAL. I THINK THE VALUES TENDED, THE AVERAGE VALUES DURING SUCH A TASK TENDED TO RANGE FROM LESS THAN .05 P.P.M. ALL THE WAY UP TO 7 P.P.M., WITH MOST CONCENTRATIONS FALLING WITHIN THE RANGE OF .3 TO 3 P.P.M. AND IN MY CALCULATIONS, WHICH IS LOOKING AT SORT OF THE WEALTH OF ALL OF THAT DATA, I ASSUMED THAT MR. HOOPER WAS EXPOSED TO 1 PARTS PER MILLION, WHICH WAS SORT OF IN THE MIDDLE OF THAT RANGE OF ALL THE DATA

SETS THAT I HAD AVAILABLE TO ME.
Q. OKAY. DID YOU ATTEMPT AS PART OF YOUR JOB IN THIS CASE TO FIGURE OUT WHAT IN REALITY MR. HOOPER WAS UNLOADING FROM THOSE RAIL CARS, BE IT OIL, BE IT SOLVENT, BE IT SOMETHING ELSE?
A. NO.
Q. OKAY. SO, WHAT OPINION DID YOU REACH BASED ON THE ASSUMPTIONS THAT YOU HAVE NOW STATED WITH RESPECT TO MR. HOOPER'S CUMULATIVE EXPOSURE FROM THE RAIL CAR UNLOADING OPERATIONS, OF COURSE TO BENZENE, WHICH OPINION DO YOU HOLD TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY?
A. .4 P.P.M.-YEARS. AND THAT IS BASED ON THE ASSUMPTION THAT EVERY TIME HE UNLOADED, HE WAS UNLOADING A SOLVENT THAT CONTAINED BENZENE.
Q. OKAY. NOW, I DON'T KNOW IF YOU HAVE DONE THIS YET, BUT HAVE YOU ADDED UP BASICALLY THE LOWER RANGE OF THESE NUMBERS AND THE HIGHER RANGE OF THESE NUMBERS TO COME TO A -- WELL, TO COME TO WHAT THE RANGE WOULD BE?
A. IN MY REPORT I HAD ADDED UP TO SOME OF THOSE AND THE VALUE I CAME UP WITH WAS .7 P.P.M.-YEARS. AND THAT WAS BASED ON THE .3 FOR TASK 1, THE .004 FOR TASK 2. AND THE .4 FOR TASK 3.
Q. OKAY. SO, PER YOUR REPORT, YOU USED THE DATA ON THIS EXHIBIT --
WHICH, YOUR HONOR, FOR IDENTIFICATION I WOULD LIKE TO CALL EXHIBIT 1759, WHICH IS --
THE COURT: YOU ARE REFERRING TO THE

MATERIAL THAT YOU HAVE JUST PLACED ON THE BOARD?

MR. RIFF: YES. I HAVE BEEN MAKING SOME NOTES AS DR. WILLIAMS HAS BEEN TESTIFYING AND HOPEFULLY RECORDING WHAT SHE HAS BEEN SAYING. SO, JUST FOR THE RECORD I'M GOING TO CALL THIS 1749. WHETHER IT IS EVER ADMITTED WE WILL FIND OUT.

THE COURT: ALL RIGHT. IT MAY BE MARKED FOR IDENTIFICATION AS 1759.

MR. RIFF: THANK YOU.

(DEFENDANT'S EXHIBIT NO. 1759 WAS MARKED FOR IDENTIFICATION.)

Q. (MR. RIFF:) SO, FOR YOUR REPORT, AT LEAST, USING THIS DATA, YOU CAME UP WITH A CUMULATIVE BENZENE DOSE OF WHAT?

A. .7 P.P.M.-YEARS.

Q. I GUESS IT IS NOT A RANGE. 0.7.

[DRAWING.]

A. WELL, I HAVE ALL OF THOSE INDIVIDUAL VALUES IN THE REPORT, BUT THIS WAS WHAT I FELT HIS MOST LIKELY CUMULATIVE EXPOSURE -- "CUMULATIVE" MEANING ALL OF THOSE TASKS COMBINED BASED ON HIS DEPOSITION TESTIMONY.

Q. OKAY.

A. WHICH WAS THAT HE NEVER WORKED WITH ANY SOLVENT HIMSELF, HE NEVER RECALLED CLEANING HIS TOOLS WITH ANY SOLVENT. AND THAT IS WHY I PICKED THOSE PARTICULAR THREE VALUES TO ADD UP.

Q. OKAY. HAVE YOU REVISED YOUR OPINION AND ESTIMATE BASED ON WHAT MR. HOOPER HAS ACTUALLY

TESTIFIED TO NOW IN TRIAL?
A. I HAVEN'T DONE IT QUANTITATIVELY, BUT, YES, I WOULD SAY THAT IF WHAT HE HAS SAID NOW IS TRUE THAT HE DID -- THAT HIS CUMULATIVE EXPOSURES WOULD BE SOMEWHAT HIGHER THAN MY ORIGINAL ESTIMATE OF .7 P.P.M.-YEARS.
Q. AND -- IT DIDN'T WORK.
WELL, ARE YOU PREPARED TO GIVE US AN OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY OF WHAT MR. HOOPER'S LIKELY CUMULATIVE DOSE TO BENZENE WAS BASED ON WHAT HE SAID IN COURT?
A. WELL, I WOULD GIVE IT -- I WOULD QUALIFY IT STILL AS AN UPPER BOUND VALUE. I WOULDN'T NECESSARILY QUALIFY IT AS A MOST LIKELY VALUE, IN WHICH IN THE FIRST SCENARIO I WOULD USE THE 1.5 P.P.M. YEAR NUMBER AS AN UPPER BOUND, BECAUSE EVEN IF YOU TOOK INTO ACCOUNT WHAT HE SAYS HE DID NOW, WHICH WAS SOMETIMES HAVE CONTACT WITH THE SOLVENT, I STILL WOULD NOT -- MY OPINION WOULD STILL BE THAT HE WASN'T EXPOSED TO THE SAME LEVEL ON A DAILY BASIS AS A TIRE WORKER BECAUSE HE WASN'T WORKING WITH THE SOLVENT ALL DAY EVERYDAY LIKE THE TIRE WORKERS WERE.
Q. OKAY. SO, ASSUMING AN UPPER BOUND EXPOSURE AS YOU JUST DESCRIBED IT, THEN WHAT WOULD WE DO? WE WOULD ADD THE 1.5.
A. WE COULD ADD THEN HIS CLAIM NOW THAT HE DID CLEAN HIS TOOLS. WE COULD ADD THE .3 AT THE 1.5 PERCENT. AND WE COULD ADD THE DERMAL COMPONENT. AND I THINK WE WOULD GET SOMEWHERE ON THE ORDER OF LESS THAN

4 P.P.M.-YEARS.
Q. WELL, LET'S SEE.
1.5 PLUS 0.3, SO NOW WE ARE AT 1.8. AGREED?
A. YES.
Q. PLUS DERMAL OF -- THE HIGHEST DERMAL IS ANOTHER .1, SO NOW WE ARE AT 1.9. RIGHT?
A. UH-HUH.
Q. YES?
A. YES.
Q. SO, THE RAIL CAR OF .4, SO WE ARE AT 2.3. IS THAT ABOUT --
A. YES, THAT IS ABOUT RIGHT, YES.
Q. YOU SAID LESS THAN 4 AND I'M SAYING APPROXIMATELY 2.3, BUT YOU ARE THE ONE TESTIFYING, NOT ME. DO YOU AGREE WITH ME OR NOT?
A. BASED ON THOSE NUMBERS, YES.
Q. OKAY. NOW, A COUPLE OF QUESTIONS AND THEN WE WILL BE DONE. I WANT TO ASK YOU SOME QUESTIONS OF A HYPOTHETICAL NATURE, I GUESS. I WANT YOU TO -- I WON'T.
WELL, HOW DO I DO THAT?
I WANT YOU TO ASSUME THAT THIS JURY HAS RECEIVED TESTIMONY FROM AN EXPERT IN THIS CASE TO THE EFFECT THAT MR. HOOPER'S EXPOSURE WAS IN FAR GREATER LEVELS THAN A TIRE BUILDER. OKAY? ASSUMING THAT TO BE TRUE, I JUST ASK YOU FOR YOUR ASSESSMENT OF THAT STATEMENT.
A. YOU DON'T WANT ME TO ASSUME THAT THAT STATEMENT

IS TRUE --
Q. NO, I'M JUST TRYING TO TELL YOU -- I'M ASKING YOU TO ASSUME THE STATEMENT WAS MADE IN COURT.
A. OKAY.
Q. AND I WANT YOU TO GIVE THE JURY THE BENEFIT OF YOUR VIEWS BASED ON YOUR WORK IN THIS CASE AS TO WHETHER THAT IS TRUE OR NOT.
A. THAT IS NOT THE OPINION THAT I REACHED IN THIS CASE. TO ME, THAT SEEMS IMPLAUSIBLE, GIVEN THAT HE DID NOT WORK WITH THE SOLVENTS THAT CONTAINED BENZENE ALL DAY EVERYDAY LIKE THE TIRE WORKERS DID.
Q. BUT DIDN'T YOU HEAR MR. HOOPER EXPLAIN OR READ THAT HE WAS DOWN THERE OPENING PIPES THAT HAD SOLVENT AND THERE WOULD BE MATERIAL SPILLING OUT?
A. I DID. I READ THAT. AND I --
Q. GO AHEAD.
A. AND I WENT BACK TO A LOT OF MY MATERIALS BECAUSE IT DIDN'T -- I DIDN'T RECALL SEEING ANYWHERE THAT THEY HAD MANY, IF ANY, SOLVENT LINES RUNNING THROUGH THIS FACILITY, AND IT SEEMED TO DEFY COMMON SENSE TO ME THAT YOU WOULD HAVE HIGHLY FLAMMABLE LIQUIDS RUNNING THROUGH PIPES IN VERY HOT AREAS IN A FACILITY. SO I WENT BACK AND LOOKED AT A NUMBER OF THE TESTIMONY BY THE FORMER FIRESTONE WORKERS, LIKE SAFETY JONES AND ROBERT HELM AND JAZWIN, AND ALL THAT I COULD FIND IN ALL THE LITERATURE MATERIALS I HAD SUGGESTED THAT THE ONLY SOLVENT PIPES THAT HE HAD IN THIS FACILITY ARE ONES THAT RUN FROM THE UNDERGROUND STORAGE

BINS OUTSIDE INTO THE CEMENT HOUSE WHERE THEY DO THE MIXING OF THESE CHEMICALS, AND THEN FROM THE MIXING HOUSE TO THE EXTRUDER, WHICH IS THAT TUBER AREA. AND THAT IS IT. I DIDN'T READ ANYTHING ELSE ABOUT THERE BEING SOLVENT LINES IN THE FACILITY. SO, IF MR. HOOPER OPENED SOLVENT LINES, IT IS POSSIBLE, BUT THEY WOULD HAVE -- THERE WOULD HAVE BEEN VERY FEW SOLVENT LINES RELATIVE TO ALL THE OTHER PIPING IN THAT FACILITY, SO IT DIDN'T SEEM TO ME THAT HE COULD HAVE DONE SUCH A THING ON A VERY FREQUENT BASIS.

Q. BUT DIDN'T YOU HEAR THE TESTIMONY THAT THOSE JANITORS WERE USING THAT RUBBER SOLVENT THAT THEY WERE USING TO BUILD TIRES, TO MOP-UP THE FLOOR ALL THE TIME?

A. I DID HEAR THAT TESTIMONY.

Q. AND DID YOU ASSESS THAT TESTIMONY AND CONSIDER IT?

A. I CONSIDERED IT, BUT, AGAIN, I DIDN'T THINK THAT WAS A VERY LIKELY SCENARIO.

Q. WHY?

A. GIVEN THAT ALL OF THE INFORMATION THAT I HAVE SUGGESTS THAT THE JANITORS HAD CERTAIN APPROVED MATERIALS THAT THEY COULD USE TO CLEAN THE FLOOR, AND THEY WEREN'T FLAMMABLE. I MEAN, IT WOULD BE VERY UNLIKELY THAT YOU WOULD HAVE SOMEBODY MOPPING ENTIRE FLOORS WITH A HIGHLY FLAMMABLE LIQUID IN A HOT TIRE PRESS AREA. AND ALL THE LITERATURE THAT I HAVE SEEN SUGGESTS THAT THEY HAD SOMETHING CALLED R.P. 1400 AS AN APPROVED SAFETY CLEANER AND AS AN APPROVED CLEANER TO

CLEAN THE TIRE MACHINES AND TO CLEAN THE FLOOR. AND THESE WOULD BE PRODUCTS THAT WOULD BE REVIEWED WHEN THEY FIRST ENTERED THE FACILITY AND WOULD BE APPROVED FOR PEOPLE LIKE THE JANITORS TO USE.

Q. OKAY. WELL, I WANTED TO MAKE SURE I UNDERSTAND SOMETHING ABOUT YOUR 1 P.P.M. FIGURE THAT YOU USED IN PART OF YOUR ANALYSIS. ARE YOU TELLING THE JURY THAT YOU THINK THAT ON AVERAGE IN THAT PLANT IN ALL LOCATIONS THE AMBIENT AVERAGE CONCENTRATION WAS 1.0 PARTS PER MILLION?

A. NO, THAT IS NOT WHAT I'M SAYING.

Q. WHAT ARE YOU SAYING?

A. I'M SAYING THAT THE AVERAGE CONCENTRATION IN THE BREATHING ZONE OF A WORKER AT -- WHILE HE IS DOING HIS JOB OF APPLYING THE SOLVENT IS 1 PARTS PER MILLION, WHICH IS NOT THE SAME AS WHAT THE CONCENTRATION WOULD BE IN OTHER PARTS OF THE PLANT WHERE THERE WASN'T A SOURCE NEARBY.

Q. AND WHAT DO YOU BASE THAT ON?

A. MY EXPERIENCE IN THE FIELD, MY EXPERIENCE REVIEWING COUNTLESS OTHER DATA SETS WHERE THEY COMPARE AND COLLECT WHAT IS CALLED BACKGROUND SAMPLES OR AREA SAMPLES THAT ARE NOT COLLECTED IN THE IMMEDIATE VICINITY OF A WORK BUT ARE MAYBE 10 OR 20 FEET AWAY.

Q. WELL, DR. WILLIAMS, HOW DO YOU ANSWER THE ALLEGATION IF ONE WERE MADE THAT THIS IS ABSOLUTE RANK SPECULATION AND THAT YOU ARE JUST MAKING IT UP AS YOU

GO ALONG. IS THAT WHAT YOU ARE DOING?

A. NO, I WOULD SAY THAT IS NOT TRUE.
Q. HAVE YOU HAD TO MAKE SOME ASSUMPTIONS ALONG THE WAY?
A. YES.
Q. AND IS THAT UNUSUAL IN A DOSE ASSESSMENT OR -- I'M SORRY. IN AN EXPOSURE ASSESSMENT SITUATION, IS IT UNUSUAL FOR AN EXPOSURE ASSESSOR TO HAVE TO MAKE SOME ASSUMPTIONS ABOUT DURATIONS OR CONCENTRATIONS?
A. NO, I MEAN, THAT IS NOT AT ALL UNUSUAL. IN FACT, ALL OF THE INPUT PARAMETERS FOR AN EXPOSURE ASSESSMENT ARE ASSUMPTIONS. SOMETIMES YOU HAVE BETTER DATA THAN OTHERS AND SOMETIMES YOU RELY ON YOUR PROFESSIONAL JUDGMENT OR MEASURED DATA OR MODEL DATA, BUT THEY ARE ALL ASSUMPTIONS THAT GO INTO YOUR ASSESSMENT.
MR. RIFF: THAT IS ALL THE QUESTIONS THAT I HAVE FOR THE WITNESS, YOUR HONOR.
THE COURT: ALL RIGHT.
MR. RIFF: THANK YOU.
THE COURT: DOES ANYONE NEED A BREAK BEFORE WE GO ON?
OKAY. MR. HARLEY.

CROSS-EXAMINATION OF

PAMELA WILLIAMS

BY MR. HARLEY:
Q. LET'S DEAL WITH ONE MATTER RIGHT AT THE BEGINNING, EXHIBIT 258.

28 I WANT TO SHOW YOU WHAT HAS BEEN PREVIOUSLY

1 MARKED AS 258, AN ARTICLE ENTITLED "WORKER EXPOSURES TO
2 CHEMICAL AGENTS IN THE MANUFACTURE OF RUBBER TIRES:
3 SOLVENT VAPOR STUDY." DO YOU SEE THAT?
4 A. YES.
5 Q. THIS IS THE PUBLISHED 10 OR 11 PLANT SURVEY OUT
6 OF VAN ERT OUT OF NORTH CAROLINA; IS THAT CORRECT?
7 A. THAT IS CORRECT.
8 Q. AND, IN FACT, IN HIS SPECIFIC REPORT TO
9 SALINAS, THAT SINGLE REPORT HAS NEVER BEEN PUBLISHED BY
10 ITSELF; IS THAT CORRECT?
11 A. I'M NOT AWARE THAT IT HAS.
12 Q. OKAY. AND HE DOESN'T GIVE IN THAT SINGLE
13 REPORT AN AVERAGE EXPOSURE FOR THE PRODUCTION WORKERS
14 OR FOR THE AREA SAMPLES THAT HE COLLECTED IN TERMS OF A
15 PLANT-WIDE AVERAGE, DOES HE?
16 A. I WOULD HAVE TO LOOK BACK AT HIS STUDY TO SEE
17 WHETHER HE SAID THAT OR NOT.
18 Q. WELL, I DON'T WANT TO TAKE THE TIME TO DO THAT,
19 BUT IT IS IMPORTANT ON THIS FIRST DATA POINT THAT YOU
20 WERE JUST BEING ASKED ABOUT. YOU SAID THAT THAT 1
21 PARTS PER MILLION WAS FOR THE PRODUCTION WORKERS AND
22 THAT THE AREA SAMPLES WOULD BE MUCH LOWER. DO YOU
23 REMEMBER SAYING THAT?
24 A. I DIDN'T SAY THAT FOR THIS FACILITY, NO.
25 Q. OKAY. LET'S GET THAT STRAIGHT, BECAUSE WHAT I
26 WANT TO TALK ABOUT IS -- WELL, WERE YOU TALKING ABOUT

TIRE FACILITIES GENERALLY?
A. WELL, THERE IS A DIFFERENCE BETWEEN DIFFERENT

TYPES OF AREA SAMPLES, SO I THINK MAYBE THAT IS WHERE THE CONFUSION IS COMING IN.
Q. WELL, I WANT TO KNOW A VERY CLEAR OPINION, DO YOU HAVE AN OPINION AS TO WHAT THE AVERAGE AREA SAMPLE WOULD BE IN A TYPICAL TIRE MANUFACTURING FACILITY USING BENZENE-CONTAINING SOLVENTS IN THE '70S?
A. IF THE AREA SAMPLERS WERE PLACED IN THE IMMEDIATE VICINITY OF THE WORKER PERFORMING THAT TASK, FOR EXAMPLE, IF I'M HERE AND THE AREA SAMPLER IS PLACED RIGHT HERE, I WOULD EXPECT THE CONCENTRATIONS TO BE VERY SIMILAR TO ONE ANOTHER.
[INDICATING.]
Q. LET'S SEE WHAT ACTUALLY THE BEST STUDY OF AREA SAMPLES WE HAVE, UNFORTUNATELY -- THE '70S STUDY OR THE REPORTED STUDIES OF THE NORTH CAROLINA GROUP FOR TIRE MANUFACTURING, AT LEAST; IS THAT CORRECT?
A. I THINK -- YES, AND THE SALINAS REPORT I BELIEVE CONTAINS A COUPLE OF AREA MEASUREMENTS AS WELL.
Q. OKAY. AND IF YOU WILL TURN TO THE LAST PAGE, THE VERY BOTTOM OF THE FIRST -- NO, THE PAGE BEFORE THAT. THE VERY BOTTOM OF THE FIRST COLUMN OF THE LAST PARAGRAPH.
WILL YOU ENLARGE THAT FOR US, THE LAST PARAGRAPH?
OKAY.
"BENZENE HAS RECEIVED A GREAT AMOUNT OF

27 ATTENTION IN RECENT MONTHS, SO RESULTS FOR THIS
28 COMPOUND MAY BE OF SPECIAL INTEREST. THE MEAN

1 CONCENTRATION YIELDED BY ALL BENZENE DETERMINATIONS
2 MADE IN OUR CROSS-SECTIONAL SURVEYS, 300 AREA AIR
3 SAMPLES, IS 1.11 PARTS PER MILLION. THE MEAN VALUES
4 FOUND FOR PERSONNEL AND AREA SAMPLES WERE 1.06 PARTS
5 PER MILLION AND 1.3 P.P.M. RESPECTIVELY."
6 MR. RIFF: 1.23.
7 MR. HARLEY: "1.23 RESPECTIVELY."
8 Q. DO YOU SEE THAT?
9 A. YES.
10 Q. IN FACT, THE AREA SAMPLES WERE HIGHER THAN THE
11 PERSONNEL SAMPLES IN THE RUBBER PLANT; ISN'T THAT
12 CORRECT?
13 A. IN THIS SENTENCE THEY ARE, YES.
14 Q. AH --
15 A. I MEAN, NOT ALL SAMPLES.
16 Q. THAT IS WHAT IS REPORTED IN THE PEER REVIEWED
17 LITERATURE, PART OF WHICH YOU CONSIDERED IN THIS -- AS
18 BACKGROUND FOR CALCULATING YOUR DATA POINT. AND YOU
19 DECIDED THAT BECAUSE MR. HOOPER WAS PRIMARILY WORKING
20 IN THE AREA AND NOT A PRODUCTION WORKER, IT WAS
21 APPROPRIATE TO TAKE A FACTOR OF ONE-FIFTH OF THE
22 PRODUCTION WORKERS RATHER THAN USE THE GENERAL AREA
23 SAMPLE; ISN'T THAT CORRECT?
24 A. AGAIN, YOU ARE TALKING ABOUT THE DIFFERENCE
25 BETWEEN DIFFERENT TYPE OF AREA SAMPLERS THAT I CAN

EXPLAIN IF YOU WOULD LIKE ME TO, BUT I DID TAKE ONE-FIFTH OF THE ONE IN MY ORIGINAL ESTIMATE, YES.

Q. THESE SAMPLES, THESE 300 SAMPLES THAT HE

AVERAGED OUT INCLUDED THE BANBURY AREAS; ISN'T THAT CORRECT?

A. I WOULD HAVE TO LOOK BACK, BUT IT IS POSSIBLE.

Q. THESE ARE ACTUAL SAMPLES OF THE ENTIRE MANUFACTURING AREA, INCLUDING CURING, CALENDARING, ALL SORTS OF THINGS; ISN'T THAT CORRECT?

A. NO, THAT IS NOT CORRECT. IT SAYS IN THE PAPER EXACTLY WHERE THE SAMPLES WERE COLLECTED AND I DON'T THINK -- IN FACT, IT DOES NOT SAY THEY WERE COLLECTED IN THE BANBURY AREA.

MR. HARLEY: WILL YOU GO TO TABLE 1, PLEASE, THE SECOND PAGE?

Q. AND THIS IS -- HE ACTUALLY DEFINES ALL THE AREAS OF TIRE-MAKING AND ABOVE THIS THERE IS ACTUALLY A CHART OF ALL OF THESE AREAS; IS THAT CORRECT?

A. THAT IS CORRECT.

Q. AND THEN HE GIVES ONE --

GO TO THE NEXT PAGE, PLEASE, TABLE 2.

THIS IS JUST ONE SET OF SAMPLES FROM ONE TIRE PLANT THAT HE DOESN'T IDENTIFY WHICH ONE; IS THAT CORRECT?

A. NO, THAT IS FROM MULTIPLE PLANTS. UNDER THE PLANT COLUMN IT SAYS, A, B, C, ET CETERA, SO THEY DIDN'T IDENTIFY THE NAME OF THE PLANTS. THEY JUST GAVE IT A LETTER.

Q. A LETTER. AND IT GOES ON FOR TWO PAGES. BUT THERE ARE NOT 300 REPORTED SAMPLES HERE, ARE THERE?
A. I DON'T THINK I ADDED THEM ALL UP.

Q. OKAY.
A. WELL, IN PARENS IT INDICATES THE NUMBER OF SAMPLES PER EACH ROW, SO, YOU ARE RIGHT, THAT IF YOU ADDED ALL OF THESE LINES IT WOULDN'T ADD TO 100 OR 300, BUT IF YOU ADDED UP IN PARENS ALL THE SAMPLES, IT PROBABLY WOULD ADD UP TO THAT, BUT I'M NOT SURE THAT I HAVE DONE THAT.
Q. OKAY. NOW, ANOTHER AREA, JUST -- THAT IS ONE ASSUMPTION YOU HAVE TO MAKE IS WHAT THE AMBIENT AREAS IN THE PRODUCTION AREAS ARE; ISN'T THAT CORRECT?
A. I MADE AN ASSESSMENT, NOT NECESSARILY IN THE PRODUCTION AREA, BUT IN OTHER PARTS OF THE FACILITY THAT WERE NOT IN THE IMMEDIATE VICINITY OF THE PRODUCTION AREA. I'M REFERRING TO THAT MORE AS BACKGROUND CONCENTRATIONS, WHICH ARE NOT THE SAME AS AREA.
Q. WELL, OKAY. I WANT TO MOVE ON.
DID YOU MAKE AN ASSUMPTION AS TO WHAT THE AVERAGE AREA -- AVERAGE EXPOSURE WOULD BE IN PRODUCTION AREAS?
A. FOR THE OPERATOR, THAT WAS 1 PARTS PER MILLION.
Q. HOW ABOUT JUST BEING NEAR THE TUBER; DID YOU MAKE THOSE KINDS OF CALCULATIONS?
A. I DID NOT.

Q. OR BEING IN THE CEMENT AREA?
A. I DIDN'T MAKE THAT CALCULATION.
Q. OR IN THE BEAD ROOM.
A. NO.

Q. OKAY. AND, SO, ANOTHER -- SO, YOU START OUT WITH AN ASSUMPTION OF -- SOME KIND OF AN ASSUMPTION OF GENERAL EXPOSURE, AND THAT IS ONE.

AND THE SECOND -- ONE OF THE PRIMARY SOURCES THAT YOU USE WAS THE VAN ERT STUDY IN LOOKING -- IN FACT, YOU EVEN HAVE A TABLE OF ALL THE VAN ERT MEASUREMENTS IN SALINAS; IS THAT CORRECT?

A. YES.

MR. HARLEY: NOW, CAN WE SWITCH OVER TO THIS? WHAT IS THIS EXHIBIT NUMBER?

Q. 1332. DO YOU HAVE THAT STILL IN FRONT OF YOU?

THIS WAS ONE OF THESE THINGS THAT HE HAD ON POSTER.

A. I HAVE IT.

Q. OKAY. THIS IS A LIST OF THE BENZENE CONTENT.

NOW, IN THE EARLY -- STARTS AT 1.9 PERCENT AT 61. BUT STARTING IN 69, IT IS 1.5 PERCENT. THERE IS AN ODD NUMBER HERE, A .7, BUT THAT IS ON AN UNDATED INFORMATION SHEET; ISN'T THAT CORRECT?

A. WELL, I HAVE A DATE ASSIGNED TO IT, SO I WOULD HAVE TO LOOK BACK AT IT, IF YOU ARE TELLING ME IT REALLY DOESN'T HAVE THAT DATE.

Q. WHAT DOES N/A MEAN?

A. I'M SORRY. MUST NOT HAVE DATA ON IT, YOU ARE

CORRECT.

Q. OKAY. SO WE DON'T KNOW WHAT DATE THAT .7 CAME FROM.

A. I'M ASSUMING THAT IS WHAT I MEANT BY PUTTING

N/A DOWN.

Q. LET'S LOOK AT THE ONE WE KNOW. WE HAVE 1.5. 1.5. WE HAVE CHEVRON 183. DID YOU UNDERSTAND THAT THAT ALSO CONTAINED 5 PERCENT HEXANE IN THAT ONE OR NOT?

A. I THINK I READ THAT LATER, YES.

Q. OKAY.

AND THEN WE HAVE 1.5 PERCENT. 1.5 PERCENT. 1.5 PERCENT. 1.4 PERCENT. ALL OF THESE IN '73.

AND THEN THERE IS THINNER WITH AN (E) AFTER IT, 183 (E) ON A DATE OF SEPTEMBER 18TH, '73. DO YOU SEE THAT?

A. YES.

Q. YOU NOW, KNOW THAT THAT (E) STANDS FOR EL SEGUNDO?

A. YES.

Q. SO WE CAN DISREGARD THAT .9 PERCENT ENTIRELY, BECAUSE THAT IS THE WRONG FACILITY, RIGHT?

EL SEGUNDO SHIPPED TO THE SOUTH GATE FACILITY, GENERALLY?

A. I GUESS I DON'T RECALL THAT, SORRY.

Q. THEN WE HAVE 1.5 PERCENT.

THEN WE ARE DOWN IN LATE '74 AND WE GET A

FIRESTONE MEMO AT 1 PERCENT.

THEN WE GET AGAIN 1 TO 1-AND-A-HALF PERCENT IN LATE '74.

AND THEN WE GET ON MARCH 24TH -- THIS IS TWO MONTHS AFTER MR. HOOPER LEFT THE FACILITY; ISN'T THAT

CORRECT?

A. BASED ON HIS TESTIMONY, YES.

Q. BUT THIS IS FOUR MONTHS OR THREE MONTHS, REALLY, THREE-AND-A-HALF MONTHS BEFORE THE VAN ERT STUDY; ISN'T THAT CORRECT?

A. YES.

Q. AND IT SHOWS A CONCENTRATION OF ONE-HALF PERCENT IN 356. ISN'T THAT CORRECT?

A. YES.

Q. THAT IS A 66-AND-TWO-THIRDS PERCENT REDUCTION IN THE BENZENE CONTENT OF 356; ISN'T THAT CORRECT?

A. IT DEPENDS ON WHAT YOU ARE COMPARING IT TO.

Q. TO THE YEARS PREVIOUS. THE 1-AND-A-HALF PERCENT NUMBERS -- 1-AND-A-HALF OR 1.4 WE SAW CONSISTENTLY, '72, '73 AND '74.

A. I'M SORRY, I MUST HAVE MISSED WHAT YOU SAID ABOUT THE 1 --

Q. .5 PERCENT.

A. THE ONE IN '74, THE FIRESTONE INTEROFFICE MEMO AT .1 PERCENT?

Q. NO, THE 3/24/75. DO YOU SEE THAT?

A. NO, I UNDERSTAND THAT. I WAS JUST ASKING A CLARIFYING QUESTION.

Q. OKAY. THAT, IN FACT, YOU WOULD HAVE TO MULTIPLY THIS BY 3 TO GET THE BENZENE CONTENT OF THE SOLVENT IN USE WHEN MR. HOOPER WAS THERE. ISN'T THAT CORRECT?

A. NO, I DON'T AGREE WITH THE WAY YOU FRAMED THAT.

Q. WELL, TO GET FROM .5 PERCENT TO 1-AND-A-HALF PERCENT DON'T YOU HAVE TO MULTIPLY BY 3?

A. IF YOU ARE COMPARING IT TO THE 1-AND-A-HALF PERCENT, BUT THERE ARE OTHER VALUES THERE.

Q. WELL, LET'S SAY THAT. WE HAVE A .1 PERCENT ON AN INTEROFFICE MEMO AGAIN AT A TIME WHEN MR. HOOPER HAS COMPLETED 98 -- 90 PERCENT OF HIS WORK THERE; ISN'T THAT CORRECT?

A. HE WAS NO LONGER AT THE FACILITY AT THAT TIME, THAT IS CORRECT.

Q. AND, SO, WHAT I'M ASKING IS, ISN'T THE MOST LIKELY INFERENCE IS WHEN THE VAN ERT STUDY WAS DONE IN 1975, THEY WERE USING THE MATERIAL WITH .5 PERCENT BENZENE?

A. THAT IS NOT MY UNDERSTANDING, NO.

Q. WELL --

A. BASED ON THIS ONE DATA SHEET.

Q. WELL, BUT DR. VAN ERT NEVER MEASURED THE BENZENE CONTENT OF THE SOLVENT OF THE 356 FOR SALINAS, DID HE?

A. NOT WHILE HE WAS THERE.

Q. NOT WHILE HE WAS THERE.

AND THE MOST RECENT DATA SHEET FROM CHEVRON IN MARCH OF '75 IMMEDIATELY PRECEDING THAT SHOWS A BENZENE CONTENT OF .5 PERCENT. WHAT SPECIFIC INFORMATION DO YOU HAVE THAT THAT ISN'T THE 356 IN USE WHEN DR. VAN ERT DID HIS STUDY?

A. I DON'T HAVE SPECIFIC INFORMATION ONE WAY OR

ANOTHER.

Q. YOU ASSUMED THAT THE BENZENE BEING USED AT THE TIME VAN ERT DID HIS STUDY WAS THE SAME, THE BENZENE CONTENT OF THE RUBBER SOLVENT, THE BASIC RUBBER SOLVENT, WAS THE SAME AS WHEN MR. HOOPER WORKED THERE, DIDN'T YOU?

A. I DIDN'T SEE ANYTHING THAT SUGGESTED IT HAD CHANGED DRAMATICALLY OVER THAT TIME PERIOD, NO.

Q. WELL, YOU DID SEE SOMETHING THAT SUGGESTED IT CHANGED RIGHT HERE ON THE MARCH 24TH, 1975 REPORT, DIDN'T YOU?

A. BUT I HAD OTHER INFORMATION AND TESTIMONY THAT SUGGESTED IT HADN'T CHANGED.

Q. THAT IS WHAT I'M ASKING YOU FOR RIGHT NOW. WHAT IS THE OTHER PIECE OF INFORMATION THAT SUGGESTED IT HADN'T CHANGED?

A. THERE IS TESTIMONY BY EUGENE JONES THAT HE CLEARLY WALKS THROUGH ALL THE PROCESSES IN CONJUNCTION WITH THE VAN ERT STUDY AND TALKS ABOUT THE DIFFERENT PRODUCTION PROCESSES AND MATERIALS THAT WERE USED. AND HE SPECIFICALLY SAYS IN MOST OF THOSE INSTANCES THAT THERE HAD NOT BEEN ANY CHANGE DURING HIS TENURE AT THE

FACILITY.
Q. WHAT MR. JONES SAID IS THEY WERE STILL USING 356; ISN'T THAT CORRECT? THIS IS STILL 356, ISN'T IT?
A. RIGHT, BUT HE --
Q. MR. JONES DENIED EVEN KNOWING WHAT THE BENZENE CONTENT OF 356 WAS, DIDN'T HE?

A. I'M NOT AWARE THAT HE DENIED THAT. THERE IS --
Q. AT THE TIME DIDN'T HE SAY HE DID NOT HAVE AN UNDERSTANDING IN 1972, '73 AND '74 OF THE BENZENE CONTENT OF 356; THAT HE LEARNED THAT LATER?
A. I DON'T RECALL THAT.
Q. THIS IS AN IMPORTANT FACTOR IF THE BENZENE CONTENT 356 IS THE DOMINANT BENZENE-CONTAINING PRODUCT AT SALINAS, ISN'T IT?
A. IT IS DEFINITELY ONE OF THE MAJOR PRODUCTS THAT WAS USED, YES.
Q. THEY WERE USING APPROXIMATELY 250,000 GALLONS OF THIS PRODUCT A YEAR; ISN'T THAT CORRECT?
A. I HAVEN'T SEEN THE FIGURES, BUT --
Q. YOU DIDN'T SEE THE SHIPPING RECORDS FOR CHEVRON PRODUCTS THAT MET THIS CODE SPEC?
A. I MAY HAVE SEEN THEM, BUT I DON'T REMEMBER WHAT THE NUMBERS WERE.
Q. OKAY. AND, IN FACT, IN COMPARISON TO 374 AND THESE OTHER SOLVENTS -- OH, THAT IS ANOTHER THING I WANTED TO SHOW YOU. DO YOU KNOW WHAT 332 IS?
A. THAT IS MY UNDERSTANDING THAT IS COMPARABLE TO

THE 356.

Q. IN FACT, MR. WILSON AND MR. JONES, AND I THINK MR. HELMS, ALL TESTIFIED THAT 356 AND 332 WERE THE SAME THING.

A. I RECALL SEEING THAT FROM SOMEONE'S TESTIMONY, YES.

Q. AND ALSO IN MARCH OF 1975 IT IS BEING REPORTED

AT HALF A PERCENT BENZENE CONTENT; ISN'T THAT CORRECT?

A. YES.

Q. IF, IN FACT, THE BASIC RUBBER SOLVENT BEING USED AT SALINAS WHEN VAN ERT DID HIS TESTING IS .5 PERCENT INSTEAD OF 1-AND-A-HALF PERCENT, THAT DRAMATICALLY AFFECTS HOW YOU COULD APPLY THOSE IN A BACKWARD MANNER; ISN'T THAT CORRECT?

A. IF AT THE TIME THAT THE VAN ERT -- I THINK THIS IS WHAT YOU ARE ASKING. IF AT THE TIME THE VAN ERT STUDY WAS CONDUCTED THERE WAS A DIFFERENT PERCENTAGE OF BENZENE IN ALL OF THE PRODUCTS THAT WERE USED, THEN ALL OF THE PRODUCTS THAT WERE USED DURING HOOPER'S EMPLOYMENT, THEN I WOULD SAY THAT THE CONCENTRATIONS WOULD BE DIFFERENT.

Q. OKAY. WHAT YOU SAID IS THAT THE -- ACROSS-THE-BOARD OF THE 10 OR 11 PLANTS, THERE WAS MORE OR LESS CONSISTENCY IN THE VAPOR RELEASE; IS THAT CORRECT.

A. THEY WERE CONSISTENT WITH THE VAN ERT STUDIES IS WHAT I SAID, YES.

Q. AND IF YOU LOOK AT EXHIBIT 1292. IT IS A

DEFENSE EXHIBIT THAT YOU HAVE THERE.

DID YOU GIVE HER 1292?

THIS IS ANOTHER VAN ERT REPORT OF THE -- THIS IS ACTUALLY THE BASIS OF THE PUBLISHED STUDY; IS THAT CORRECT?

A. I WOULD HAVE TO LOOK AT IT FOR A FEW MINUTES. I DON'T --

Q. OKAY.

A. IF YOU WANT TO -- DO YOU WANT ME TO JUST TO TAKE YOUR WORD ON IT, I WILL.

Q. TAKE A QUICK LOOK. IT HAS THE SAME TABLES, THE SAME GRAPHS.

A. IT APPEARS THAT THERE IS MORE INFORMATION PERHAPS IN THIS THAN THE PUBLISHED PAPER.

Q. RIGHT.

A. BUT IT DOES LOOK LIKE THERE IS SOME DATA THAT LOOKS LIKE IT IS PROBABLY THE SAME.

Q. DO YOU REMEMBER YOU BROUGHT THIS TO YOUR DEPOSITION?

A. I'M SURE I DID. I BROUGHT EVERYTHING WITH ME.

Q. OKAY. LOOK AT TABLE 5 TOWARDS THE BACK. IT IS ABOUT FIVE OR SIX PAGES.

A. OKAY. I HAVE IT.

Q. DO YOU SEE THE BENZENE CONTENT OF THE BASIC RUBBER SOLVENTS?

MR. RIFF: I'M GOING TO OBJECT, YOUR HONOR, TIME RELEVANCE. THIS IS 1977.

THE WITNESS: THESE ARE NOT SALINAS, I DON'T THINK.

THE COURT: HOLD ON JUST A SECOND. THERE IS AN OBJECTION.

THE WITNESS: SORRY.

THE COURT: TIME RELEVANCE.

MR. RIFF: TIME RELEVANCE.

THE COURT: AND YOUR RESPONSE?

MR. HARLEY: MY RESPONSE SHE RELIED ON THIS IN FORMULATING THE BASIS OF HER OPINIONS THAT THE VAN ERT STUDIES WERE RELIABLE.

THE COURT: THE OBJECTION IS OVERRULED.

Q. (MR. HARLEY:) EACH OF THE BENZENE CONTENT OF THE RUBBER SOLVENTS REPORTED IN TABLE 5 IS LOWER THAN 1-AND-A-HALF; ISN'T THAT CORRECT?

A. THAT IS CORRECT.

Q. AND TWO OF THEM ARE, IN FACT, AT .5.

A. ONE IS AT .5 AND ONE IS AT .55.

Q. AND ONE IS ALMOST 1 AND ONE IS SLIGHTLY OVER 1 AND ONE IS SLIGHTLY OVER 73; IS THAT CORRECT?

A. YES.

Q. THESE WOULD AVERAGE ABOUT HALF OF THE BENZENE CONTENT AT 356 IN USE FROM '72 TO '75.

A. IN USE IF YOU ASSUME 1.5 PERCENT, YES.

Q. YOU DID ASSUME FOR YOUR PURPOSES IT WAS 1.5 PERCENT, DIDN'T YOU?

A. FOR MY CALCULATION IN THE CATALYTIC SHOP.

Q. WELL, YOU ASSUMED WHEN YOU INTERPRETED THE VAN

ERT STUDY AND APPLIED IT TO THE TIRE PLANT GENERALLY THAT THE VAN ERT STUDY WAS MEASURING RUBBER SOLVENTS THAT HAD 1-AND-A-HALF PERCENT BENZENE, WEREN'T YOU? DIDN'T YOU MAKE THAT BASIC ASSUMPTION?

A. NO, I MADE THE ASSUMPTION THAT THE VAN ERT STUDY WAS MEASURING CONDITIONS, WHATEVER THEY HAPPENED TO BE.

Q. WELL --

A. I MEAN, I HAVE ALWAYS SAID THERE WAS SOME REPORTED RANGE IN THE BENZENE CONCENTRATIONS AND THE MAXIMUM WAS 1-AND-A-HALF PERCENT.

Q. AND, IN FACT, THE MAXIMUM OF THE RANGE THAT YOU REPORTED WAS 1.9 PERCENT, WASN'T THAT CORRECT?

A. EARLIER THAN THE TIME PERIOD OF INTEREST, IF YOU WANT TO INCLUDE THAT EARLIER DATE, THEN YES.

Q. OKAY. BUT WHAT HAPPENED TO BENZENE -- AND THIS IS REPORTED IN THE RUBBER LITERATURE IN THE MC MICHAEL'S STUDIES, IS THE BENZENE CONTENT STARTING IN THE MID-1970S, THE BENZENE CONTENT IN RUBBER SOLVENTS BECAME A MATTER OF CONCERN IN THE INDUSTRY. THAT IS WHY WE HAVE THE MC MICHAEL/VAN ERT STUDIES; ISN'T THAT CORRECT?

A. THAT WAS --

Q. PART OF THE REASON.

A. I'M NOT SURE I'M FAMILIAR WITH THE MC MICHAEL'S STUDY YOU ARE REFERRING TO.

Q. MC MICHAEL'S WAS THE LEAD EPIDEMIOLOGY

INVESTIGATOR THAT THESE DOSE ASSESSMENTS WERE USED TO SUPPORT THE ULTIMATE EPIDEMIOLOGY; ISN'T THAT CORRECT?

A. I HAVEN'T REVIEWED THE EPIDEMIOLOGY LITERATURE FOR THIS CASE, SO I DON'T WANT TO --

Q. AND THAT, IN FACT -- WELL, WHAT YOU ARE -- IF, IN FACT, THE BASIC RUBBER SOLVENT IN USE AT THE TIME OF THE VAN ERT STUDY HAD ONE-THIRD THE BENZENE AS THE RUBBER SOLVENT IN USE EARLIER, THEN THAT MEANS ALL OF HIS MEASUREMENTS, AT LEAST REGARDING BENZENE, COULD BE

MULTIPLIED BY A FACTOR OF 3 TO GET A REASONABLE ESTIMATE OF WHAT THE EXPOSURES WERE EARLIER, DOESN'T IT?

A. I WOULDN'T MAKE A CALCULATION THAT WAY, NO.

Q. WELL, THEN, ON THE OTHER HAND, WOULD YOU JUST HAVE TO DISCARD THE VAN ERT?

A. I WOULDN'T -- WOULD NOT THINK THEY WOULD GIVE YOU THE SAME CONCENTRATION. I DON'T KNOW THAT I WOULD DISCARD THEM ON ONE HAND. BUT, ON THE OTHER HAND, I DON'T KNOW THAT I COULD JUST MAKE A BLANKET CLAIM AND MULTIPLY THEM ALL BY 3.

Q. WHEN YOU DID YOUR ROOM CONCENTRATION ANALYSIS AND YOU -- I'M GOING TO GO THROUGH THIS LATER, BUT YOU WENT THROUGH THIS WHOLE THING AND FOR THE MATERIAL THAT WAS .02 YOU ENDED UP FINDING THAT IF IT WAS .02 IN THE MATERIAL, IT WAS .02 IN THE AIR. ISN'T THAT HOW IT TURNED OUT?

A. IT TURNED OUT THAT WAY, BUT IT IS NOT --

Q. AND WHEN IT WAS 1.5 IN THE MATERIAL, IT TURNED

OUT TO BE 1.5 IN THE AIR; ISN'T THAT CORRECT?
A. BY HAPPENSTANCE IT TURNED OUT TO BE THE SAME NUMBER.
Q. AND, SO, YOU ARE SAYING THAT IF IT WAS .5 IT WOULDN'T HAVE TURNED OUT TO BE .5 IN THE AIR?
A. IN THAT EXAMPLE IT WOULD HAVE BEEN REALLY LINEAR.
Q. WHAT YOU WERE GIVING AS AN EXAMPLE, WHAT YOU WERE CALCULATING IS THE RELEASE OF BENZENE FROM A

MIXTURE OF A SOLVENT; ISN'T THAT CORRECT?
A. RIGHT, BUT THERE ARE OTHER PARAMETERS THAT GO INTO THAT ASSESSMENT.
Q. RIGHT. ONE OF THE -- BUT I'M TRYING TO FIGURE OUT IS IF, IN FACT, THE SOLVENTS IN USE VAN ERT'S, THE BASIC RUBBER SOLVENT, 356 WAS .5 PARTS PER MILLION, HOW CAN YOU TAKE HIS RAW NUMBERS OF BENZENE CONCENTRATIONS AND APPLY THEM TO MR. HOOPER?
A. IT WAS NOT MY UNDERSTANDING THAT THEY HAD CHANGED OVER THAT TIME PERIOD AND THAT IS WHY I RELIED UPON THE DATA.
Q. I UNDERSTAND THAT, BUT I'M ASKING YOU NOW TO MAKE AN ASSUMPTION. ASSUME, IN FACT, THE DOCUMENTS, CHEVRON'S M.S.D.S.S ARE, IN FACT, CORRECT, AND THAT BY 1975 THEY HAD REDUCED THE BENZENE CONTENT IN THE BASIC RUBBER SOLVENT TO .5 PERCENT.
A. UH-HUH.
Q. I'M GOING TO ASK YOU TO MAKE THAT ASSUMPTION,

AND I'M GOING TO ASK YOU TO ASSUME THAT THOSE WERE THE MATERIALS IN USE WHEN DR. VAN ERT DID HIS STUDIES. DO YOU STILL BELIEVE THAT YOU CAN TAKE THE RAW BENZENE NUMBERS AS A BASIS FOR MR. HOOPER'S EXPOSURE IN '72 TO '74?

A. I WOULDN'T RELY ON THOSE NUMBERS BY THEMSELVES.

Q. NOW, SECONDLY, THE OTHER THING YOU HAVE TO CONSIDER -- SO, ONE OF THE ASSUMPTIONS YOU MADE WAS BENZENE CONTENT OF 356, YOU ASSUME 1.5 PERCENT MAY HAVE BEEN .5 PERCENT. IS THAT FAIR?

A. I DIDN'T MAKE ASSUMPTIONS THAT IT MAY HAVE BEEN .5 PERCENT SPECIFICALLY.

Q. NO, YOU ASSUMED IT WAS 1.5 PERCENT OR IN THAT RANGE WHEN HE DID HIS MEASUREMENTS, DIDN'T YOU?

A. NO, WE JUST TALKED ABOUT THAT. I ASSUMED THAT IT WAS WHATEVER IT WAS AND THERE WAS SOME RANGE, BUT THE MAXIMUM SPECIFICATION AT THE TIME WAS 1.5 PERCENT.

Q. OKAY. YOU SAY THAT IN YOUR REPORT TOO, THAT FIRESTONE HAD A MAXIMUM SPECIFICATION OF 1.5 PERCENT.

A. THAT WAS MY UNDERSTANDING BASED UPON A REVIEW OF THE MATERIALS, YES.

Q. IN FACT, AT THE TIME WASN'T THE SPECIFICATION FOR RUBBER SOLVENTS A MAXIMUM AROMATIC HYDROCARBON CONTENT OF 5 PERCENT?

A. I THINK THAT MAY HAVE BEEN ANOTHER SPECIFICATION.

Q. WOULD YOU SHOW ME THE DOCUMENT OR A DATED DOCUMENT BEFORE JANUARY 1975 WHERE THE MAXIMUM BENZENE

CONTENT BY FIRESTONE OF ANY RUBBER SOLVENT WAS SPECIFIED?

A. I DON'T KNOW IF I HAVE A MEMO OR A DOCUMENT TO THAT EFFECT.

Q. OKAY. YOU RECEIVED THE '72 TO '73 AIR MEASUREMENTS, FOR LACK OF A BETTER WORD, MADE BY FIRESTONE OF VAPORS; ISN'T THAT CORRECT?

A. I OBTAINED THAT DOCUMENT MYSELF.

Q. AND THOSE DOCUMENTS --

A. OH, I'M SORRY.

Q. BY WILSON AND HIS INDUSTRIAL HYGIENE TEAM, YOU SAW THEY WENT OUT ON A COUPLE, THREE OCCASIONS AND MADE TOTAL VAPOR MEASUREMENTS. THAT WAS GIVEN TO YOU.

A. I MISUNDERSTOOD. MAYBE YOU CAN GO BACK. I WAS THINKING OF THE '73 TO '77 STUFF.

Q. YEAH. NO, I'M TALKING ABOUT DURING '72 THROUGH '74.

A. OKAY.

Q. DO YOU RECALL BEING PROVIDED WITH FIRESTONE DOCUMENTS WHICH SHOWED THEIR INDUSTRIAL HYGIENISTS WERE TAKING TOTAL VAPOR MEASUREMENTS?

A. THESE ARE THOSE SALINAS PLANT --

Q. RIGHT.

A. -- REPORTS, YES.

Q. SALINAS PLANT I.H. SURVEYS.

A. WHATEVER IT WAS CALLED. IT HAD THE DATE ON IT, YES.

Q. DID YOU HAPPEN TO NOTICE THEY TOOK SEVERAL DATA POINTS THAT WERE EXACTLY THE SAME DATA POINTS AT LEAST BY DESCRIPTION AS DR. VAN ERT?

A. DO YOU MEAN SAMPLES IN THE SAME TYPE OF LOCATION?

Q. YES.

A. AND PROCESS?

Q. LIKE A NUMBER 10 TUBER.

A. SURE.

Q. OKAY. DID YOU COMPARE THEM?

A. NO, THEY WERE IN -- ONE WAS IN BENZENE AND ONE

WAS TOTAL HYDROCARBON.

Q. WELL, IN AT LEAST SEVERAL INSTANCES DR. VAN ERT DOES REPORT TOTAL VAPOR CONCENTRATION AND I THINK HE EXPLAINS IT IN HIS DEPO. HE CALLS IT IN HEXANE TOTAL VAPOR. DO YOU REMEMBER THAT?

A. I DO.

Q. DID YOU COMPARE THEM?

A. I DID NOT.

Q. THAT MIGHT GIVE YOU AN IDEA OF WHETHER THE METHODS IN USE IN JULY OF '75 WERE THE SAME AS THE METHODS IN USE OF 1973 OR '74, WOULDN'T THEY?

A. IF THE SAMPLE IS COLLECTED IN THE SAME MANNER AND AT THE SAME LOCATION AND FOR THE SAME PERIOD OF TIME, YES, IT MIGHT.

Q. WELL, DO YOU REMEMBER READING DOCUMENTS OF EXPLOSIVE LEVELS OF VAPORS IN THE AREA OF THE NUMBER 10 TUBER DRIP PAN?

A. I DO.
Q. DID VAN ERT REPORT THAT THERE EVEN EXISTED SUCH A THING AS A DRIP PAN ON THE NUMBER 10 TUBER?
A. I DON'T RECALL HIM MENTIONING THAT, NO.
Q. IN FACT, THERE IS A 1974 MEMO, IN LATE '74, I THINK IT IS DECEMBER OF '74, INDICATING THAT THAT PROBLEM WAS BEING CORRECTED; ISN'T THAT CORRECT?
A. NO, I ACTUALLY NEVER SAW A FOLLOW-UP ABOUT THE DRIP PAN MEMO, WHICH OCCURRED BEFORE MR. HOOPER'S EMPLOYMENT.
Q. DID YOU SEE THAT IN THE BEAD ROOM THERE WERE

CORRECTIONS MADE -- DID YOU UNDERSTAND THAT THERE HAD BEEN A SUBSTITUTION OF SOLVENTS IN THE BEAD ROOM FROM WHAT WAS USED IN '74 TO WHAT WAS USED IN '75?
A. I WOULD HAVE TO LOOK AT DOCUMENTS TO REFRESH MY MEMORY. I'M NOT SURE.
Q. DO YOU RECALL THAT DR. VAN ERT DESCRIBED IN THE BEAD DIP OPERATION -- I'M NOT CALLING -- THERE IS A BEAD MANUFACTURER OPERATION, THAT IS SEPARATE. BEAD DIP OPERATION HE DESCRIBED A DIP TANK WITH A SILICONE-BASE SOLVENT AND THEN WITH A PETROLEUM-BASE SOLVENT. DO YOU REMEMBER THOSE TWO DIFFERENT DIP TANKS?
A. I THINK YOU MIGHT BE REFERRING TO THE DOPER AREA AND NOT --
Q. NO, I'M TALKING ABOUT THE BEAD ROOM. THE DIP TANKS IN THE BEAD ROOM.

A. THEN I'M NOT SURE. I WOULD HAVE TO LOOK BACK AT THE DOCUMENTS. I DON'T RECALL THAT.

Q. DO YOU RECALL IN THE DOCUMENTS THAT MR. JONES AND MR. WILSON DECIDED TO SUBSTITUTE A SILICONE-BASED DIP FOR A SOLVENT-BASED DIP IN THE BEAD ROOM AND THIS WAS DONE IN EARLY '75?

A. I JUST DON'T RECALL. IF YOU WANT TO SHOW ME SOMETHING, THAT WOULD BE GREAT.

Q. I'M GOING TO SHOW YOU WHAT HAS PREVIOUSLY BEEN MARKED AS 119, WHICH IS A --

CAN YOU BRING THAT UP, PLEASE?

MS. MISLUK: UH-HUH.

Q. (MR. HARLEY:) WHICH HAS BEEN ADMITTED. AND I'M GOING TO ASK YOU TO LOOK AT THE NUMBER 2 -- THERE IS A WHOLE BUNCH OF STUFF ON HERE.

A. OKAY.

Q. BUT I JUST WANTED TO GO TO --

WOULD YOU GO TO THE THIRD PAGE?

AND IT IS TALKING AT THE END OF ABOUT THE BEAD INSERT OPERATION AND PROBLEMS WITH A SOLVENT MIXTURE. DO YOU SEE THAT, R.P. 4732; DO YOU SEE THAT?

A. YES.

MR. HARLEY: THEN GO TO THE NEXT ONE. THE NEXT PAGE, TOP OF THE PAGE.

Q. THIS IS A WATER-BASED MATERIAL WHICH CAN BE USED INSTEAD, AND WOULD ELIMINATE THE HAZARD. DO YOU SEE THAT?

NEXT PAGE. IT IS RIGHT ON THE PAGE WITH THE

SIGNATURE.
A. I'M JUST LOOKING AT THE DATE OF THIS, WHICH IS FEBRUARY OF '75.
Q. RIGHT. FEBRUARY OF '75.
A. I WAS TRYING TO FIND THE BEGINNING.
Q. THAT IS EXACTLY WHAT I'M TRYING TO DRAW YOUR ATTENTION TO.
AFTER MR. HOOPER LEFT AND BEFORE VAN ERT ARRIVED, THERE WERE CORRECTIONS BEING MADE TO THE PLANT TO REDUCE EXPOSURES OF ALL KINDS; ISN'T THAT CORRECT?
A. WELL, THIS IS THE R.P. 4732, WHICH IS THE ISOPROPYL ALCOHOL.

Q. NO, THAT IS NOT THE ISOPROPYL ALCOHOL.
MR. RIFF: WELL, HE IS ARGUING WITH THE WITNESS. THERE IS A CODE BOOK.
THE COURT: IT IS NOT CLEAR TO ME WHETHER THE DISCREPANCY RELATES TO NOT LOOKING AT THE SAME ITEM OR SOMETHING ELSE, SO LET'S CLARIFY.
MR. HARLEY: OKAY.
THE WITNESS: IT CARRIES OVER TO THE NEXT PAGE.
Q. (MR. HARLEY:) IT CARRIES OVER TO THE NEXT PAGE AND IT IS SEPARATED.
IT IS YOUR -- I WON'T SAY IT.
MR. RIFF -- YOU BELIEVE THAT THAT SOLVENT IS ISOPROPYL ALCOHOL; IS THAT CORRECT?
A. THAT IS MY UNDERSTANDING.

Q. OKAY. DID YOU REVIEW WHETHER CORRECTIONS WERE MADE TO THE 10-10 TUBER AREAS TO REDUCE LEVELS OF EXPOSURE BY ADDING ADDITIONAL VENTILATION?

A. I THINK THERE WERE SOME MEMOS THAT INDICATED THROUGHOUT THERE WERE RECOMMENDATIONS TO INCREASE CAPTURE VELOCITY VENTILATION AT SPECIFIC UNITS. I DON'T RECALL THE EXACT TIME PERIODS OF WHEN THAT WAS RECOMMENDED VERSUS WHEN THOSE CHANGES WENT INTO EFFECT.

Q. BY THE WAY, HOW MANY OF THE AREAS WHERE THERE WERE EXCESSIVE -- EXCESSIVE VAPOR CONCENTRATIONS FOUND BY WILSON'S TEAM WERE CORRECTED BEFORE THE ARRIVAL OF DR. VAN ERT?

A. I'M NOT SURE I UNDERSTAND THAT QUESTION. HOW

MANY WERE CORRECTED?

Q. YES.

A. I DON'T -- I HAVEN'T SEEN ANYTHING THAT SUGGESTED WHAT WAS CORRECTED AND WHAT WASN'T IN TERMS OF THE VAPOR CONCENTRATIONS.

Q. DO YOU REMEMBER SEEING AN APRIL '72 MEMO FROM WILSON CONCERNING VENTILATION AND VENTILATION DEFICIENCIES WHERE HE SAID THE SITUATION IS OUT OF HAND, DESCRIBING THE PROBLEMS WITH VENTILATIONS?

A. I WOULD HAVE TO LOOK AT THE MEMO.

Q. YOU ALSO TOLD ME DURING -- YOU DIDN'T TELL ME. I ACTUALLY HAVE NEVER GOTTEN TO MEET YOU UNTIL THIS TRIAL OUT IN THE HALLWAY; ISN'T THAT CORRECT?

A. THAT IS CORRECT.

Q. YOU TOLD MY ASSOCIATE KELLY MC MEEKIN THAT YOU

BELIEVED THAT THE FACILITY AT SALINAS -- LET ME SEE IF I CAN -- WAS DRAFTY AND WINDY INSIDE. DO YOU REMEMBER THAT?

A. THERE WAS TESTIMONY BY FORMER WORKERS SUCH AS MR. HELM SUGGESTING OR INDICATING THAT AREAS SUCH AS THE TIRE BUILDING SECTION WAS LIKE A WIND TUNNEL.

Q. YEAH. AND MR. HELM ACTUALLY SAID THAT A COOL OCEAN BREEZE FLOWED THROUGH THIS FACILITY; ISN'T THAT WHAT HE SAID?

A. I DON'T REMEMBER THAT SENTENCE, BUT I HAVE THE FEELING LIKE A WIND TUNNEL AND THE WINDOWS ARE FREQUENTLY OPENED.

Q. SO YOU CONCLUDED FROM THAT THAT THE VENTILATION

WAS GOOD OR ADEQUATE AND THAT IT WAS DRAFTY AND WINDY AT TIMES. ISN'T THAT YOUR CONCLUSION; THAT IS WHAT YOU TOOK OUT OF IT?

A. I THINK I REPORTED WHAT I HAD READ BASED ON THAT TESTIMONY AND ALSO THE TESTIMONY OF SAFETY JONES, WHO INDICATED THAT THERE WAS -- HE DID ROUTINE CHECKS THROUGH THE FACILITY AND THAT THERE WAS ADEQUATE VENTILATION IN THE FACILITY.

Q. WHAT DO YOU BELIEVE THE AVERAGE TEMPERATURE WAS IN THE FACILITY?

A. SOME OF THE DEPOSITION TESTIMONY BY -- I CAN'T REMEMBER WHETHER IT WAS MR. JONES OR MR. JAZWIN OR MR. HELM, SUGGESTED IT WAS AT TIMES IN THE 60S OR 70S AND OTHERS SUGGESTED IT WAS COLDER IN THE WINTER AND

HOTTER IN THE SUMMER. I HAVEN'T SEEN ANY ACTUAL TEMPERATURE, REPORTED TEMPERATURE DATA FOR THE FACILITY.

Q. I'M HAVING A NAME BLOCK RIGHT NOW, BUT DID YOU REVIEW THE TESTIMONY OF THE SALINAS EMPLOYEE WHO CAME AND EXPLAINED TO US ALL HOW THEY MADE TIRES IN SALINAS?

A. MR. NEWELL?

Q. MR. NEWELL.

A. I DID.

Q. OKAY. DID YOU HEAR HIM SAY THAT THE TEMPERATURES IN THERE WERE HOT?

A. I BELIEVE HE DID SAY THAT.

Q. IN FACT, IT IS DESIRABLE TO AT LEAST HAVE IT VERY WARM TO PRESERVE THE TACKINESS AND MALLEABILITY OF

THE RUBBER DURING THE MANUFACTURING PROCESS; ISN'T THAT CORRECT?

A. I THINK HE SAID THAT, YES.

Q. DOESN'T THAT SEEM LOGICAL TO YOU?

A. HUM -- SURE.

Q. AND --

A. BUT I ALSO READ MEMOS THAT SUGGESTED IT WAS COOL AT TIMES AND IT WASN'T THAT TACKY.

Q. DR. VAN ERT, WHAT DID HE MEASURE THE TEMPERATURE TO BE?

A. I DON'T RECALL HIM REPORTING THAT.

Q. HE REPORTED THE VENTILATION WAS ALL IN GOOD SHAPE AND IN GOOD WORKING ORDER WHEN HE WAS THERE, DIDN'T HE?

A. I'M NOT SURE, BECAUSE THERE WAS -- I'M NOT SURE EXACTLY WHAT HE SAID ABOUT THAT. I KNOW THERE WAS FOLLOW-UP CORRESPONDENCE AFTER HIS VISIT OF WHICH THERE WERE MANY RECOMMENDATIONS, SOME OF WHICH WERE TO IMPROVE VENTILATION IN CERTAIN AREAS.

Q. YEAH, HE CERTAINLY SUGGESTED IN TWO OR THREE AREAS TO ADD VENTILATION, BUT WHAT WAS THERE HE DESCRIBED WAS IN GOOD ORDER.

A. PERHAPS. I WOULD HAVE TO LOOK AT HIS TESTIMONY AGAIN TO LOOK AT HIS WORDING.

Q. BUT IN ORDER TO DECIDE HOW MUCH WEIGHT TO GIVE TO THE VAN ERT STUDY, YOU HAVE TO MAKE AN INDEPENDENT JUDGMENT AS TO HOW COMPARABLE THE CONDITIONS WERE WHEN MR. HOOPER WAS THERE DAY IN AND DAY OUT AS COMPARED TO

DR. VAN ERT'S TWO OR THREE DAYS AT THE FACILITY; ISN'T THAT CORRECT?

A. YES.

Q. AND YOU UNDERSTOOD THAT ALL OF THE VAN ERT INSPECTIONS, ALL THE NORTH CAROLINA INSPECTIONS TO ALL OF THE FACILITIES WERE ANNOUNCED WELL IN ADVANCE.

A. I DON'T KNOW WHAT "WELL IN ADVANCE" IS. I BELIEVE I READ SOMETHING THAT THEY KNEW THEY WERE COMING.

Q. AND DID YOU NOTE THAT HE MADE NO NOTES OF POOR HOUSEKEEPING AT THE PLANT? DID YOU SEE THAT? HE MADE NO COMMENT ON THAT.

A. I WOULD HAVE TO GO BACK AND LOOK TO SEE IF THAT

IS TRUE.

Q. DID YOU SEE THE TESTIMONY BY HOOPER, RYAN, NEWELL, AND THE WORKER COMPLAINTS THROUGHOUT '74 AND '75 ABOUT POOR HOUSEKEEPING AT THE PLANT?

A. I DON'T THINK I READ ANYTHING RELATED TO WORKER COMPLAINTS, BUT CERTAINLY I READ THE DEPOSITION OF THE OTHER PEOPLE THAT YOU MENTIONED.

Q. DID YOU READ THAT THE SKYLIGHTS WERE MAINTAINED AS CLOSED?

A. ONE PERSON, AT LEAST, TESTIFIED TO THAT.

Q. ONE PERSON NOT ONLY TESTIFIED TO THAT, HE TESTIFIED THAT HE COMPLAINED ABOUT IT; ISN'T THAT CORRECT?

A. I DON'T REMEMBER WHETHER HE SAID HE COMPLAINED ABOUT IT.

Q. DO YOU KNOW WHETHER THOSE SKYLIGHTS WERE FUNCTIONING WHEN VAN ERT WAS THERE?

A. I DON'T KNOW.

Q. IS THERE LITERATURE ON BENZENE-CONTAINING SOLVENT SPILLS OR GASOLINE SPILLS?

A. THAT MIGHT BE REPORTED IN CERTAIN PAPERS.

Q. DID YOU LOOK FOR SUCH LITERATURE?

A. FOR GASOLINE SPILLS, NO, NOT IN THIS CASE.

Q. OR FOR SOLVENTS WITH 1-AND-A-HALF, 2 PERCENT TYPE LEVELS OF SOLVENTS CONTAINING BENZENE.

A. I DON'T BELIEVE I DID A SPECIFIC LITERATURE SEARCH FOR BENZENE SPILLS.

Q. FOR INSTANCE, WHEN YOU WERE TRYING TO LOOK FOR

RAILROAD CAR INFORMATION YOU ACTUALLY LOOKED AT GASOLINE INFORMATION BECAUSE THEY ARE KIND OF COMPARABLE TO THE SOLVENTS; ISN'T THAT CORRECT?

A. I LOOKED TO WHATEVER WAS AVAILABLE. THEY JUST HAPPENED TO BE DEALING WITH THE TRANSPORT OF GASOLINE.

THERE WAS ONE STUDY THAT EXCLUDED THE TRANSPORT OF BENZENE MIXTURES THAT WAS NOT NECESSARILY GASOLINE, BUT THAT IS ALL THAT WAS AVAILABLE IN THE LITERATURE.

Q. DO YOU REMEMBER IN DR. VAN ERT'S REPORTS OF ONE HIS COMPLAINTS OF AN IMMEDIATE FIX WAS THAT THERE WAS A COUPLING CONNECTION PROBLEM ON THE SOLVENT BEING PIPED TO THE AUTOMATIC DOPER?

A. I THINK I DO RECALL SOMETHING LIKE THAT, YES.

Q. SO THERE WAS PIPING GOING TO THE AUTOMATIC DOPER.

A. I DON'T KNOW THAT THAT REFERRED TO THE PIPING IN WHAT WE THINK ABOUT PIPES GOING TO THE PLANT. I THINK THAT MIGHT HAVE BEEN TUBING JUST FOR THAT PARTICULAR NOZZLE OR INSTRUMENT.

Q. WHAT IS YOUR UNDERSTANDING OF HOW THIS AUTOMATIC DOPER GOT SOLVENTS TO SPRAY?

A. I'M NOT SURE WHAT IT WAS ATTACHED TO, BUT SOMETHING THAT WOULD HAVE CONTAINED THE SOLVENT. IT WAS NOT MY UNDERSTANDING THAT THAT WAS PIPED IN, ONLY BECAUSE I HAVEN'T READ ANYTHING TO THAT EFFECT.

Q. OKAY. AND DO YOU KNOW -- HOW MUCH EXPOSURE -- DID YOU MAKE ANY CALCULATION OF EXPOSURE OF

MR. HOOPER'S REPAIRING OF THE DOPER?

A. I DID NOT. HE DID NOT CLAIM TO DO THAT IN HIS ORIGINAL DEPOSITION TESTIMONY.

Q. LET'S TALK ABOUT THAT. MR. HOOPER WAS DEPOSED VERY EARLY IN THE LITIGATION; ISN'T THAT CORRECT?

MR. RIFF: OBJECTION, LACK OF FOUNDATION.

Q. (MR. HARLEY:) WELL, WHAT WAS THE DATE OF THE DEPOSITION YOU REVIEWED?

A. I WOULD HAVE TO LOOK IT UP. IT IS IN MY REPORT. I DON'T REMEMBER OFFHAND.

Q. WELL, DO YOU RECALL THAT DURING THE TIME OF HIS DEPOSITION HE WAS UNDERGOING CHEMOTHERAPY?

A. I DON'T RECALL THAT EITHER. I WASN'T LOOKING FOR THOSE SORTS OF DETAILS.

Q. APPROXIMATELY DECEMBER OF LAST YEAR. DO YOU RECALL THAT?

A. HUM --

Q. NOVEMBER MAYBE?

A. IT LOOKS LIKE I HAVE DECEMBER OF --

Q. 2003 OR 4?

A. 2004.

Q. YEAH.

A. AND -- YES, 2004.

Q. AND AT THAT TIME HE WAS BEING ASKED QUESTIONS, WERE ANY OF THESE DOCUMENTS PRESENTED TO HIM THAT YOU CAN REMEMBER?

A. ANY OF WHICH DOCUMENTS?

Q. ANY OF THESE DOCUMENTS THAT YOU GOT TO REVIEW.

A. OH, I DON'T KNOW WHAT HE HAD AVAILABLE TO HIM, NO.
Q. NOTHING LIKE THAT WAS ATTACHED TO HIS DEPOSITION, WAS IT?
A. NO, I DON'T ALWAYS GET THE ATTACHMENTS TO THE DEPOS. I DON'T RECALL WHAT I RECEIVED IN THAT REGARD.
Q. AND YOU MADE THE ASSUMPTION WHEN HE ONLY COULD COME UP WITH 60 PERCENT OF HIS TIME OR 65 PERCENT OF HIS TIME, YOU MADE THE ASSUMPTION HE REMEMBERED EVERYTHING HE DID, HE JUST DIDN'T ASSOCIATE ENOUGH TIME WITH EACH FUNCTION. ISN'T THAT THE ASSUMPTION YOU MADE?
A. YES, PRETTY MUCH.
Q. OKAY. A DIFFERENT CONCLUSION TO BE DRAWN FROM THAT IS HE -- THIS IS AS MUCH AS HE CAN REMEMBER HE DID, BUT THERE IS 35 PERCENT OF THE TIME HE IS DOING

THINGS HE CAN'T REMEMBER. ISN'T THAT ANOTHER INTERPRETATION OF THAT?
A. I SUPPOSE, BUT HE DIDN'T FRAME IT THAT WAY.
Q. WELL, ACTUALLY WHAT HE SAID AT THE VERY END OF HIS WHOLE LISTING IS "THAT IS ALL I CAN REMEMBER." ISN'T THAT WHAT HE SAID?
A. I DON'T REMEMBER IF THAT IS EXACTLY WHAT HE SAID, BUT I WILL TAKE YOUR WORD ON IT.
Q. AND DID HE EVER SAY THAT IS ABSOLUTELY EVERYTHING I DID, THIS IS AN EXCLUSIVE LIST OF WHAT I DID, I'M SURE I DIDN'T DO ANY OTHER THINGS?

A. I DON'T RECALL HIM SAYING THAT. I JUST RECALL THAT HE SAID THERE WASN'T ANYWHERE ELSE THAT HE WENT THAT HE SPENT MORE THAN 5 PERCENT OF HIS TIME.

Q. OKAY. AND IT IS NOT -- HAVE YOU DONE A LOT OF THESE INDIVIDUAL WORKER RECONSTRUCTIONS?

A. IT DEPENDS ON WHAT YOU MEAN BY "A LOT."

Q. HOW MANY OF SINGLE WORKERS?

A. SINGLE WORKERS. I DON'T KNOW IF I CAN COME UP WITH THAT NUMBER OFF THE TOP OF MY HEAD. I WOULD SAY IT IS DEFINITELY HAS BEEN -- ARE WE TALKING BENZENE ONLY OR ANYTHING?

Q. ANYTHING.

A. PROBABLY MORE THAN FIVE, LESS THAN 20.

THE COURT: LET ME PAUSE YOU HERE. UNLESS YOU ARE JUST ABOUT TO CONCLUDE WITH YOUR CROSS, WE WILL TAKE OUR AFTERNOON RECESS.

MR. HARLEY: WELL, YOU ARE GOING TO HAVE

REDIRECT ANYWAY, AREN'T YOU?

MR. RIFF: IF I SAY NO, WILL YOU LET HER GO?

MR. HARLEY: IF YOU SAY NO, I CAN FINISH IN LESS THAN FIVE MINUTES.

MR. RIFF: WELL, I'M GOING TO HAVE REDIRECT ANYWAY.

THE COURT: OKAY. LADIES AND GENTLEMEN, WE WILL TRY TO STICK TO OUR SCHEDULE AS BEST WE CAN SO WE WILL TAKE OUR RECESS.

9:30 TOMORROW. THE USUAL ADMONITION APPLIES.

HAVE A GOOD EVENING. THANK YOU.

(WHEREUPON, PROCEEDINGS WERE CONTINUED TO WEDNESDAY, AUGUST 3, 2005.)

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ROSE M. MILLER, CSR NO. 5041

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ALAMEDA

BEFORE THE HONORABLE ROBERT FREEDMAN, JUDGE

DEPARTMENT NO. 20

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DALE HOOPER Plaintiff, vs. CHEVRON U.S.A., Defendant.	)	No. RG-04171297

Pages 1940 through 2021

REPORTER'S TRANSCRIPT OF PROCEEDINGS

AUGUST 3, 2005; MORNING SESSION

1221 Oak Street, Oakland, CA

(Administration Building)

APPEARANCES: **(See inside)**

CERTIFIED COPY

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EXHIBIT	DESCRIPTION	FOR ID	RECEIVED
1320	Curriculum Vitae - Pamela R.D. Williams		1982
1490	4/2/75 Memo from G.L. Wilson		1985
1508	10/24/75 Specification: Code 356		1986
1760	5/25/77 Letter from Ireland re specifications for Codes 356 and 374		1987
1761	6/1/77 Letter from D.R. Jones re compliance		1988
1491	6/27/79 Memo		1989
1737	8/27/76 Firestone memo: Draft Report on Salinas Survey		2001

WEDNESDAY, AUGUST 3, 2005; MORNING SESSION

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P R O C E E D I N G S

THE COURT: Good morning, ladies and gentlemen. Welcome back. Welcome back, Dr. Williams. You remain under oath, of course, from yesterday's session.

And, Mr. Harley, I think you have a question or two left?

MR. HARLEY: Oh, I think a few more than that.

THE COURT: All right.

CROSS-EXAMINATION (Resumed)

BY MR. HARLEY:

Q. Good morning, Dr. Williams.

A. Good morning.

Q. I hope that by this morning I'm a little more rested and my questions are little more cogent than what they were yesterday. So I apologize if I was a little unorganized yesterday. Let's see if we can go through this in step wise today.

Dr. Wilson [sic], there are no measurements of maintenance personnel performing regular maintenance activities at the Salinas facility in the '72, '74 time frame; is that correct?

A. You said Dr. Wilson? I didn't catch that.

Q. No, no. There are no measurements, period, by anybody of the maintenance personnel doing their work in terms of vapor exposures or benzene exposures at all at Salinas.

A. I don't know that that's correct, because I believe

that Dr. Van Ert testified in his deposition, at least, that he thought there had been some measurements collected on in-flight personnel.

Q. Let me put it this way. For purposes of doing your reconstruction, did you find a single measurement recorded anywhere in the historical data that was available to you dated prior to February 1, 1975 of either a vapor or a benzene measurement while a maintenance worker at Salinas was doing their work?

A. I didn't recall seeing such a document, but that's not surprising to me.

Q. And we do know that, in fact, there were no measurements of Mr. Hooper actually doing his work.

A. That's correct.

Q. And because there were no measurements specific to Mr. Hooper at the time he was doing work during various activities, the best -- what you're trying to do is extrapolate from other data to estimate what you think his exposure was?

A. That's correct.

Q. And -- so, we have to go through -- you have to make -- using the data that was available, you have to make some assumption; isn't that correct?

A. Sure.

Q. There are no -- there are no benzene measurements, at least expressed in parts per million, for the Salinas facility prior to 1975, the Van Ert study; is that correct?

A. None that I saw. Although, I believe that "Safety

Jones" mentioned that they routinely sampled for benzene, but I didn't certainly see that reported data, but that those concentrations were less than the standard.

Q. Did you understand when "Safety Jones" said he sampled to see if there was benzene in the air, what he was doing is taking a little snapshot and saying yes or no, there's benzene in the air?

A. I don't recall if he specifically discussed the types of samples that he collected and the way you're describing them.

Q. Now, one of the source materials you used to try to reconstruct Mr. Hooper's exposure was the Van Ert study of July 1975.

A. Yes, that's correct.

Q. Specific to Salinas. And the first question you have to ask is: How applicable is that data to the time period three to four years earlier; isn't that correct?

A. Well, how applicable is it to the time period for Mr. Hooper which, as you said, went up to January of 1975.

Q. He worked there throughout 1973; isn't that correct?

A. That's correct.

Q. That's two and a half to three and a half years before the Van Ert study; isn't that correct?

A. Yes, that's correct.

Q. And then he worked for the first approximately nine months of 1974; isn't that correct?

A. That's my understanding.

Q. So a year to a year and a half before the Van Ert

study?

A. Correct. And then he worked again in early 1975.

Q. And four to six weeks in 1975, shortly -- six months before the Van Ert study, approximately, five to six months.

A. Yes.

Q. So, you have to decide how applicable this January -- July '75 data is to early '73 to late '73 to early '74 and early '75. Isn't that what you have to do?

A. Yes, that's correct.

Q. And one of the issues you have to satisfy you is that the benzene content of the solvents generating the exposures remain pretty much the same; isn't that correct?

A. That's within an order of magnitude or such, yes.

Q. An order of magnitude?

A. Well, I mean there is some variability in the data, so essentially it would fall within the range of the data, yes.

Q. Would you tell the jury what an order of magnitude means?

A. A ten-fold difference in concentrations.

Q. Okay. That isn't what I asked you. What I asked you was: You had to satisfy yourself that the benzene content of the solvent was especially the same. Now, when you say "concentrations," are you talking about the content of the solvent?

A. No, I'm sorry. I misunderstood.

Q. And so when I said "content," what degree of similarity were you looking for in the benzene content of the solvents when you made your extrapolations back to

Mr. Hooper?

A. I'm not sure I understand the question.

Q. I thought I heard you say yesterday that basically you assumed that the solvents, at least the standard rubber solvent, the 356 that was in use at the time of the Van Ert study, you assumed to be around 1.5 percent, approximately.

A. No, that's not what I said.

Q. Now I'm asking you the question. What did you assume it to be?

A. I didn't make any assumptions about what the solvent actually was during the time of the Van Ert study.

Q. How did you -- so you have no idea -- you made no assumption when you looked at the tire builder data as to which solvent was being used by the tire builder?

MR. RIFF: I'm sorry, technical objection. It's compound, no idea versus made no assumption.

MR. HARLEY: I thought I was correcting myself.

THE COURT: Break it down, please.

Q. **(By Mr. Harley)** When you looked at the Van Ert data on tire builders, what did you understand the tire builders were using as a, quote, Tackifier, end quote?

A. It was my understanding they were primarily using 356.

Q. And what did you understand, what did you assume the benzene content was for 356 in July of '75?

A. I didn't make any specific assumption about what that value was. I think maybe what you're asking is that I assumed it wasn't substantially different than what it was in the prior time periods.

Q. You did make that assumption.

A. Yes.

Q. So you assumed that the benzene content of the solvents in use in '73 and '74 were substantially the same as those in July of '75.

A. Were not substantially different.

Q. Now, my question is: What qualifies as substantial in your mind?

A. I don't know that I can give a specific percentage, but I did not see any discussion about changes in production processes, how the material was used, what the worker practices were or that the benzene content of the solution had changed in a significant way until much later in time in the late 1970s.

Q. Do you agree that in '73 and '74 there is good information, repeated information that the benzene content of 356 was approximately 1.5 percent?

A. I think there's some data sheets that say 1.5 percent and there are others that specify that as a maximum and there are others that specify less than that. They're not the same when it comes out of the refinery process and how much benzene is in any given solution.

Q. So, is it fair to say you didn't arrive at any conclusion as to what the specific benzene content was, you just concluded they were substantially the same.

A. Well, I would frame it as I concluded they were not substantially different.

Q. Not substantially different.

Now, my question is: If one was .5 percent benzene and one was 1.5 percent benzene, do you consider that a substantial difference?

A. I consider that a difference, yes.

Q. Do you consider that a substantial difference?

A. Maybe. It doesn't mean that I think it would affect the overall air concentrations per se, but I do think that .5 percent and 1.5 percent are obviously different.

Q. Did you assume, other than the benzene content, that there had been no significant product substitutions between the time Mr. Hooper worked and Van Ert did his study?

A. In terms of solution containing benzene, that's correct.

Q. Did you assume that the ventilation systems were substantially the same insofar as they were directed to vapor control?

A. I can't answer that with yes or no, but I can explain. I assumed that the ventilation in the facility as a whole was substantially the same. There are various memos that suggest specific hoods over specific tire-type equipment were changed at various points in time.

Q. What we're concerned with is the ventilation that is directed specifically at capturing and removing benzene containing vapors. That's what my question is about when I ask about ventilation.

What I'm asking is: In your opinion, was there any substantial difference between the ventilation directed at benzene vapors in '73, '74 versus when Van Ert did his study

in '75?

A. I would say there were some. I wouldn't necessarily classify that as substantial. It certainly wasn't any different prior to that time period versus after that time period.

Q. And can you tell me the changes that were made, what effect did it have in reducing the benzene vapors -- benzene-containing vapors, if at all?

A. If there were actual changes in ventilation near a particular equipment or where the solvent was being used in that immediate vicinity during the use of that solvent, obviously if it was improved ventilation you would expect there to be less vapors.

Q. Did you make any correction in your extrapolation in judging the exposures at Salinas in '73-74, the kind of benzene content in the room? Did you make any adjustment in that value based on improved ventilation?

A. No, I did not.

Q. At the time of the Van Ert measurements, the ambient conditions within the production facility, for instance, temperature, was the temperature average? Above average? Or below average?

A. Dr. Van Ert, from what I can remember, did not report what the temperature was. Since it was July, I figured it was probably on the warmer side than what it usually is for that facility.

Q. So you just assumed that it was warmer inside; is that correct?

A. I didn't make any specific assumptions one way or another. I took the data to represent the conditions at the time.

Q. What do you think probably has the greater effect on the interior room temperature of those facilities, the amount of production going on and curing and the amount of steam operation going on in the plant versus the outside temperature?

A. A greater effect on what?

Q. The interior temperature of the plant. What's going on in the plant or what the outside temperature is?

A. They're both a factor, I'm sure.

Q. Is there any indication in Van Ert's data, for instance, how many of the tire builder stations were actually in operation on the day he was there?

A. I don't remember if he specifically stated that.

Q. He took -- there's no statement of how many of the tire curing presses are in operation, is it?

A. I don't know. I'd have to look back to see whether he stated that or not.

Q. In fact, he took no vapor measurements in the tire curing areas, did he?

A. I don't think he did, because there wasn't a source present of the solvents. That's probably why he didn't take measurements in that area.

Q. Do you know whether there is reported literature measuring the vapor -- breaking down the vapor content released during the curing process?

A. Whether there's published data?

Q. Yes.

A. I'm not sure. I'd have to go back and look at the various studies.

Q. Can you describe the curing process, what they're doing?

A. Sure, they're taking the tire, called a green tire at that point, and they're basically heating it up so that it will end up being a final finished tire. It's a sort of -- my understanding, the tire is -- I don't know, it's contained, it's not just out in the open in terms of the heat. It's in a type of container and it's heated up to very hot temperatures so that you'll end up with the finished tire that looks more like the tire we're all familiar with, as opposed to this green tacky tire.

Q. Your understanding is the green tire is taken and there actually is a rubber bladder inflated inside of it that forces it into a mold while -- and then while they're cooking it. You understand that?

A. Uh-huh (affirmative response). Yes, thank you.

Q. That's called bulkinization.

A. Yes.

Q. Do you know what the purpose of the cooking is besides making the rubber hard?

A. Helps it maintain its shape and its form.

Q. It drives out all the solvents and other liquid materials contained in the tire; isn't that correct?

A. Yes, it does that too. It's in an enclosed process.

Q. Right before those tires are put in the curing, it's described they're swabbed inside and out with 356; is that correct?

A. Well, it's my understanding that's in a different department.

Q. Right. I understand. But it's put on the tire.

A. At least there's spray on the inside. For certain types of tires there was also sometimes a swabbing on the outside as well.

Q. The green tire doping is the operation -- the last operation before curing; isn't that correct?

A. That's my understanding.

Q. And the green tire doping has a guy actually sitting there with a mitt, a 356 mixed formula, it's not pure 356, it's about 80 percent or 90 percent 356, but assume that. And he's mixing it with a mitt right out there long the sidewalks; isn't that correct?

A. It's my understanding that someone was utilizing that practice for certain types of tires, not necessarily all of the tires.

Q. And then there's an automatic doper machine that in '73 and '74 was uncovered and sprayed a solvent solution both inside and outside the tire; isn't that correct?

A. That's not exactly my understanding of that process, no.

Q. Did you read Clay Ryan's description of that process?

A. I'm sure I did at one time, but I don't recall how his description might have differed from other people's

descriptions.

Q. Going back to the curing, we'll come back to doping later, the curing mechanism is driving off the solvents and other liquid materials in this compound. Where does that steam and solvent vapor go? How is it released?

A. I'm not sure of the exact venting mechanism that they have. I don't believe that it's just vented to the open air within that area.

Q. You didn't understand the molds just had very fine holes that allowed even the little rubber to extrude into nits and that the vapor escaped through the same holes?

A. Well, that probably happened while it was in the enclosed unit that it's in while undergoing the heat.

Q. And when you open the unit, what happens to all that vapor?

A. Well, I don't know what the process is between when they're finished with that versus when they open it, whether there's some ventilation in the interim that they do to capture that. I didn't see anything that went into those specifics.

Q. So without that knowledge, you made the assumption there are no benzene exposures in the curing area, didn't you?

A. No, I didn't make that assumption at all. Quite the contrary.

Q. Work practices.

Do you know if the doping processes changed from the time Mr. Ryan and Mr. Hooper worked on the doping nozzles

until the time Mr. Van Ert was there?

A. I don't know whether they changed or not. I do --

Q. Go ahead.

A. I do recall that "Safety Jones" mentioned at one point in his deposition that there were some minor changes, but I don't recall him giving a specific time period for when those occurred.

Q. Do you recall Dr. Van Ert describe that the automatic dopers, by the time he arrived there, were all enclosed processes, meaning they were within cabinets?

A. I'm not sure exactly how he described that, I'd have to go back and look.

Q. That's a big difference whether you're doing open-air spraying or closed-cabinet spraying of these solvents, isn't it?

A. It depends on what the processes were like and who was present and what material was being used.

Q. But you didn't investigate and answer all those questions you just listed that would be variables.

A. I did not.

Q. And then we get -- did you read Dr. Van Ert's deposition?

A. I did.

Q. Did you read about breakthrough?

A. I did.

Q. Have you ever done a charcoal tube measurement for benzene?

A. I have.

Q. You know what breakthrough is.

A. I do.

Q. And normally the standard practice is, if you have breakthrough you're supposed to go back and remeasure for shorter periods of time until you don't get breakthrough; isn't that correct?

A. Not necessarily. According to NIOSH and OSHA standards, you can have up to 25 percent breakthrough and it's still an acceptable measurement.

Q. Did you read Dr. Van Ert says what they did with breakthrough was discard the -- those measurements?

A. That's not what I recall him saying. I recall him saying he didn't recall that happening. And if it did happen, it wouldn't have been very often and he wasn't sure what happened to those measurements.

Q. The significance of that is that those would generally, because there is breakthrough, that's an indication that there's more benzene in the air?

A. Well, it's hard to say. It could be having breakthrough and if it's an acceptable value it might be the same as the other charcoal tubes that didn't have breakthrough.

Q. But you don't know unless you actually evaluate that data.

A. Those would not be valid samples to use, so you wouldn't know what those measurements were.

Q. An assumption you made was that the production workers at Salinas in '73 and '74 had an average exposure of one

part per million to benzene; isn't that correct?

A. On average, yes.

Q. Does Van Ert ever report that number? Does he ever say the average production worker in Salinas had a one part per million?

A. No, he didn't. I went back and looked at that based on your question yesterday. But if you take an average of the 22 samples which he collected, it equals one part per million. So I did that calculation myself.

Q. But taking the samples and average them assumes that every sample has equal value, doesn't it?

A. Well, I wasn't making that assumption explicitly, no. I was just trying to get an overall feel for what an average value might be.

Q. But that's in fact, when you average the value the implicit assumption that if you take a value for 17 minutes and it has X parts per million, and if you had a value for 60 minutes and it had Y parts per million, but you just average all the Y parts per million, you're ignoring the time difference of each different sample; isn't that correct?

A. It's not explicitly taken into account in this calculation, but it doesn't really matter for these purposes.

Q. In fact -- and then you assumed that actually the production workers would have the highest exposure in the plant; isn't that correct?

A. Compared to other people in the facility such as

pipefitter, yes.

Q. Dr. Van Ert reports on the basis of all his studies that essentially area samples, not taken next to the production workers, were about 25 percent higher than the production workers; isn't that correct?

A. Which paper are you referring to?

Q. I'm referring to the one we went over yesterday with the Van Ert summary of the 10 or 11 anonymous sites and the conclusion at the end where he said because benzene is of interesting concern we're reporting the average data for benzene separately. And it said, production workers had an average exposure of 1.06 and area samples were 1.23, do you remember that?

A. I do.

Q. That's about 25 percent higher, isn't it?

A. Right, but we really need to have an understanding of where the area samples were collected.

Q. The area samples were in the general area of where these use of solvents were going on: In the tuber area, in the cementer areas, in the doper areas, in the tire building areas; isn't that correct?

A. No, that's not my understanding.

Q. Where is your understanding?

A. My understanding is that the area samples were collected in the immediate vicinity of the worker and were meant to represent that worker's -- serve as an proximate for that worker's exposure along with the breathing samples. It wasn't meant to represent the general background or area

concentrations that might have been, say, ten or more feet from the source.

Q. What he did was he took workers in the area, who weren't actually using the solvents, and he measured those workers, some of whom were more than 10 feet away from the use of the cement; isn't that correct?

A. There were situations where he measured still production workers that were involved with the process.

Q. Right. But weren't actually using the solvents.

A. That might be the case, for example, with the booker if that's what you're thinking about, versus the cementer. But he's still working on the process line where this material that's just received the solvent is now right in front of him.

Q. Then you made the assumption Mr. Hooper had 20 percent of a production worker; is that correct?

A. That was in my first calculation, yes.

Q. And the -- Does Van Ert say that, that the maintenance people at Salinas working in the production areas had 20 percent of the production workers?

A. Van Ert just reported the data for which he collected and for those workers.

Q. And Van Ert, in his deposition, never said that he thought that Mr. Hooper's exposure was 20 percent of that of any of the production workers, did he?

A. I believe he said that it would have been a fraction less and perhaps substantially less than that of a production worker.

Q. He said in his opinion it might be less than a production workers. And I think he said there may be times under certain conditions it could be higher.

A. I don't think he said higher. I think he said the same as, based on the new testimony that came out later from Mr. Hooper, which is what I had said yesterday. And I agree with that statement.

Q. And then you said Mr. Hooper spent 60 percent of his time in the -- in the inside, basically, in the tire production areas either -- I think that's how you put, it in the tire production areas. How did you describe what this 60 percent represented?

A. I don't remember if it was exactly 60 percent or more than that, but I just said working throughout the general plant performing his general pipefitter duties.

Q. Throughout the general plant. Where did you come up with this 60 percent. Mr. Hooper never explicitly said that, did he?

A. No. He gave testimony about all the different locations he worked in the plant and then I tallied them up.

Q. And then what you did is you tallied that up and you extrapolated his 64 percent of his time, and you just took those activities and put it into 68 percent of the time, is that correct, into a hundred percent of the time?

A. Yes.

Q. I want to ask you just a kind of common sense question.

Have you ever had the experience of, for instance,

going back to your class reunion and running into somebody you kind of knew during high school and they said, oh, remember that time when you and I went out to the theater with a group of people and we did this and we did that, and prior to that time had no memory until they actually mentioned that event to you.

You ever had your memory spurred by someone else?

A. Sure, for things that might not have been that frequent.

Q. Or that you might have things of particular memory that stand out in your mind that come to memory quickly because they might be particularly unpleasant; isn't that correct?

A. I like to think they would be pleasant but, yes. I'll remember the pleasant ones I hope.

Q. But it's not surprising that working in the trenches around hot steam pipes where the temperatures got very, very hot might be one of Mr. Hooper's very first memories of working at Salinas. That's not really surprising is it?

A. Well, if he spent a lot of his time there like he said, and some of his co-workers agreed, I would expect he would remember that, yes.

Q. But initially you might actually think you spent more time there just because that was your first memory. I mean what you did is because that was one of his original memories, you decided that that must consume the same proportion of his unremembered memory, didn't you?

A. Essentially, but it wouldn't matter in my calculations

whether he spent more time there versus more time somewhere else, because I assume he had the same exposure concentrations whether he was in that area that didn't have any exposure versus one that did. I still assumed he was exposed to some measure of benzene.

Q. That's correct. Your basic assumption is you didn't care what Mr. Hooper's specific activities were, you made an assumption that he had a homogenized level exposure over this entire 60 percent of his home; isn't that correct?

A. No, I didn't assume he had the exact same value. I mean I figured there would be some cases that he would be exposed to, some higher, but overall on average that that would average out to be essentially the same.

Q. You made no calculations as to what in this exposure reconstruction. You never attempted to quantify the level of his intermittent high exposures, did you?

A. I didn't try to quantify that, no.

Q. You didn't try to quantify the frequency of his intermittent high exposures, did you?

A. No.

Q. You didn't even seek to define, while he was inside the production areas, what those intermittent high exposures were.

A. As I said in his earlier testimony, he never claimed to work with the solvent. I wouldn't expect there to have been very many, if any, high intermittent exposures.

Q. You assumed that the janitors did not use 356; isn't that correct?

A. I didn't make any calculations one way or another, but it's my understanding that they did not.

Q. And you assumed that Mr. Hooper and the other maintenance personnel did not use petroleum based solvents -- no, that isn't right -- naphtha-type solvents to clean machinery and tools; is that right?

A. I did calculations both ways, one assuming that they did not one assuming they did.

Q. But you assumed in your calculations, you never tried to calculate an inhaled exposure of when Mr. Hooper was using a petroleum-based solvent like naphtha, like solvent 356 to clean his tools, you never made that.

A. I made a room air calculation, whether it was him or someone else cleaning his tools, but I did not try to do anything specific for him originally because he said he didn't do that.

Q. And would you look at -- would you give her 133, the Van Ert report. And would you bring up the very last page of the report. In fact, it's the very last sentence.

(Counsel handing document.)

"Maintenance and Related Areas," do you see that?

A. I do.

Q. This is the entire -- of this probably 45-50 page report, this is the entire text dedicated to the maintenance personnel; isn't that correct?

A. Based on this, and I think this copy was so weird because this is the last page and there is no closing. I don't know. Sometimes I think there might be other pages

and I just don't have it.

Q. Well, I'm going to ask you to assume this was a copy produced at Dr. Van Ert's testimony, this is the copy produced by Firestone, and this was identified by Dr. Van Ert of his report of the inspection of the Salinas facility.

A. Oh, I agree. This is the same copy I have. I'm just telling you it seems an odd way to close a report and it made me wonder if there were additional pages that got lost somewhere.

Q. Dr. Van Ert nor Firestone has never even suggested there are any pages missing from that report.

MR. RIFF: Your Honor, that was not a question. I object.

MR. HARLEY: **Q.** Have Dr. Van Ert or Firestone, in any document or sworn testimony that you've seen, suggested this is an incomplete copy of the report?

A. No, and I didn't mean to imply that they did.

Q. Now, he's talking about the maintenance shop right here. You see that?

A. Yes.

Q. You said there is some welding operations going, some pipefitter welding going on. Mr. Hooper didn't do any welding in the shop, did he?

A. Not that I read.

Q. And there's no special ventilation for welding, but he does say the maintenance shop is under positive pressure resulting in vapors and fumes being forced into other regions of the plant. You see that?

A. I see that.

Q. That kind of positive pressure means generally air is being brought in through an air conditioning system or some other kind of forced air where air is brought into the room; is that correct? That's what positive pressure means?

A. Well, I think in this case they're saying that removing the air from this room to another room.

Q. By positive pressures they're bringing air in through vents which forces it out into other areas.

A. That's correct.

Q. And they briefly mentioned a new shop setup for battery and truck maintenance. And then he said, "degreasing operations in maintenance used naphtha rather than the chlorinated hydrocarbons such as trichloroethene." You see that?

A. I do.

Q. You testified that the specified rubber solvent, the specified cleaning solvent for the janitors and the maintenance people to use was this chlorinated hydrocarbon -- I think you gave a 17400 -- some kind of number for it?

A. RP number, yes.

Q. And it was a chlorinated hydrocarbon; isn't that correct?

A. For cleaning and janitorial purposes, which is not necessarily the same as the degreasing solvent.

Q. But, nonetheless, he reports that they weren't using this chlorinated hydrocarbon, but rather they were using a

naphtha-based material which is consistent with a rubber solvent; isn't that correct?

A. I'm not sure which naphtha material he's referring to.

Q. I'm not asking you to say which one he's referring to. I'm asking you a description of naphtha, his description would be consistent with rubber solvent.

A. That would be one of them. Certainly there were lots of others.

Q. But there was one particular naphtha that was regularly available on the floor in dispensers, conveniently located around the production areas; isn't that correct?

A. There was at least one.

Q. And that was 356; isn't that correct?

A. Yes.

Q. So, while the janitors may have been told to use a chlorinated hydrocarbon approved cleaner, they could have done the same thing the maintenance people were doing and used something else that was conveniently available to them; isn't that correct?

A. I don't know what they would have done, but certainly that wouldn't have been an approved use. And they weren't housed in the maintenance shop. And, again, we talked about this yesterday, I don't think they would be able to use a highly flammable solvent to mop the floors.

Q. It's not exactly mopping the floors. What they're doing is going to a specific area in a high traffic area where the forklifts have run over a piece of rubber and they're trying to get this stuck piece of still uncured

rubber off the floor. Did you read that description that that's what they were trying to do?

A. I read that as part of the description, but I also read a lot of testimony where mopping the floor was specifically what they said.

Q. Do you know how effective a chlorinated hydrocarbon would be in removing a stuck piece of rubber to the floor?

A. I don't know.

Q. Did you see Mr. Ryan say that the approved cleaner just didn't work to remove rubber from tools and machinery?

A. I don't recall him saying that.

Q. Mr. Hooper's specific exposures.

Did you calculate any kind of -- in your exposure reconstruction, where you're trying to describe Mr. Hooper's exposures to benzene, did you make any attempt to calculate his changing of filters, not flitters, filters for floor drain filters?

A. I did not make a specific calculation for that.

Q. Let me ask you about some general principles of vapor exposure.

For a volatile vapor, one that vaporizes at room temperature -- do you have that in mind?

A. Yes.

Q. The greater the surface it's spread over, the more likely it is to release vapors in the greater amounts.

A. It will result in higher air concentrations, yes.

Q. So if I put a drop of solvent here and it spreads out on the table, I'll get a release of some vapor, is that

correct, if it's volatile?

A. Yes.

Q. But if I spread that vapor out over the whole surface of this table, I'm going to get a much higher vapor release; isn't that correct?

A. You will get a higher release, yes.

Q. And in this filter -- you saw the description it was straw like, didn't you? The filter medium?

A. Straw-like material contained at the bottom of the filter, yes.

Q. And that that was off the tuber area in collecting the drainage of the solvent materials that were flowing off the tuber area, you remember that?

A. Again, this was later. It wasn't in the original testimony. But in his trial testimony is when I recall reading that. And I don't know whether he knew what material was in there, whether it was solvents or some other coolant-type material, what it would be, but yeah, he said there was some type of material.

Q. I'm going to ask you to assume the solvent being used on the tuber is tread-base cement between 75 and 80 percent 356. Can you make that assumption?

A. I thought I read that was 374, that was used in that process.

Q. I'll come back to that. For this purpose I'm asking you to assume that. I'm not asking you to state it as a fact. I'm asking you to assume.

A. Okay.

Q. And assume that when he picks up this soaked straw-like material, that the solvent has been spread -- that it's damp, it's gone through the whole material. Do you understand?

A. Okay.

Q. That means that the surface area of all that straw has been covered with the benzene, under my hypothetical, a benzene-containing solvent; isn't that correct?

A. I don't know if I'd say every piece of straw was covered, but there would be some amount of surface area, yes.

Q. And assume this is like four by four. That's a lot of surface area, isn't it, compressed into an area of four by four, 8 inches deep? The surface area of that straw would be enormous, wouldn't it?

A. Well, you're not taking into account the depth, you're taking into account just the surface area.

Q. Well, you're taking into -- the depth of the straw is 8 inches. You gotta take all the straw into account, don't you?

A. But what I'm saying is that's not affecting the release in terms of the air concentration. It's just whatever is at that surface, but what is beneath that surface is not part of, quote, the surface area.

Q. About the time he starts picking up that straw to put it in a trash can it's no longer just a nice flat surface, it's an all jumbled surface, and what was underneath is now on top and it's broken up; isn't that correct?

A. If it's perfectly maintained the way you're describing this as one big lump of straw that you're able to hold as one piece.

Q. You ever seen anything in the literature that can help you quantify that?

A. Help me quantify what?

Q. The amount of benzene exposure that might result from changing these filters in the manner he described?

A. Not -- no. And again, I would need to know at what concentration, what material that we're talking about, whether it had already volatilized, if it did contain benzene before you got to the point of cleaning. I would need to know all those factors.

Q. Sure, because there's a huge number of variables for each and every operation; isn't that correct?

A. There are several key variables. I don't know that I would say huge.

Q. And that's what you were hired to do in this exposure reconstruction --

MR. RIFF: Retained.

Q. **(By Mr. Harley)** Retained? Okay. Retained to do in your dose reconstruction is to take your expertise, go look at the literature of other data, look at all the documents for Firestone, look at all the many variables that are present and then come up with a number; isn't that correct?

A. Essentially, and that's what I did.

Q. But you didn't do it for changing filters.

A. I did not. As I said, there was not much discussion

in his original testimony, which is what I had available to me at the time.

Q. And you didn't do it for cleaning tools, inhalation, did you?

A. I did do a scenario for cleaning tools in the Catalytic shop.

Q. What you did in the Catalytic shop is you assumed if Mr. Hooper was present when others were cleaning tools with 356 in this shop which was -- I think you said 1100 square feet or so, 25-foot ceilings -- what would the -- his exposure be from being a bystander, in essence, to other people cleaning tools; isn't that correct?

A. No. Because in that scenario I assumed a continuous release over that entire period of time for which he was in the room which -- it would not -- if you were doing that yourself or you were just in the rest of the room, if you cleaned your tools for just those first few minutes your breathings on concentration is going to be the same as the rest of the room once --

Q. So in this case, moving away from the operation doesn't decrease the exposure, it leaves it the same.

A. Well, I calculated a concentration in the room, assuming it's well-mixed. So the concentration in the room is the same value. It's different than the other.

Q. You assumed a 68-degree Farenheit in that room, didn't you?

A. That was in there for the calculations, yes.

Q. Because of the vapor impressions of benzene, it's

going to make a dramatic difference in those calculations if you assume 75- or 80-degree Fahrenheit, isn't it?

A. It wouldn't be traumatic. I've done the calculations, assuming higher temperatures, and it doesn't change the answer.

Q. Goes up about 10- or 20 percent; isn't that correct?

A. Goes up in instead of being -- let's say, it's .1. It might go up to .1 something.

Q. You used Rau's law, essentially an EPA law, based on Rau's law; isn't that correct?

A. I'm not sure that that simplistic model took that into account or not.

Q. You essentially got with whatever model you use. If you had a one and a half percent concentration in the solvent, you had a one and a half concentration in the air; isn't that correct?

A. That's what that estimate showed that it was just coincidental. I mean if you changed any parameter in the room high, a little bit, something, it would not have ended up being 1.5 percent. That probably made it more confusing than it really needs to be.

Q. Tell me. Do you think you can use that value when Mr. Hooper goes to a piece of machinery, gets on his back and finds rubber gunk stuck to the machine, he needs to remove and uses a little solvent to remove that, get his tools in there; you think that's a reasonable estimation of that?

A. No, I wouldn't use that estimate for that at all.

Q. And you actually never did a calculation of the inhalation of the person cleaning the tool.

A. I never did a calculation specifically for those few minutes in his breathing zone if he was cleaning the tool.

Q. But you did for those few minutes then did a calculation for dermal exposure; isn't that correct?

A. I did a calculation assuming dermal exposure over that time period, yes.

Q. Can you tell me how a person can have dermal exposure cleaning the tools and not have direct inhalation exposure at the same time, assuming they're not wearing a respirator?

A. I was not trying to say that at all. And I didn't say that at all. I said if someone was cleaning their tools this is what the dermal absorption would be so we could see whether that was significant or not.

You have to understand these models. You can predict very well what a general room concentration is, but you can't predict very well what they call the "near field exposure," which is right in their breathing zone. That's a much harder number to capture with the model than the general room concentration.

And since we had real measurements of this case and parts of the plant for your -- collected in your breathing zone you definitely wouldn't come back without a model because you've got the real measurements. So, that's the main reason I didn't do that. First of all, he didn't claim to have cleaned his tools, and then when I saw his testimony later it was pretty late in the process from which I

finished my analysis. It's hard to predict with modeling what someone's personal breathing sample is versus the rest of the room.

Q. He also cleaned nozzles in the doper areas? Do you remember Mr. Ryan's testimony about that?

A. I remember Mr. Hooper said that in his trial testimony but, again, not in his deposition.

Q. So you made no calculation of this?

A. I did not make a specific calculation for that, no.

Q. And did you ever try to calculate exposures for someone right next to a spill of a rubber solvent where it spilled on the floor or dribbled on the floor next to somebody working?

A. I didn't make that calculation in this case, no.

Q. And did you make any calculation of what a worker's exposure would be if his clothing, either the sleeves of his coveralls or his trousers, got solvent on 'em, soaked, what that continuing exposure would be?

A. I just did the dermal contact in the Catalytic shop if you were cleaning with the tools. I didn't do a specific clothing example.

Q. Did you note, in fact, that the rubber workers wore short-sleeve shirts in part to avoid this problem with solvents getting in their shirt and stuck to their skin?

A. I read someone said that they wore short-sleeve shirts all the time, I didn't know that was the reason why.

Q. And then there are specific ambient areas he worked in, the tuber, the bead room and the doper. You didn't

specifically analyze his exposure in each area and try to put it together. What you did is say on average his exposure, the areas would have been this and he had point some percent of that, either 20 percent or a hundred percent, depending on your calculation.

A. That's true. And in the original testimony he didn't say he worked in some of those areas anyway, such as the bead room and the doper area.

Q. And, in fact, nobody even presented him with a map in his original; he was asked to come up with his own map and remember all the areas of the manufacturing facility; isn't that correct?

A. I don't know.

Q. You don't remember him hand drawing --

A. I remember he had a handwritten map. I don't know if someone had presented him with a map or not.

Q. Did you see a schematic drawing attached to his depo that someone would have showed you and asked you to go over?

A. I don't recall.

Q. What are -- where is the published standard for taking generalized areas like the rubber solvent data and applying that to another person in a different trait? Is there any reference book or standard that tells you how you go about that?

A. Well, there's certainly a lot of reference books that talk about exposure assessment and exposure reconstruction methods in general.

Q. Let's talk about exposure assessment in general.

These Van Ert studies of Salinas and the other rubber plants that were published, that is an exposure assessment of the rubber industry as it existed at a point in time. As a period of time.

A. I don't know that I classify it as a full exposure assessment per se, but it certainly provides measurements of the air concentration data which are not necessarily the same as exposure.

Q. And that people can take that data and use it to judge, make generalized statements about classes of rubber workers and their general exposure to benzene and other constituents that were measured; isn't that correct?

A. For the Salinas study as well as the ten tire plant study, yes, over that '73 to '77 time period.

Q. And the vast majority of risk assessment publications -- not risk assessments -- exposure assessment talks about how to analyze groups of workers and take that data to assess the exposure of subclasses or the overall group; isn't that correct?

A. There are quite a few publications, yes.

Q. Now, what I'm asking is a different question.

Is there a recognized set of standards where an individual who you want to calculate based on data that's not particular to a attorney, so it's not particular to Mr. Hooper, there wasn't data collected for him doing his specific activities with the materials in use exactly as he was using it.

Is there a set of standards by which your assessment

is controlled for the individual assessment criteria?

A. I don't think there's a particular standard for that. It would be very difficult to come -- what we do is we come out with general methodologies that you use in any type of situation as a foundation, but you can't prescribe a priori, a standard that is going to meet every single situation you encounter because they're going to be different.

So, that's why you are a learned professional and you learn about the foundations upon how to do exposure assessments and then you apply that to the very studies you encounter.

Q. And so a great deal of this individual assessment depends upon the choices and judgments made by the person doing the assessment.

A. There is professional judgment that comes into place, yes.

Q. And the -- and partly depends on how good the data is that you're given to make conclusions from?

A. Sure.

Q. And let's see. Before your deposition you spent 160 hours preparing -- reviewing materials and preparing the report; isn't that correct?

A. That was my estimate, yes.

Q. That's you, your personal time.

A. I don't know if it was just me or I also included my colleagues.

Q. Do you stand by that estimate?

A. I have not gone back and looked it up. I would say

it's probably still something on that order.

Q. Now, since that time you've spent at least four days in court, maybe five; is that correct?

A. I guess today would be the fourth day.

Q. Well, you were here for one or two days of --

A. I was only there for one.

Q. And you were here for Mr. Corn, right?

A. Right. So three days.

Q. And then you were here yesterday.

A. That was Mr. Corn, yesterday.

Q. Okay.

A. No. My days are all running together.

Q. You were here for Dr. Corn and then you were here yesterday.

A. I should have been here for one day for Mr. Corn, but it ended up being two days.

Q. And then you were here today. And so in between your deposition and coming here to testify, how many days did you spend reviewing the transcripts that were sent you?

A. I'm not sure exactly. I'd say I probably spent at least another couple of weeks preparing for trial, going back reviewing, re-reviewing the materials and reading the transcripts.

But in addition to these transcripts, there were depositions that came out after my deposition that I read, so it was probably at least another two weeks worth of effort.

Q. So, about a week work time here. Did you spend any

time meeting with counsel getting ready to testify?

A. I'm trying to remember. We didn't spend much time. A few hours right before my trial and a few hours right before my deposition.

Q. And you charge your time at $260 an hour; is that correct?

A. That's the rate for my company.

Q. That's ChemRisk. You work for ChemRisk; is that correct?

A. That's correct.

Q. And ChemRisk bills your time for working on projects like this.

A. Right. We all have different rates.

Q. And so as I calculate, just ChemRisk for just your time, which is between seven and eight weeks, as billed, in excess of $50,000 for your time alone; is that correct?

A. That's probably correct for my time plus some of my staff.

Q. And then Dr. Pasterbau (phonetic) has looked at some of this stuff?

A. He looked at my original expert report briefly. He didn't look at anything else.

Q. And there's been some staff members that helped collate this material and organize it and put it in. All that is billed; is that correct?

A. That's correct.

Q. How much is ChemRisk going to bill Steptoe for this total report? Is it going to approach a hundred thousand

dollars?

A. Oh, no, I hope not.

MR. RIFF: Me too.

THE WITNESS: It's probably like you said, around 50,000 or more, but it won't be anywhere near a hundred thousand, no.

Q. **(By Mr. Harley)** And can you -- you understand that this work is being done, even though you're retained by the Steptoe & Johnson firm, that the Defendants were Unocal, Chevron and Shell when you started this engagement; is that correct?

A. And I was retained by Firestone as well.

Q. And Firestone as well.

Can you give me some idea of the volume of dollar billings from ChemRisk to those three petroleum companies, Shell, Unocal, Chevron?

A. I'm not sure I understand what you're asking.

Q. ChemRisk does other projects involving Chevron and other petroleum companies; isn't that correct?

A. Actually they don't do much for the petroleum industry in general. We do some work.

Q. And what I'm asking is is that "some work," how much is it?

A. I can't speak for the company as a whole. I don't know all the projects. I would say it's a very low percentage of our overall work.

Q. What's the Defense Research Council?

A. You'd have to give me the context.

Q. I think it's on your résumé as one of the presentations you made, the Defense Research Council?

A. Oh, the MTBE Defense Research Council. I'm sure there's multiple ones recited, that's why I didn't understand your question.

That's, my understanding, a consortium of different people that were working on MTBE cases.

Q. Defending MTBE cases.

A. Defendants, yes.

Q. And one of these presentations that you've gotten listed on your professional publication, professional CV, is your lecture to them about MTBE cases; is that correct?

A. No, I was an invited speaker to give a presentation to just help educate folks on the work that had been done in the area of MTBE and what was known about different topics.

Q. And what private firms has sponsored ChemRisk's work on MTBE? That's a gasoline additive, isn't it?

A. Right. ChemRisk has not done much MTBE work at all. I worked on one project since I've been with ChemRisk, I think I'm the only person, and that was on behalf of a company.

Q. And --

A. Was not a petroleum company.

Q. Oh, I noticed in your report -- I'm going through little notes so they may be disjointed questions.

You made several notes that Mr. Hooper had reported dizziness while working around different parts of the plant, do you remember that?

A. Yes, he did report that.

Q. Did you research the literature of what dizziness means in terms of vapor exposures to solvents?

A. I did not, that was not part of my exercise.

Q. But do you know that there is a body of literature of the amount of solvent exposure it takes to induce narcotic effects like dizziness?

A. I'm sure there is, I'm not familiar with the literature.

MR. HARLEY: I think that's everything, Your Honor. Thank you.

THE COURT: All right. Unless it will be three minutes or less, we'll go ahead and take a break.

MR. RIFF: Take a break.

THE COURT: All right. Ladies and gentlemen, the usual admonition applies. About ten minutes, please.

(Recess taken.)

Okay. Thank you.

Mr. Riff, you may proceed with your redirect examination.

MR. RIFF: Appreciate it.

REDIRECT EXAMINATION

BY MR. RIFF:

Q. Dr. Williams, I want to go over a couple of timing issues with you. And I plugged some of this timing information into the case. Can you see that where you are?

A. Yes.

Q. On the top of this chart I've written in Hooper and a

line from October of 1972 to about September of 1974 with a little break, and then January and February '75. And this is intended to represent a duration of time when Mr. Hooper was at the Firestone facility. You with me?

A. Yes.

Q. Then under here in green I wrote "Van Ert." And I got two entries there. I have a line that runs from 1973 to 1978. This is intended to cover the duration of time that Dr. Van Ert was -- say that differently.

This is intended to cover the duration of time of the samples acquired from the ten tire plants throughout the United States that Van Ert ultimately collected up and reported in his peer-reviewed article that counsel showed you yesterday, which is Plaintiff's Exhibit 5. You with me?

A. I'm with you.

Q. Then the other entry on this under "Van Ert" says, "Salinas," and there's a line of July '75; that's intended to represent the date that Van Ert and his colleagues at Salinas Firestone acquired the data that you've also told us about. You with me?

A. Yes.

Q. And based on your understanding of who was where, when and who was doing what when, does it appear to you that I've more or less accurately reflected those times -- that timing?

A. That's my understanding, yes.

Q. We'll come back to that.

I want to turn to one element of your method here

which is your reliance or use, I should say, of Mr. Hooper's deposition. And counsel asked you some questions about whether you've ever had that common human experience of going to a high school reunion some 20 years later and they say, hey, Pamela, remember when we used to skip gym and drink a beer?

A. That wasn't me.

THE COURT: You're not required to answer that question.

Q. **(By Mr. Riff)** But in this case, the information you were relying on from Mr. Hooper wasn't a high school reunion, it was a court proceeding called a deposition. You understand that?

A. Yes.

Q. And Mr. Hooper was questioned for approximately 15 hours by a room full of lawyers about a lawsuit that he brought concerning events that happened at Firestone some years earlier, right?

A. Yes.

Q. And do you remember that the lawyer who, for the first day, asked all the questions was one of Mr. Harley's -- Mr. Hooper's lawyer that went into that deposition to acquire the information from Mr. Hooper about what he did at Firestone.

A. That's my recollection, yes.

Q. And in trying to do what I asked you to do, did you think it was reasonable to rely upon the sworn testimony of Mr. Hooper and his recollections as expressed to his own

lawyer under oath in a court proceeding as to what happened?

A. Yes, I thought he provided a very lengthy and descriptive deposition.

Q. Okay. Then after you acquired that information, did you learn that a Mr. Kenneth Cohen picked up the phone after Mr. Hooper's deposition and talked to Mr. Hooper for awhile about things?

A. That's what I read, according to Mr. Cohen's deposition.

Q. And then Mr. Hooper came into court and testified as you've read, correct?

A. That's correct.

Q. And it was necessary, based upon that new testimony of Mr. Hooper, to make some changes in your analysis.

A. Right.

Q. Now --

By the way, Your Honor. Housekeeping matter. Please offer 1320, the CV. I forgot to do that yesterday.

THE COURT: Any objection to 1320?

MR. HARLEY: No.

THE COURT: 1320 is admitted.

(Curriculum Vitae - Pamela R.D. Williams, Defendant's Exhibit No. 1320 Received in evidence.)

Q. **(By Mr. Riff)** In terms of the work you've done in this case, did I ask you thoroughly to understand, based upon the materials I sent you, what was going on in that Firestone plant during the time that Mr. Hooper worked there?

A. Well, you asked me to review all the materials.

Q. That's what I mean.

A. Yes.

Q. And did you understand from me that not only was it okay with me but I, in fact, insisted that you truly review it and understand it?

A. To the best of my ability, yes.

Q. Because there would come a day perhaps in August of 2005, or in a deposition, when a lawyer might ask you questions like: Well, isn't it true that Mr. Jasmin said that the doper was this or the tuber was that? Isn't that true, Dr. Williams? And I expected you to be able to say yes, that's true or, no, that's not true?

A. Yes, although sometimes it's hard to remember everything that you've read.

Q. And I understand that you spent multiple weeks undertaking that effort to try to master this body of knowledge.

A. That's true.

Q. Did you try to be efficient in doing that?

A. Yes.

Q. Now, I want to ask you some questions raised -- on subjects raised by the cross-examination.

Now, to do the thing you did, was it necessary for you to make any assumptions whatsoever -- withdraw, I don't want to ask it that way. I'll do it better and different.

I want to ask you questions about the benzene concentration of the rubber solvent at Salinas at various

times relevant here. You understand the subject matter?

A. Yes.

Q. Okay. And the question was raised, and I paraphrase it a bit, by Mr. Harley, well, gee, Dr. Williams, isn't it true that things really changed down there, coincidentally right after Mr. Hooper stopped working there and right before Dr. Van Ert showed up? And that's the subject matter I want to address to you with respect to the benzene concentration, okay?

A. Okay.

Q. Now, I'm going to put a series of documents in front of you. First is Defense Exhibit 1490, a single-paged letter or memo, Firestone document from April 2, 1975. April 2, 1975. This is Exhibit 1490.

(Counsel handing document.)

Now, what information can you glean from that letter, April 1975, with respect to what the Firestone specification for benzene and rubber solvents were at that time?

THE WITNESS: One point --

MR. HARLEY: Objection. Irrelevant.

THE COURT: The objection is overruled. You may answer.

THE WITNESS: One point five percent.

Q. **(By Mr. Riff)** Tell us what you're referring to there.

A. This is a memo that looks like from the chemical lab --

MR. HARLEY: Your Honor, if we're going to do the content, can we move the admission of 1490?

MR. RIFF: I move the admission.

THE COURT: I take it there is no objection.

MR. HARLEY: No, as long as the content is read and not characterized.

MR. RIFF: Please read the content.

THE COURT: The Exhibit 1490 is admitted.

(4/2/75 Memo from G.L. Wilson, Defendant's Exhibit No. 1490, received In evidence.)

MR. RIFF: I just want to get the date again. Tell me the date.

THE WITNESS: The date of the memo is April 2, 1975.

Q. **(By Mr. Riff)** Okay, 4/2/75. So we're clear on this, Mr. Hooper is no longer there, but it's before Van Ert shows up.

A. Right. It's in between that time period.

Q. Okay. And what do we know -- just tell us what that note says.

A. The title is, "Benzene Content in Hydrocarbon Solvents." And it says: "For the present we recommend that the benzene content of hydrocarbon solvents be no higher than 1.5 percent."

Q. Okay?

A. And then it says more, but --

Q. Okay. Just set that down, please.

MR. HARLEY: Can we read the last paragraph?

MR. RIFF: Oh, all right. Go ahead and read the

last paragraph.

THE WITNESS: Actually, that's a good one to read in support of it.

"In view of data coming from the University of North Carolina studies, it may be necessary to make a change in this recommendation at some future time."

Q. (By Mr. Riff) Okay. So in April of '75, Firestone is saying -- well, I'm not going to characterize it. It says what it says.

Now I want to show you 1508. And let me just see if I can offer it at this time, Your Honor.

MR. HARLEY: I just gotta look at it. Yeah, that's fine.

THE COURT: 1508 is admitted.

(10/24/75 Specification: Code 356, Defendant's Exhibit No. 1508, received In evidence.)

Q. (By Mr. Riff) 1508 is an April 24, 1975 document. And -- what date did I just say?

A. It says October 24, 1975.

Q. So that's 10-75. Van Ert's come and gone, true?

A. Right.

Q. And what is that document?

A. This is a specification sheet from Firestone of their material 356.

Q. Okay. And does Firestone specify, as of October '75, after Van Ert has come and gone, what the benzene content in this product ought to be?

A. It does.

Q. What does it say?

A. It says, "with 1.5 percent maximum benzene content."

Q. Okay. Now, let me show you Exhibit 1760. Showing counsel.

MR. HARLEY: Sure. This is for a different product.

MR. RIFF: At any rate, I'm offering 1760.

MR. HARLEY: It's incomplete, but no objection.

THE COURT: 1760 is admitted.

(5/25/77 Letter from Ireland re Specifications for Codes 356 and 374, Defendant's Exhibit No. 1760, received In evidence.)

Q. **(By Mr. Riff)** Now, Exhibit 1760 is a Firestone letter dated May 25, 1977, true?

A. Yes.

Q. So -- I'm going to run out of space here. But 5-77, Firestone's writing a letter. Who is he writing a letter to?

A. The purchasing agent at Salinas, Mr. Ireland.

Q. Okay. Who is it from?

A. I'm sorry, that's who it's from.

Q. Who is it to?

A. To Chevron.

Q. So in '77, almost two years after Van Ert's come and gone, we have Firestone writing a letter to Chevron. And what is Firestone telling Chevron at that time, two years

after Van Ert's come and gone, with respect to the benzene content that Firestone wants for its solvents?

A. He's saying that --

MR. HARLEY: I object to the form of the question. Mischaracterizes the document.

MR. RIFF: I'll withdraw the question. Read the first paragraph of the letter, please.

THE WITNESS: [Reading:] "Our corporate office has advised that all solvents purchased in the future should contain less than 1 percent benzene."

Q. **(By Mr. Riff)** Okay. Let me show you Exhibit 1761, the June 1, 1977 letter.

MR. HARLEY: I don't have any objection to that.

MR. RIFF: Offer 1761, Your Honor.

THE COURT: 1761 is admitted.

(6/1/77 Letter from D.R. Jones re Compliance, Defendant's Exhibit No. 1761, received in evidence.)

(Counsel handing document.)

Q. **(By Mr. Riff)** And this is a letter, correct?

A. Yes.

Q. To who, Firestone?

A. This is a letter to Firestone from D.R. Jones.

Q. And from the content of the letter, does it appear to be addressing Chevron solvents?

A. Yes.

Q. I withdraw -- not a true question.

A. It says Chevron at the bottom.

Q. Okay. Why don't you slowly, for the court reporter, just read the content of that letter. And let me get the date of that again. What's the date?

A. June 1, 1977.

Q. Okay. Just kind of following that earlier letter that -- that earlier exhibit, again, two years after Van Ert's come and gone. Read the letter, please.

A. [Reading:]

"Dear Mr. Miller: We have received your material Codes 356 and 374 dated May 17, 1977. Regarding compliance with benzene content, as stated by our wire of May 20, we guarantee one volume percent maximum benzene. Regarding compliance with the remaining specifications, Chevron thinner 200 meets material Code 356 with slight exception to the 10 percent and occasionally the 50 percent distillation maximum. Chevron solvent 54-L meets material Code 374 in all respects. Spiritually yours, D.R. Jones."

Q. Okay. Thank you for that.

Now I'm going to show you Exhibit 1491, which I offer.

MR. HARLEY: No objection.

MR. RIFF: Your Honor, I offer 1491. And I think counsel has no objection.

MR. HARLEY: No objection.

THE COURT: 1491 is admitted.

(6/27/99 Memo, Defendant's Exhibit No. 1491, received in evidence.)

Q. **(By Mr. Riff)** And 1491 is a June 1979 memo, agreed?

A. It says June 27, 1979?

Q. Right.

A. Yes.

Q. And does that document, that exhibit, collect up in one place all of the Firestone benzene specifications for product 356 for a collection of years?

A. Yes.

Q. And with respect to these dates on this chart here, this timing diagram I have here, when -- well, does there come a time, per that exhibit, when -- withdrawn. I'm going to leave it alone. The document speaks for itself, as we say in this business.

Okay. Just set that down, please. Next question. Next topic, I should say. Actually, one last question.

Do you think, based on your review of the documents in this case and the testimony and everything you've reviewed, that there was a material difference, a substantial or significant difference in the benzene concentration of Chevron 356 at the Salinas plant when Van Ert acquired his data in July '75 as compared with the time when Mr. Hooper was on the premises?

A. No, I did not see any documents that would lead me to believe that.

Q. Now, I want to change topics to changes in the plant. And really I'm addressing the question whether at the time Van Ert did his studies -- acquired his data, something was materially or significantly different from how it was when

Mr. Hooper was there that would affect the results. Do you understand what we're about to talk about?

A. Yes.

Q. So first let me put in front of you Plaintiff's Exhibit 103. This is in evidence. This is one of those industrial hygiene walk-throughs that we heard about of the Salinas plant. And confirm for us that this is in April of 1972.

A. Yes.

Q. So this document talks about conditions before Mr. Hooper got there.

A. Yes.

Q. This is the document that reports explosive vapor pressures in the catch pans at the 810 and 1010 tuber, cementing stations?

MR. HARLEY: Objection. Mischaracterizes the document.

MR. RIFF: Well, does it?

MR. HARLEY: Not in the catch pans.

THE COURT: I don't have the document before me, I'm not able to rule on the objection. May I see the exhibit, please?

MR. RIFF: I'm happy to withdraw the question.

THE COURT: All right. Thank you.

Q. **(By Mr. Riff)** What does the document say about, quote, explosive vapor concentrations relative to the catch pans at 810 and 1010, the tuber cementing stations?

A. On page 8 it says "at rollers above pan."

Q. Okay. And it talks about explosive.

A. That's correct.

Q. Now, based on your experience and your training -- training and experience, how do you interpret the words -- what did you say, "at rollers above pan?" Is that literally what it says?

A. That's literally what it says.

Q. What do those words mean to you?

A. It means they -- looks like they collected a sample, this is probably an instantaneous measurement. Without further information it seems they were probably trying to identify a source of the release and would have collected the sample right above these catch pans. So perhaps if the pans were on the floor they might have taken the sample inches above the pan near the floor.

MR. HARLEY: Objection. Move to strike. Speculation.

THE COURT: Well, I'm going to overrule the objection, but I'm going to allow the witness' statement to stand for her understanding of that terminology, assuming that that understanding in some fashion was relied upon for the formation of her opinions and limit it to that purpose.

Q. **(By Mr. Riff)** If your understanding is true, and we'll make that a hypothetical, assume for the sake of argument that what you just said is correct -- that it's correct, how does that relate to a worker's breathing zone?

A. Well, it would be far different from the location where that person is standing if that measurement was taken

near the floor versus where they're standing.

Q. Okay. Now here's what I want to know.

In the weeks of work you've done in this case pouring over these documents, have you seen, ever again, a reference to explosive conditions at that location described in that memo some six months before Mr. Hooper got there?

A. I never saw a reference to this again, and I specifically looked for it. I wanted to see whether they had corrected it. And since they never referenced it again, I assumed that they had.

Q. And in all of the Department of Industrial Relations walk-throughs, the union walk-through, the Liberty Mutual walk-through, Van Ert and his work, did you ever see that condition referenced again?

A. No.

Q. And in that memo before you, that exhibit, I think it's 103?

A. Yes.

Q. Six months before Mr. Hooper showed up, is that industrial hygienist saying in that memo, or recommending that we fix it? That Firestone fix it?

A. Yes. He says, "this must receive immediate attention."

Q. Now, in that same document does that industrial hygienist, Mr. Bernard, make any reference as to whether there are or are not vapor conditions of solvent found in the tire building machine?

A. No, he says, "no hazardous vapor concentrations of

solvent were found at the tire building machines."

Q. Now, let me put another document in front of you. This is Defendant's 1687. It is a July 1973 walk-through not yet in evidence and I offer it.

MR. HARLEY: It is in evidence, but that's okay. It's Plaintiff's Exhibit 113. Go ahead.

MR. RIFF: Okay. Can we confirm that at a break and use this in the meantime?

THE COURT: Yes. And if it is the same document then we'll rely on 113. And if not, then we'll deal with it accordingly.

MR. RIFF: Well, these are important, so it won't take long to check. Yeah, 113 has another document on top of it, but I would prefer to use the one in evidence.

MR. HARLEY: It's just the transmittal letter.

MR. RIFF: Correct. So we'll put 113 in front of you.

(Counsel handing document.)

Q. Now, this is a July 1973 walk-through -- industrial hygiene walk-through, right?

A. At Salinas, yes.

Q. July '73 Mr. Hooper is working there.

A. Yep.

Q. Now, what does the report tell us with respect to whether -- withdrawn.

What does the report tell us with respect to the substance that was used to clean the tire machine?

A. It reports here that a solvent called RP-12400. And

under "Remarks" it says: "Exposure cleaning tire machine with mixture of solvent and soap."

Q. Pardon me for interrupting. Read the sentence or sentences so we get some context for this RP-12400, please.

A. Well, it's a table. And in the table, in one column it says what the solvent is, the name and another number in this case. There's another column it says what the concentration of that solvent was measured in terms of parts per million, and then there's another column called "Remarks."

Q. And in the remarks, does it represent what that solvent is being used for?

A. That's correct.

Q. Tell us what those remarks are?

A. The one that I just said was that -- one is in regards to cleaning the tire machine and the other is in regards to swabbing the tire machine with the same solvent RP-12400.

Q. Now, keeping that document handy, look in front of you and see if there isn't a defense exhibit with a blue tab marked "Code Book?"

A. Yes.

Q. Is that what you're looking at?

A. Yes.

Q. What's the exhibit number?

A. Fourteen eighty.

Q. What's the name of that document?

A. "Coding of Incoming Raw Materials."

MR. RIFF: Your Honor, actually this document was

admitted outside the presence of the jury, and I don't know if anybody is keeping notes that carefully on the jury, but could the Court confirm that this document is in evidence, please?

MR. HARLEY: Which, 113?

THE WITNESS: Fourteen eighty.

MR. RIFF: The Code Book.

THE COURT: You're talking about 113?

MR. HARLEY: No, 1480. I thought it was admitted.

THE COURT: It was admitted on July 28, correct.

MR. RIFF: Thank you very much.

Q. **(By Mr. Riff)** Go to the second tab. Does the second tab identify what RP-12400 is?

A. Yes.

Q. What is it?

A. It says it's chlorothene.

Q. And if I get outside of your area of expertise --

A. Chlorothene, C-H-L-O-R-O-T-H-E-N-E.

Q. Is it your understanding that chlorothene is the same thing as Chevron 356 rubber solvent?

A. No.

Q. If you can find it, tell us what that industrial hygiene report reflects with respect to whether there were excessive solvent vapors detected during that walk-through.

A. The comments at the conclusion of the sampling says: "No excessive solvent vapors were detected."

Q. Okay.

A. So all samples were well below the threshold limit

value.

Q. Okay. Now tell us what that report tells us with respect to the identity of the solvents used in the tuber and tread and cementing area.

A. Here it talks about the tuber area and the cementing area as being combination of Code 374 and RP-10373.

Q. Okay. Does not identify 356, does it?

MR. HARLEY: Objection. Lacks foundation.

THE COURT: Sustained.

Q. **(By Mr. Riff)** Three seventy-four -- solvent 374, do you understand from your work in this case, is the Chevron product that contained benzene at about .1 percent benzene concentration?

A. Sometimes.

Q. And sometimes what?

A. I think I might have indicated a range in my table.

Q. Okay. Fine. Please set that down.

Next I'm going to put in front of you Plaintiff's Exhibit 117 in evidence.

And this is a document from September 27, September 27, 1974. And I guess my timing chart isn't good enough to say whether Mr. Hooper was still there or not, but it's very near just that last period before he took his break before coming back in January. Okay? You with me?

A. Yes.

Q. Let's see what I want to ask you. I'm going to put 117 in front of you and I want to talk about the bead manufacturing area.

(Counsel handing document.)

Yesterday you were asked a question about whether or not the comments about the bead manufacturing area concerned Isopropyl Alcohol. Do you remember that?

A. I do.

Q. And I think Mr. Harley said, and you think, you think 4732 is Isopropyl Alcohol, right?

A. Yes.

Q. And does that exhibit, Plaintiff's Exhibit 117, speaking as of September 1974, make reference to RP-4732 at the bead insert manufacturing?

A. Yes, it does.

Q. Okay. What's it say about it?

A. Well, it has a table with the concentrations in different areas on one of the pages.

MR. RIFF: Just a minute.

THE COURT: I think we're okay.

THE WITNESS: And then under the remarks section later after it presents the year's sampling data. It says: "The air concentration of RP-4732 was quite excessive at the bead insert operation."

Q. And you think 4732 is Isopropyl Alcohol, don't you?

A. Yes.

Q. Go to the Code Book, go to the first tab and tell us what it says about 4732. What substance is 4732?

A. It says it's Isopropyl Alcohol.

Q. Now, I want to put in front of you Plaintiff's Exhibit 119 in evidence. And this is a industrial hygiene

walk-through in February 1975. So, again, just near or at the time Mr. Hooper was just leaving his employment. You with me?

A. Yeah.

Q. And I'm going to have two questions for you. Well, I'll do them one at a time.

The first one is: Are they still making comment in that memo about an issue or a problem of high exposures, I'll say, with respect to RP-4732 at the bead insert manufacture?

(Counsel handing document.)

A. Yes, they're still making reference to that.

Q. And what does the document say as of February '75 with respect to exposures at the bead dip unit?

A. In regards --

Q. To whether the exposures were high, low or something else, whether they're a problem or not a problem at the bead dip unit?

A. At the bead dip unit they're referring to Code 356.

Q. Right.

A. And it says: "Repeated sampling to represent the operator's exposure showed no exposure except for momentary peaks to 200 ppm.

Q. And that's 200 ppm of the 356, not 200 ppm of the benzene; is that how you interpret it?

A. That's right.

Q. All right. You can set that down.

MR. HARLEY: Which date was that? Is that the

February '75?

MR. RIFF: February '75.

Q. (By Mr. Riff) Now, next question, next topic.

Did you draw the conclusion from the materials that you read in this case, over the weeks that you spent pouring over this material, that there was some material substantial significant changes in the efficiency and effectiveness of the ventilation between '75 -- July '75 when Van Ert and his colleagues show up to take measurements and when Mr. Hooper worked?

A. No.

Q. Did you see any evidence that post-Mr. Hooper's work there and post-Mr. Van Ert's sampling that Firestone was continuing to discuss ventilation improvements?

A. Yes.

Q. Let's look at a couple of those documents.

Let me put in front of you Defendant's 1737 not yet in evidence. I'll show counsel. This is a August 27, 1976 Firestone memo.

MR. HARLEY: I'm not sure I see the relevance, but --

MR. RIFF: Well, I'm just going to offer it. I'm asking if there's an objection.

THE COURT: Is there an objection or not?

MR. HARLEY: If we'll go faster, I'm not going to object.

MR. RIFF: Well, I object to that. I'd like to know if there is an objection or if there's not.

MR. HARLEY: No objection.

THE COURT: I'll both sustain and overrule the objection. The exhibit is admitted.

MR. RIFF: Thank you, Your Honor.

(8/27/76 Firestone Memo: Draft Report On Salinas Survey, Defendant's Exhibit No. 1737, received in evidence.)

(Counsel handing document.)

Q. **(By Mr. Riff)** Now, what's the date of this?

A. August 27, 1976.

Q. Okay. So let's see where we are.

Mr. Hooper is gone, Mr. Van Ert -- Dr. Van Ert's taken the samples and he's gone, right? We're further along in history, true?

A. True.

Q. And is this a Firestone document?

A. Yes, it is.

Q. And what are they discussing, generally, with respect to ventilation problems, issues and changes?

A. They're talking about, based on the UNC studies that Van Ert has been conducting, they may want to make some improvements to ventilation.

Q. Let's see if I can get it straight.

Firestone is saying, Van Ert has come and gone. Based on what Van Ert has said, we may want to make some ventilation changes.

A. Correct.

Q. Maybe I will take the hint and not do more of these.

Okay. I'm going to change topics now.

You were asked some questions about Van Ert's area samples versus personal monitoring. Remember that?

A. Yes.

Q. Tell us your understanding of what an area sample is of the type that Van Ert did and reported in the document that you were shown yesterday.

A. The ten tire plant analysis.

Q. Yes.

A. It's my understanding, based on the description for that, both in that study and some of his --

Q. A little louder, please.

A. Based on his description both in that published paper as well as his description of his sampling approach in a report that he had prior to the publication of that report, they talk about how those area samples were collected. And he essentially says that it's not surprising that his area samples resulted in similar concentrations to his personal samples, because the area samples were collected in the immediate vicinity -- those are his words -- of where the worker was during that task, which is quite different -- there are at least four different ways that industrial hygienists take area samples.

And the concentration that you're measuring is going to be substantially different depending on the location of that area sampler. So if you put the sampler right next to the source or, in the case of the pans that we talked about, inches from the surface of the source, that's going to be a

substantially different concentration than if you put your area sample 10, 20 feet away. And it just depends on the purpose of your sampling.

Are you trying to identify a release spot? Are you trying to characterize a worker's exposure? Are you trying to characterize the background exposures far away from that point? That's what dictates where you will place that stationary area sampler.

Q. Here's the bottom line question on that I want to ask.

So, when Van Ert says the area sample number for benzene was this number (indicating) and the personal sample number was this number (indicating), how does that relate to the concentration of benzene generally throughout a rubber plant?

MR. HARLEY: Objection to the form of the question. I have no objection to her understandings of what Van Ert said, but she's saying -- this question implies that this is what Van Ert says.

MR. RIFF: Well, what's your understanding?

THE COURT: All right. Thank you.

THE WITNESS: Can you repeat the question?

MR. RIFF: Probably not.

THE WITNESS: Can you repeat a similar question?

THE COURT: Mr. Riff is going to rephrase the question.

MR. RIFF: I will.

Q. **(By Mr. Riff)** I guess what I'm really getting at is you -- in doing your work here you have -- you've told us

that you opine that an operator in the Salinas tire plant at the relevant time was exposed on average to about one ppm benzene in the air. Did I accurately state that?

A. Correct.

Q. And the operators we're talking about are the kinds of people slathering on solvents in front of tire building machines and slathering on solvent-based cement at the tread --

A. Right, they're applying the solvent.

Q. Those are the operators you're talking about.

A. Right.

Q. And Van Ert, in his ten studies -- in the ten plants throughout the United States, puts air monitoring instrumentation on those kinds of workers and acquire some personal samples.

A. Correct.

Q. And he also acquires area samples, right?

A. That's right.

Q. Okay. And he reports the relationship between the area samples and the personal samples in these hundreds of data points that you've considered, right?

A. He presents both sets of data, yes.

Q. Okay. Now here's what I want to know. And we looked yesterday at what he said about the area and the personal samples.

A. That's right.

Q. What I want to know is: How do those data, in your understanding and in your opinion of what Van Ert was

reporting, how do those data compare or relate, I should say, to the benzene concentration generally in the plant, but at some removed -- some distance from the specific operations in question?

A. He did not specifically collect a report on those samples. And my experience in the field, and having reviewed other types of data sets, would indicate that that concentration sort of in the background would be much lower than that right next to the source.

Q. Is that why you initially decided, at least, that Mr. Hooper's exposure would be about 20 percent of one of those people slathering on the solvent in front of the tire machine eight hours a day?

A. Right, when his testimony was that he didn't work with the solvent. When he testified later that he, that's when I said I would have changed my estimate.

Q. And ultimately, in the estimate you gave the jury yesterday, one of the ranges of the estimate, you have assumed, okay, his exposure was equal to a worker that eight hours a day is paid to slather solvents onto rubber, be it at the tire building machine or the cementer?

A. Right. I did that calculation assuming he did that; that he was equal to that level all day every day for that period of time.

Q. And you've seen the testimony in deposition and otherwise, that the tire builders and the cementers, they also got solvent on their clothing from time-to-time, true?

A. I don't recall that specific testimony.

Q. Did you see Mr. -- did you remember Mr. Newel testifying about how the tire on the jig would spin and put it on and it would spray?

A. I do recall that now, yes.

Q. And do you have any reason to believe that what was happening in Salinas with the tire builders and what they were doing, and the slathering on of the material, was materially different from what was happening in ten other -- or at least nine other tire plants in the United States over this five-year period that Van Ert was collecting data?

A. No.

Q. And you've characterized the data from all those tire plants over all those years, and Van Ert reports, and the data Van Ert collects at Salinas as a consistent data cell?

A. Yes. They were very consistent.

Q. Why is that important to you?

A. Well, it's very important. As I said before, is that the greater number of samples that you have the more confident you feel in your answer, and helps show you how much variability there might be in the data. And in this case there wasn't that much availability in the 2- or 300 or more samples that were collected across the different facilities.

Q. You were asked questions about the ventilation in Salinas and Mr. Harley asked you about the padlocking of the skylights to defeat the ventilation system. Do you remember that?

A. Yes.

Q. By the way, in all the hours you spent pouring over these documents, did you ever see reported in any Firestone document, in any union document, in any OSHA document or in any Liberty Mutual document, even a complaint or suggestion that the ventilation system would have been padlocked -- had been padlocked and rendered inoperable?

A. No, I didn't see anything like that.

Q. You want to go back to Denver?

A. I'd love to go back to Denver.

Q. Then I'll stop asking questions and maybe we'll get you out of here by noon.

MR. HARLEY: I doubt that.

THE COURT: All right, Mr. Harley.

RECROSS-EXAMINATION

BY MR. HARLEY:

Q. Ms. Williams, in this time frame, from '73 to '77, it wasn't just in Salinas that there were dramatic reductions in benzene exposure according to Van Ert; isn't that correct?

A. I'm not sure what you're referring to.

Q. This is Exhibit 258. You still have that up there? That's the Van Ert ten-plant study you were talking about not very long ago.

A. I don't have that up here anymore.

Q. Now, at the top of Table 2, right up here, it says, "this data was collected '73 to 77"; isn't that correct?

A. Yes.

Q. But he lists all the plants anonymously, and he

doesn't tell us which plant were collected when. He doesn't give the dates of each plant survey, does he?

A. No, he doesn't.

Q. And there is a wide variation in the results of benzene exposure from plant to plant and even from within plants operations. There's a pretty significant range going in .1 up to as high as seven or eight at times; is that correct?

A. I'd have to look back at all these measurements, but that sounds about --

Q. From looking at this data alone, we can't determine if plants with higher exposures were measured earlier in the survey, can we?

A. He doesn't break it out by time period, that's correct.

Q. I want to turn to the next page -- wait. Before we turn, we're to down here. I hope you can all read that. This is in the tire building area. And the table carries over to the next page. And the tire building continues at the top of the page. Do you see that?

A. Yes.

Q. And now I want to go down to these lines down here where it says "Median."

Now, the total average for -- yeah, for personnel involved in tire building was 1.4, and this is benzene, parts per million of benzene for the tire builders themselves on the personnel section; is that correct?

A. Yes, that's my understanding.

Q. And in the general area of tire building, in the areas of tire building, it's nearly two parts per million. You see that?

A. Yes. But there were only two samples collected.

Q. But that's what he reports, 1.4 -- there's only 12 samples there altogether; isn't that correct?

A. Correct.

Q. And the -- even though he surveyed ten plants, he only reported ten -- 12 samples. And you're the one who said, I understand that this report can be used to characterize generally tire exposures. And that it's a reliable and good source of information; isn't that correct?

A. Right. And you --

Q. So if we take this as reliable, just using this as a data alone, when you go into the tire building area of the Salinas plant, it would be reasonable to assume close to two parts per million assuming the same solvents were used in the same manner; isn't that correct?

A. If you only look at those two data points. But he presents a subsequent Table 3, several hundred other samples --

Q. I'm getting to additional tables. But what I want to do is focus on the timing of here. This combines data, we don't know sometime between '73 and '77, and this is what he reports is the average data; is that correct? Median data.

A. Right. Median.

Q. Now, I want you to turn to the next to the last page in this. Okay.

Would you just do the caption to this table initially?

Now we have -- he went back -- this article's actually published in 1980; isn't that correct?

A. Yes.

Q. And what he did, and his group did, is went to two plants in 1977 and took excessive monitoring in those two plants; isn't that correct?

A. That's my understanding.

Q. And he actually reports in those two plants alone he did like 600 personnel samples and 400 area samples; is that correct?

A. Something along those lines, yes.

Q. And now in 1977 --

A. Wait.

Q. Can we go down to tire building?

A. I think he only collected work area samples here.

Q. This is the work area in 1977. I'll address that comment in a moment. But what he's reporting here is the area samples; is that correct?

A. Yes.

Q. Okay. Now enlarge the tire building area.

Now the benzene levels reported average .41. Do you see that?

A. For that particular plant, yes.

Q. And the major difference that he reports here is the passage of time. What happened between '73 and '77 was a dramatic reduction in the benzene content of rubber solvents, wasn't it?

A. I don't know. I'd have to look and see and compare the actual plants. This is a specific plant.

Q. These are two plants actually.

A. Right, the number of the .41 was for a particular --

Q. For two plants. That's what it says in captions, right?

A. Right. There's Plant 1 that had a different number than Plant 2.

Q. And the number for -- I'm sorry, that's right. This column is .6, one-third the mean -- less than one-third the mean value.

A. The mean value from other plants.

Q. And one explanation for this is the reducing benzene content of the solvents being used; isn't that correct?

A. I don't know what the explanation is.

Q. Then Dr. Van Ert -- would you go to the next page, please? Would you just highlight the beginning of the first half of the second paragraph?

What Dr. Van Ert says about his collection is: "The results of analysis of approximately 210 personnel samples, collected in breathing zones and approximately 100 area samples, collected in solvent work areas, presented in Table II." You see that?

A. Yes.

Q. He doesn't say anything about how close they are, how far away they are, anything; isn't that correct?

A. He says that in a prior report.

Q. The plain fact of the matter is, in tire building

areas in particular you can't get very far away. These machines are set one right next to the other and across the aisle from each other in tire building areas; isn't that correct?

A. It depends on what area you're in and some of them are closer together than others.

Q. I'm talking about the tire builders. I'm not talking about the dopers, the tubers, the cementers, the repairers, the curer and others. I'm talking about the tire building area. That's a term specific to rubber industry, isn't it?

A. Yes.

Q. And it's a term he uses.

A. Yes.

Q. And tire building, the -- it's peculiar to that particular area. You just can't get very far away from an individual tire builder, no matter where you are in the building area; is that correct?

A. I don't know that I could say that.

Q. And doesn't he specifically warn -- would you go back two pages? This paragraph right here, would you enlarge that.

"The obvious limitation of the methodology" -- that's the methodology in this plant -- "is the ultimate inability to relate a specific exposure to a specific individual with a precision analogous to that for any recorded event."

You see that?

A. Yes.

Q. What he's saying is you can't use this data to analyze

whether a particular worker's illness resulted from their work at Firestone; isn't that correct?

A. No. He's just saying that it's a limitation of a study, like most studies they're not able too measure every single individual. So, it is a limitation when you have this type of data, but he's not saying it's impossible to use.

Q. It's a limitation that he's saying causes a -- the limitation, in effect, causes a certain problem that you can't use it to predict individual health results, individuals' health events.

A. You would not be able to say if Mr. X walked into the room that this data was specific exactly to Mr. X.

THE COURT: Mr. Harley, what's your best estimate?

MR. HASLEY: Oh, I'm sorry. Probably about 20 -- 15-20 minutes.

THE COURT: You expect some re-redirect?

MR. RIFF: Based on -- so far I have one question.

MR. HARLEY: I may be short.

MR. RIFF: Then I'll have half a question.

THE COURT: We'll give you some make-up time at the end of the lunch recess. Anybody who needs take a break now? Look likes we can keep going, if you can keep it within those limits.

MR. HARLEY: Would you go to Exhibit 105, please.

(Counsel handing document.)

Q. **(By Mr. Harley)** Did you get this document from what Firestone and the other defendant's gave you?

A. I can't recall. I received a number of these compound master sheets. A whole book full.

Q. Do you recall that it is tread-based cement that is being used in the tuber areas?

A. That's one of the materials, yes.

Q. This is the compounding sheet for tread-base cement dated January 13, 1972. Do you see that?

A. Yes.

Q. And let's look at this area right here (indicating).

And it lists -- this is the material 332, and this is the percentage, 75 percent; isn't that correct?

A. Yes.

Q. And then -- would you close up, please.

Down here at the bottom it says, "Use 356 for 332." You see that?

A. Yes.

Q. So when I told you to assume that the tread-base cement being used in the tuber had 75 to 80 percent 356, this is the document that supports that assumption; isn't that correct?

A. Yes.

Q. And have you ever seen a different formulation for tread-base cement before Mr. Hooper left the plant?

A. I don't recall if I've seen another formulation sheet like this. I just recall reading quite a bit of testimony and perhaps other materials that suggested it was a combination of the 374.

Q. Oh, I'm sorry. You're right, there is a 374 in there.

A. My recollection was it was a combination of 374 and either the heptane or the hexane.

Q. It has 374 in it, but it's only 12 and a half percent.

A. According to this sheet, yes.

Q. Well, this is the compounding sheet for tread-basing cement in evidence. There is some other compounding sheet that should be in evidence?

A. This is for January of '72.

Q. Yeah, they revise them as they change. The question is: There any evidence of a change?

A. I have to go back. I have whole binder full of these master's sheets and I have to go back and look.

Q. Did you see Mr. Jones said tread-base cement was 356?

A. I don't recall. My recollection was the testimony was it was a combination of 374 or either the hexane or the heptane.

Q. So your conclusions were based on that recollection, I assume.

A. No, I didn't reach any specific conclusions one way or the other in terms of my analysis. That's just what I recall reading.

Q. I want to be quick here. I think I have one other area that I need to talk to you about. Some question questions and then we're going to get --

Dr. Williams, have you ever seen a spec for 356 that requires the presence of benzene?

A. I don't think that I have seen anything that requires it.

Q. Because I thought some of the answers and questions were confusing when we were talking about these specs for 356 that came about in 1975 and later.

I want to make this clear. In 1975, for the first time Firestone set a maximum benzene concentration; isn't that correct?

A. I'm not sure if that's correct or not.

Q. Did you see a document earlier than I believe it was April 1975 that set a maximum benzene concentration for 356 of any level?

A. I don't recall. I mean I think there were some MSDS sheets and other sheets that said --

Q. No, I'm talking about Firestone specs. That's what we were talking about. Firestone specifications, not Chevron's disclosure of content.

A. I don't recall. If you want to show me something.

Q. I'm going to do that -- well, would you look at Exhibit 104 real quickly?

A. Do I have it?

Q. Do you have that letter dated September 1972?

A. I'm not sure I have that. What's the number?

(Counsel handing document.)

Q. This letter is discussing Chevron 183 and the specs for Chevron 183 in regards to its compliance with Firestone specs; is that correct, for 356?

A. Could I just read it for a minute? This is the El Segundo letter, is that it?

Q. No, it -- yeah, it's from El Segundo but it's

regarding Richmond formulation Chevron thinner 183. Do you see that at the top?

A. I see that.

Q. It talks about being used at Firestone Salinas. You see that, second sentence?

A. Yes.

Q. And this new formula will allow Richmond filling and established product, do you see that?

A. From El Segundo, yes.

Q. And it lays out the Firestone specs for this 183 product; there is no benzene specification at all, is there?

A. I don't see a specification for any of the aromatics or any of the other materials.

Q. Final set of questions.

Did you say that after those explosive levels were detected near a pan in the tuber area you never saw another reference to a pan and vapor exposures to -- in the tuber area?

A. No, I said I didn't see a reference to that specific type of a drip pan.

Q. Turn to 119.

Do you have 119 in front of you? This is the report dated February 3, 1975. Would you go to the last page, paragraph five.

(Witness complies.)

A. It's not the last page though.

Q. It's the next to the last page. Would you enlarge --

Do you see "the excessive exposures of the 1010 tuber

not usually found in similar operations may be due to a work practice. The operator spread cement for a small container over a two or three foot of a nearby surface and cemented trans -- by transferring the cement."

Isn't there a description that these pans they're talking about are pans used by the cementers to spread cement?

A. These pans, yes. This is different, in my understanding, than the earlier pans.

Q. And where did you get that understanding?

A. Based on the description of the prior memo compared to this description, as well as testimony by -- I don't remember if it was Helm or somebody else.

Q. The full description of those drip pans before were roller above drip pans, isn't that --

A. I think there might have been some text in the back as well. You can look at that. I was confused by this concept as well, so I went back and looked at the two and compared them and realized that we were talking about two different things.

Q. 103, do you have 103 in front of you?

If you'll take a quick look at 103 and tell me where the description of that drip pan is, above rollers of drip pans?

A. It calls it a catch pan on the first page.

Q. Catch pan. And then a drip pan is later on.

A. No, maybe drip pan is my word.

Q. Final set of questions. Did you see any descriptions

beyond either catch pan or drip pan?

A. I'm not seeing that right now.

Q. Final set of questions. This is very confusing. There is bead manufacturing and there is a bead dip room; is that correct?

A. Well, I'm not sure.

Q. The Isopropyl Alcohol that's described in these reports is talking about bead manufacture and bead inserting. Do you recall that?

A. I recall the term bead insert, yes.

Q. And bead wire manufacture inserting, you remember that?

A. Might not have had the wire in there, but I understand.

Q. Then after the wires and the beads are made, they go down the line to something called "bead room" where they're dipped. Do you understand?

A. I understand they're dipped, I'm not sure how close that process occurs or if they're in the same room or not.

Q. All right. It's the bead dip that contains the 356 solvents; isn't that correct?

A. That's my understanding, yes.

Q. Not -- and the Isopropyl Alcohol is up the line in the process somewhere, maybe close, maybe far away.

A. I actually don't have a good understanding of where the Isopropyl Alcohol comes into place in terms of the manufacturing.

Q. And Dr. Van Ert notes in his report that the bead room

has new ventilation that's been installed within the last year, doesn't he?

A. I don't recall. I'd have to look back.

MR. HARLEY: Nothing further.

MR. RIFF: Two questions, Your Honor, with the Court's permission and the jury's permission.

FURTHER DIRECT EXAMINATION

BY MR. RIFF:

Q. I want you to assume that a witness qualified by this Court in industrial hygiene said the following in this courtroom:

When accidents or other toxic exposures occur, it is rarely possible to do scientific measurements contemporaneously, therefore industrial hygienists are required to use their scientific knowledge and training. Okay?

Here's my question: Is that what you did?

A. Yes.

Q. Did you try to do your level best to tell the jury your best judgment involving scientific knowledge and training as to what Mr. Hooper's benzene dose was for the months he was at Firestone?

A. Yes.

MR. RIFF: Thank you.

THE COURT: All right. Mr. Harley, anything within the scope?

MR. HARLEY: Nothing.

THE COURT: All right. Dr. Williams is excused.

Thank you for your time.

Ladies and gentlemen, we will resume at 1:45 this afternoon. The usual admonition applies.

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(Whereupon, the noon recess was taken.)

COPY

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA

IN AND FOR THE COUNTY OF ALAMEDA

BEFORE THE HONORABLE ROBERT B. FREEDMAN, JUDGE

DEPARTMENT NO. 20

---OOO---

DALE HOOPER,

PLAINTIFF,

VS. NO. RG04171297

BRIDGESTONE/FIRESTONE, INC., AS SUCCESSOR-IN-INTEREST TO FIRESTONE TIRE AND RUBBER COMPANY, ET AL.,

DEFENDANTS.

_____/

AND CROSS ACTIONS.

_____/

REPORTER'S DAILY TRANSCRIPT OF PROCEEDINGS

ADMINISTRATION BUILDING - 1221 OAK STREET
OAKLAND, CALIFORNIA 94612
TUESDAY, AUGUST 3, 2005 - P.M. SESSION

APPEARANCES:
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TUESDAY, AUGUST 2, 2005

PROCEEDINGS - P.M. SESSION

---OOO---

(WHEREUPON, THE FOLLOWING PROCEEDINGS WERE HELD IN OPEN COURT, IN THE PRESENCE OF THE JURY PANEL.)

THE COURT: GOOD AFTERNOON, LADIES AND GENTLEMEN.

MR. HARLEY, YOU'VE ELECTED TO WAIVE VOIR DIRE AS TO HER QUALIFICATIONS?

MR. HARLEY: I WILL WAIT FOR CROSS-EXAMINATION.

THE COURT: THANK YOU.

MR. RIFF, YOU MAY RESUME YOUR EXAMINATION.

MR. RIFF: THANK YOU, YOUR HONOR.

THE COURT: I SHOULD NOTE FOR THE RECORD THAT THE COURT CONCLUDES THAT DR. WILLIAMS HAS AT LEAST THE MINIMUM QUALIFICATIONS NECESSARY TO OPINE ON THE SUBJECTS IDENTIFIED.

YOU MAY PROCEED.

MR. RIFF: THANK YOU, YOUR HONOR.

CONTINUED DIRECT EXAMINATION OF

PAMELA WILLIAMS

BY MR. RIFF:

Q. DR. WILLIAMS, IN ABOUT TWO MINUTES I'M GOING TO ASK YOU WHAT YOUR ASSIGNMENT WAS AND WHAT YOU DID IN THIS CASE, BUT I JUST WANT TO BACK UP A LITTLE BIT ON ONE POINT.

I WOULD LIKE TO HAVE YOU EXPLAIN THE BASIC

PARADIGM OR STRUCTURE OF RISK ASSESSMENT AND WHERE EXPOSURE ASSESSMENT FITS IN. DO YOU UNDERSTAND WHAT I'M ASKING YOU TO DO?

A. YES.

Q. AND WOULD IT ASSIST YOU IN EXPLAINING THAT TO THE JURY IF YOU DREW SOMETHING ON THE BOARD?

MR. HARLEY: I OBJECT. THAT IS BEYOND THE SCOPE.

THE COURT: OBJECTION IS OVERRULED.

MR. HARLEY: YOUR HONOR, CAN WE APPROACH?

THE COURT: YES.

(DISCUSSION AT THE BENCH, NOT REPORTED).

THE COURT: THANK YOU.

Q. (MR. RIFF:) DR. WILLIAMS, I WANT TO EMPHASIZE MY QUESTION. WHEN YOU GET UP TO THE BOARD, I WANT YOU TO FOCUS YOUR COMMENTS ON EXPOSURE ASSESSMENT, OKAY? AND WHAT I'M ASKING YOU TO DO IS BRIEFLY TO EXPLAIN WHERE THIS EXPOSURE ASSESSMENT CONCEPT THAT YOU AND I ARE GOING TO TALK ABOUT FOR ABOUT AN HOUR FITS IN, GENERALLY, INTO THE SCIENCE OF RISK ASSESSMENT. DO YOU UNDERSTAND WHAT I WANT YOU TO DO?

A. I THINK SO. I WILL TRY. IT IS HARD TO EXPLAIN ONE WITHOUT SOME OF THE OTHER CONCEPTS, BUT I WILL TRY TO DO THAT.

Q. GIVE IT A TRY, AND IF WE HAVE A PROBLEM, I'M SURE SOMEONE WILL SPEAK UP.

SO, GO AHEAD AND PLEASE KEEP YOUR VOICE UP. THERE ARE MARKERS UP THERE, AND PROCEED, PLEASE.

A. SO, EXPOSURE ASSESSMENT AS I MENTIONED EARLIER IS REALLY ONE OF THE KEY COMPONENTS OF A RISK ASSESSMENT. IT IS NOT THE ONLY COMPONENT OF A RISK ASSESSMENT, BUT IT IS ONE OF THE KEY COMPONENTS. AND THERE ARE FOUR PRIMARY STEPS IN WHICH ONE MUST TAKE BEFORE THEY CAN FULLY CONDUCT A RISK ASSESSMENT. AND I JUST WANTED TO PUT THOSE FOUR STEPS UP ON THE BOARD SO YOU ALL WOULD HAVE A BETTER UNDERSTANDING OF WHERE EXPOSURE ASSESSMENT COMES INTO PLAY IN THE BROADER RISK ASSESSMENT PROCESS.

Q. PLEASE DO THAT.

A. [DRAWING.]

OKAY. SO, THE RISK ASSESSMENT FRAMEWORK AS I MENTIONED EARLIER AT A VERY BROAD LEVEL IS THE PROCESS OF TRYING TO CHARACTERIZE THE WAYS IN WHICH SOMEONE MIGHT BE EXPOSED TO AN AGENT, WHAT THAT EXPOSURE LEVEL MEANS IN TERMS OF A HEALTH EFFECT, AND ALL OF THESE OTHER THINGS THAT MUST COME INTO PLAY WHEN YOU DO A RISK ASSESSMENT.

SO, BY DESIGN, THERE ARE METHODS OUT THERE THAT SHOW YOU CAN BREAK THESE OUT INTO A NUMBER OF DIFFERENT COMPONENTS SO IT DOESN'T SEEM SO OVERWHELMING. YOU DON'T HAVE TO CONSIDER ALL OF THE COMPONENTS AT ONCE. AND THEY FOLLOW A FAIRLY LOGICAL ORDER UNTIL YOU GET TO THE FINAL POINT WHERE YOU CAN SAY WHETHER SOMEONE IS AT RISK OR NOT.

SO, THE FIRST KEY STEP THAT IS IN THE PROCESS BEFORE YOU CONDUCT ANY RISK ASSESSMENT IS THE PHASE

CALLED HAZARD IDENTIFICATION. AND WHAT THAT BASICALLY MEANS IS --

MR. HARLEY: YOUR HONOR, I THINK THIS IS MUCH BROADER THAN I ANTICIPATED. I STILL OBJECT THAT WE'RE TALKING ABOUT AN ENTIRE BACKGROUND OF RISK ASSESSMENT FOR WHICH SHE HAS NOT BEEN DEPOSED OR WRITTEN ANY REPORTS.

THE WITNESS: CAN I CLARIFY?

Q. (MR. RIFF:) ACTUALLY, YOU CAN'T.

THE COURT: JUST A MINUTE.

MR. RIFF: LET ME TRY ANOTHER QUESTION.

THE COURT: PLEASE.

Q. (MR.) RIFF: WOULD YOU PLEASE WRITE DOWN THE COMPONENTS AT ISSUE WITHOUT FURTHER COMMENT AT THIS POINT?

A. [DRAWING.]

I'M A LEFTY. YOU WILL HAVE TO FORGIVE MY PENMANSHIP HERE.

Q. YOU ARE DOING FINE.

OKAY. ALL RIGHT.

NOW, LET ME TRY TO LEAD HERE A LITTLE BIT WITH YOU. YOU HAVE WRITTEN FOUR ELEMENTS OF THE CONCEPT OF RISK ASSESSMENT, AND THEY ARE HAZARD IDENTIFICATION, DOSE RESPONSE ASSESSMENT, EXPOSURE ASSESSMENT, AND RISK CHARACTERIZATION, RIGHT?

A. YES.

Q. OKAY.

THE COURT: THE RECORD SHOULD REFLECT

THERE IS AN ASTERISK NEXT TO THE THIRD ITEM.

MR. RIFF: YES. THANK YOU, YOUR HONOR.

Q. AND WHY DID YOU WRITE AN ASTERISK NEXT TO THE THIRD ITEM, EXPOSURE ASSESSMENT?

A. BECAUSE THAT IS THE ONE YOU WANT ME TO FOCUS ON, SO I WANTED TO SINGLE OUT WHERE IT CAME IN THIS PROCESS.

Q. OKAY. TO GET US OVER THIS I AM GOING TO TRY TO LEAD, BUT DON'T LET ME PUT WORDS IN YOUR MOUTH, OKAY? IF I DON'T GET IT RIGHT, CLARIFY FOR US, PLEASE.

IN LESS THAN A SENTENCE, HAZARD IDENTIFICATION ASKS THE QUESTION OF A GIVEN AGENT, WHAT IS IT CAPABLE OF DOING, IRRESPECTIVE OF DUST.

A. THAT IS TRUE.

Q. AND DOSE RESPONSE ASSESSMENT, YOU ASK THE QUESTION: WELL, HOW MUCH DOES IT TAKE TO CAUSE THE ADVERSE HEALTH EFFECT OF THIS AGENT.

A. HOW MUCH EXPOSURE TO THAT AGENT, YES.

Q. OKAY. AND, THEN, IF YOU ARE TRYING TO LOOK AT AN INDIVIDUAL OR A GROUP OF PEOPLE TO SEE IF THEY ARE AT RISK, YOU HAVE TO FIGURE OUT WHAT IS THEIR EXPOSURE TO THE AGENT IN QUESTION.

A. YES.

Q. AND WITH THOSE THREE CONCEPTS IN MIND, THEN SOMEONE WHO IS IN THE RISK ASSESSMENT, SOMEONE SKILLED IN RISK ASSESSMENT SCIENCE AND ART CAN SAY SOMETHING SCIENTIFIC ABOUT SOMEBODY'S RISK, AND THAT IS CALLED RISK CHARACTERIZATION.

A. MORE OR LESS, YES.
Q. OKAY. FINE.
NOW, GO AHEAD AND HAVE A SEAT, PLEASE.
IN THIS CASE, MR. HOOPER'S, CASE, WHAT DID YOU UNDERSTAND YOUR ASSIGNMENT TO BE THAT I GAVE YOU?
A. I UNDERSTOOD THAT MY ASSIGNMENT WAS TO ATTEMPT TO EVALUATE ALL OF THE AVAILABLE INFORMATION THAT I HAD, INCLUDING MR. HOOPER'S DEPOSITION TESTIMONY, AS WELL AS SIX TO EIGHT BANKER BOXES FULL OF ADDITIONAL MATERIALS. AND ONCE I REVIEWED ALL OF THOSE MATERIALS, TO ESTIMATE WHAT MR. HOOPER'S LIKELY EXPOSURES TO BENZENE WOULD BE WHILE WORKING AT THE SALINAS FIRESTONE PLANT.
Q. BETWEEN WHAT YEARS AND WHAT YEARS, APPROXIMATELY?
A. BETWEEN THE FALL OF '72 TO THE FALL OF !74, AND FOR ONE MONTH IN JANUARY OF '75.
Q. OKAY. AND DOING THAT ASSIGNMENT THAT YOU JUST TOLD THE JURY ABOUT, IS THAT CONSIDERED AN EXPOSURE ASSESSMENT?
A. YES.
Q. THE SAME KIND OF EXPOSURE ASSESSMENT THAT IS ONE OF THE ELEMENTS OF RISK ASSESSMENT THAT YOU TOLD THE JURY ABOUT?
A. YES.
Q. OKAY. AND IN A BIT I'M GOING TO ASK YOU WHAT YOUR OPINIONS ARE AND THE REST, BUT LET ME JUST GET SOME BACKGROUND.

FIRST OF ALL, WERE YOU ABLE TO COMPLETE YOUR ASSIGNMENT?

A. YES, I WAS.

Q. WERE THERE ADEQUATE DATA AVAILABLE TO YOU TO PERMIT YOU TO FORM AN OPINION ON THIS QUESTION?

A. ABSOLUTELY. THERE WAS EXTENSIVE DATA AVAILABLE, AND, IN PARTICULAR, ACTUAL AIR MEASUREMENTS OF BENZENE COLLECTED IN THE SALINAS FACILITY FOR PRODUCTION OPERATORS WHILE USING A BENZENE-CONTAINING SOLVENT.

Q. OKAY. AND IN DOING YOUR EXPOSURE ASSESSMENT THAT WE'RE GOING TO TELL THE JURY ABOUT IN A MINUTE OR TWO, WOULD YOU CONFIRM FOR US THAT YOU USED GENERALLY-ACCEPTED SCIENTIFIC METHODOLOGIES.

A. YES, I DID.

Q. AND DESCRIBE FOR THE JURY, GENERALLY, WHAT THE METHODOLOGY IS THAT YOU USED.

A. THE GENERAL EXPOSURE ASSESSMENT METHODOLOGY CONSIDERS THAT YOU TAKE INTO ACCOUNT A NUMBER OF DIFFERENT FACTORS. ONE OF THOSE KEY VARIABLES IS CONCENTRATION: WHAT IS THE CONCENTRATION OF THE CHEMICAL, IF YOU ARE LOOKING AT A CHEMICAL, IN THE ENVIRONMENT. SOMETIMES THAT IS REFERRED TO AS THE EXPOSURE POINT CONCENTRATION.

ANOTHER SIGNIFICANT VARIABLE IS CONSIDERED DURATION: HOW -- DURATION AND FREQUENCY. HOW LONG IS SOMEBODY EXPOSED TO THAT PARTICULAR CONCENTRATION AND FOR HOW LONG EACH TIME THEY ARE EXPOSED TO THAT

CONCENTRATION.

AND THEN, OF COURSE, THE FIELD OF EXPOSURE ASSESSMENT IS MUCH BROADER BECAUSE YOU HAVE TO CONSIDER ALL THE DIFFERENT WAYS IN WHICH SOMEONE MIGHT BE EXPOSED. THAT IS TYPICALLY REFERRED TO AS DIFFERENT EXPOSURE PATHWAYS OR SOMETIMES IT IS CALLED ROUTE OF EXPOSURE, MEANING IS THIS SOMETHING THAT IS IN THE AIR AND SOMEONE IS INHALING IT, IS IT SOMETHING THAT IS IN FOOD AND YOU ARE CONSUMING IT OR IS IT SOMETHING THAT YOU COME INTO CONTACT WITH AND IT GETS ABSORBED THROUGH YOUR SKIN.

SO, THERE ARE MANY DIFFERENT WAYS YOU CAN BE EXPOSED TO DIFFERENT CHEMICALS IN AN ENVIRONMENT, AND PART OF AN EXPOSURE ASSESSOR'S JOB WOULD BE IDENTIFY WHAT THE CONCENTRATIONS IS IN THE DIFFERENT PLACES YOU ARE EXPOSED: WHAT IS THE CONCENTRATION IN FOOD, WHAT WOULD THE CONCENTRATION BE IN WATER, WHAT WOULD IT BE IN AIR, THAT SORT OF THING.

Q. OKAY. NOW, ULTIMATELY IN THIS CASE, DID YOU WRITE A REPORT THAT LISTED THE INFORMATION YOU CONSIDERED, YOUR ANALYSIS OF IT, THE MATHEMATICS, AND SCIENTIFIC REFERENCES THAT YOU RELIED UPON?

A. YES.

Q. OKAY. LET ME JUST PUT THIS IN FRONT OF YOU IN THE EVENT THAT YOU NEED TO REFER TO IT. IT IS EXHIBIT 1321.

ANOTHER PRELIMINARY QUESTION. TELL THE JURY WHAT THE UNIT IS THAT YOU USED TO DESCRIBE THIS

CUMULATIVE EXPOSURE FOR MR. HOOPER. AND IF YOU NEED TO WRITE SOMETHING TO HELP ILLUSTRATE THAT, FEEL FREE TO DO THAT.

A. SURE.

I USED THE UNITS OF P.P.M.-YEARS, WHICH IS, P.P.M. WOULD BE THE CONCENTRATION THAT WE JUST TALKED ABOUT. IN THIS CASE, IT WOULD BE THE CONCENTRATION OF BENZENE IN AIR.

AND THE YEARS COMPONENT DEALS WITH THE DURATION AND FREQUENCY CONCEPTS WE TALKED ABOUT. IN THIS CASE, HIS TOTAL YEARS WAS ON THE ORDER OF ABOUT TWO YEARS.

Q. OKAY. THE JURY HAS HEARD A BIT ABOUT P.P.M.-YEARS. I GUESS I WOULD LIKE YOU TO PLEASE STEP UP TO THE BOARD AND ERASE SOME OF YOUR HANDIWORK THERE. OKAY. AND JUST WRITE FOR US, PLEASE, SHOW US WHAT THIS UNIT P.P.M.-YEARS LOOKS LIKE IN WRITING.

A. [DRAWING.]

Q. I THINK YOU NEED A BETTER PEN.

A. I THINK SO TOO. LET'S SEE IF THIS WORKS.

Q. THERE YOU GO.

A. [DRAWING.]

Q. NOW, IS THAT A CUSTOMARY UNIT OF CUMULATIVE EXPOSURE USED BY EXPOSURE ASSESSORS?

A. YES, IT IS.

Q. HOW DO YOU KNOW?

A. IT IS PUBLISHED QUITE FREQUENTLY IN THE PEER REVIEW LITERATURE, GOVERNMENT AGENCY REPORTS, AND OTHER SOURCES. AND THEY TALK ABOUT EXPOSURE DATA,

PARTICULARLY WHEN THEY ARE TALKING ABOUT SOMEONE'S CUMULATIVE EXPOSURES, MEANING THEIR EXPOSURES THAT OCCUR OVER THEIR LIFETIME FOR WHICH THEY ARE EXPOSED, THEN THESE ARE THE UNITS THAT THEY WILL TYPICALLY PUT THAT IN.

Q. OKAY. JUST TO ILLUSTRATE -- ULTIMATELY, WHEN YOU GIVE US YOUR OPINION ON MR. HOOPER'S CUMULATIVE EXPOSURE AT FIRESTONE TO BENZENE YOU ARE GOING TO EXPRESS IT IN THAT UNIT?

A. YES.

Q. LET'S JUST RUN THROUGH A COUPLE OF EXAMPLES OF HOW THIS UNIT WORKS SO THAT WHEN WE GET THAT NUMBER WE WILL UNDERSTAND WHAT IT MEANS. OKAY?

A. SURE.

Q. SO, LET ME GIVE YOU A HYPOTHETICAL, AND IF YOU CAN ANSWER IT, YOU TELL ME.

LET'S ASSUME YOU HAVE A WORKER WHO WORKS IN AN ENVIRONMENT WHERE ON AVERAGE OVER THE COURSE OF EIGHT HOURS THE BENZENE CONCENTRATION IS ONE-HALF OF A PART PER MILLION.

A. ALL RIGHT.

Q. ARE YOU WITH ME SO FAR?

A. UH-HUH.

Q. AND ASSUME THAT THAT WORKER WORKS FIVE DAYS A WEEK FOR 50 WEEKS. ARE YOU WITH ME?

A. UH-HUH.

Q. IN OTHER WORDS, ONE YEAR OF WORK LIFE DURATION. DO YOU FOLLOW?

A. YES.
Q. AND USING THE LANGUAGE OF EXPOSURE ASSESSMENT, WHAT IS THAT WORKER'S CUMULATIVE EXPOSURE EXPRESSED IN P.P.M.-YEARS?
A. [DRAWING.]
Q. TELL US WHAT YOU WROTE FOR THE RECORD.
A. SO, WHAT YOU SAID, I THINK --
Q. I DID.
A. -- IS THAT THIS PERSON WOULD BE EXPOSED ON AVERAGE EIGHT HOURS -- FOR EIGHT HOURS A DAY, FIVE DAYS A WEEK, 50 WEEKS OUT OF THE YEAR, TO A CONCENTRATION OF .5 PARTS PER MILLION FOR ONE YEAR. HIS CUMULATIVE EXPOSURES WOULD END UP BEING 0.5 P.P.M.-YEARS.
Q. OKAY.
A. WHICH IS JUST THE PRODUCT OF THESE TWO VARIABLES.
[INDICATING.]
Q. NEXT HYPO. SAME WORKER, SAME ENVIRONMENT, BUT THAT WORKER IS THERE FOR FOUR YEARS. WHAT IS THAT WORKER'S CUMULATIVE EXPOSURE EXPRESSED IN P.P.M.-YEARS?
A. [DRAWING.]
SO, IT WOULD BE 2 P.P.M.-YEARS. IT IS THE SAME EQUATION. I HAVE JUST CHANGED THE NUMBER OF YEARS FOR WHICH THAT PERSON WAS EXPOSED.
Q. ONE MORE. LET'S NOW SAY HYPOTHETICALLY SOMEONE IS EXPOSED IN A WORKPLACE ENVIRONMENT OF, SAY, 1-AND-A-HALF P.P.M. FOR FOUR YEARS. ARE YOU WITH ME?
A. YES.

Q. SO WHAT IS THAT PERSON'S CUMULATIVE EXPOSURE EXPRESSED IN P.P.M.-YEARS?

A. [DRAWING.]

IF I DID MY MATH RIGHT.

Q. 1-AND-A-HALF TIMES 4?

A. 6 P.P.M.-YEARS. 6.0, I'M SORRY.

Q. OKAY. PLEASE HAVE A SEAT.

LET ME ASK YOU THIS: IN AN EXPOSURE ASSESSMENT, IS THE DURATION OF EMPLOYMENT OR THE DURATION OF EXPOSURE IMPORTANT?

A. YES.

Q. OKAY. AND WITHIN A WORKER'S DURATION OF EXPOSURE, ARE THE VARIOUS ACTIVITIES THAT THAT WORKER IS ENGAGED IN, IS THAT AN IMPORTANT VARIABLE?

A. YES.

Q. TELL THE JURY WHY.

A. BECAUSE THIS IS EMBEDDED IN THE CONCEPT THAT WE JUST TALKED ABOUT. YOU WOULD NEED TO KNOW WHAT CONCENTRATION ARE YOU EXPOSED TO AND FOR HOW LONG AND FOR HOW MANY YEARS, AND THAT ALL GOES INTO THE EQUATION.

SO, IF YOU ARE PERFORMING A TASK AND ONLY SOME OF THE TIMES YOU ARE EXPOSED FOR ONLY PART OF THE DAY AND OTHER PARTS OF THE DAY YOU ARE NOT EXPOSED, YOU WOULD NEED TO CONSIDER BOTH THE TIME FOR WHICH YOU WERE EXPOSED AS WELL AS THE TIME THAT YOU WEREN'T EXPOSED TO COME UP WITH THIS SORT OF ESTIMATE.

Q. SO, FOR EXAMPLE, IN ALL OF THESE EXAMPLES WE

JUST DID I ASKED YOU TO ASSUME THAT I AVERAGED FOR EIGHT HOURS A DAY THERE WAS MORE OR LESS A UNIFORM CONCENTRATION OF .5 OR 1.5 PARTS PER MILLION, RIGHT?

A. THAT'S RIGHT.

Q. OKAY. BUT IN DOING AN EXPOSURE ASSESSMENT MIGHT YOU CONSIDER THAT A WORKER FOR THIS AMOUNT OF TIME WAS EXPOSED TO, SAY, 3 PARTS PER MILLION FOR THIS 20 MINUTE PERIOD, AND THEN FOR THIS 45 MINUTE PERIOD TO 0.005 PARTS PER MILLION AND THEN WENT TO LUNCH AND THEN CAME BACK AND THEN FOR ANOTHER HOUR WAS EXPOSED. IS THAT THE KIND OF AN ANALYSIS THAT AN EXPOSURE ASSESSOR MIGHT DO?

A. YOU COULD. DEFINITELY IT IS THE TYPE OF ANALYSIS AN EXPOSURE ASSESSOR MIGHT DO. YOU WANT TO GET TO THAT CONCEPT LEVEL OF DIFFERING OUT HOW THE CONCENTRATION MIGHT CHANGE EVERY MINUTE OF THE DAY OR TAKE AN AVERAGE CONCENTRATION FOR THAT WHOLE DAY.

Q. OKAY.

WHAT I GUESS I WANT YOU TO DO IS TO TELL THE JURY THE INFORMATION THAT YOU HAD AVAILABLE TO YOU WHEN YOU DID -- IN ORDER FOR YOU TO DO YOUR ASSIGNMENT. AND I GUESS BY WAY OF FOUNDATION, DID YOU LIST THAT INFORMATION IN YOUR REPORT?

A. I DID.

Q. OKAY. WELL, USING THAT REPORT, IF NECESSARY TO REFRESH YOUR MEMORY, AND NOT SPEAKING TOO QUICKLY FOR OUR REPORTER, TELL THE JURY WHAT KINDS OF INFORMATION YOU CONSIDERED AND HAD AVAILABLE TO YOU.

A. CAN I JUST GO THROUGH THIS LIST?
Q. IF THAT IS THE BEST WAY TO DO IT, PLEASE DO IT THAT WAY.
A. WELL, I ORIGINALLY HAD THE PLAINTIFF'S -- A COPY OF THE COMPLAINT, WHICH HELPS ME HAVE AN UNDERSTANDING OF WHAT IT IS THAT THEY THINK THE PLAINTIFF IN THIS CASE WAS EXPOSED TO AND UNDER WHAT CONDITIONS. IT DOESN'T REALLY PROVIDE MANY DETAILS BEYOND JUST WHAT IS THE CASE ABOUT IN GENERAL.

I ALSO REVIEWED THE PLAINTIFF MR. DALE HOOPER'S DEPOSITION TESTIMONY. THIS WAS ABOUT 15 HOURS WORTH OF TESTIMONY TAKEN OVER A THREE-DAY PERIOD, SO THERE WERE THREE DISTINCT VOLUMES. AND THAT IS ALL THE INFORMATION THAT I HAD FROM THE PLAINTIFF AT THE TIME THAT I PERFORMED MY ANALYSIS.

I ALSO HAD DECLARATIONS, WHICH ARE JUST STATEMENTS UNDER OATH, BY SOME OF MR. HOOPER'S COWORKERS AS WELL AS HIS IMMEDIATE SUPERVISOR. THAT INCLUDED CURTIS MYRICK, CLAYTON RYAN, WHO I THINK YOU HEARD FROM, AS WELL AS JOE PARISE.

THERE WERE ALSO DECLARATIONS AVAILABLE FROM SOME OF THE DIFFERENT PRODUCT SUPPLIERS, SUCH AS CHEVRON, UNOCAL, AND SHELL WHERE THEY TALKED ABOUT WHAT TYPES OF MATERIALS THEY SUPPLIED TO FIRESTONE DURING THAT '72 TO '75 TIME PERIOD AND HOW THEY SUPPLIED THEM, WHETHER IT WAS BY RAIL CAR OR IN A 55-GALLON DRUM OR WHATEVER THE SITUATION WAS. AND THAT INCLUDED DECLARATIONS BY CLARENCE COOK, CHRISTINE PETERSON,

ZOLTAN SAARY, ARTHUR WESP, AND ROSEMARY FALLABECK.

THEN I RECEIVED QUITE A BIT OF DEPOSITION TESTIMONY FROM FORMER EMPLOYEES AT FIRESTONE. THESE WERE -- I SAY QUITE A BIT, BECAUSE THERE WERE BOXES FULL OF DEPOSITIONS THAT WERE TAKEN IN FORMER CASES BUT ON THE SUBJECT MATTER OF WHAT WAS GOING ON AT SALINAS DURING THESE DIFFERENT PERIODS OF TIME: WHAT DID WE KNOW ABOUT INDUSTRIAL HYGIENE AT THE FACILITY, WHAT DID WE KNOW ABOUT SAFETY AT THE FACILITY, WHAT DID WE KNOW ABOUT THE TYPES OF PRODUCTS THAT WERE USED, AND WHAT THE SPECIFICATION WAS FOR BENZENE IN THOSE PRODUCTS. AND THAT INCLUDED DEPOSITION TESTIMONY BY GEORGE WILSON. HE WAS THE CORPORATE INDUSTRIAL HYGIENIST AT FIRESTONE. HE WAS NOT ON-SITE AT SALINAS, BUT HE HAD OVERSIGHT FOR THE FACILITY, INCLUDING SALINAS.

THAT ALSO INCLUDED DEPOSITION TESTIMONY BY -- WHO I HAVE SEEN REFERRED TO NOW AS SAFETY JONES. I KNEW OF HIM IN READING AS EUGENE JONES.

THERE WAS ALSO DEPOSITION TESTIMONY BY TWO OF THE FORMER CHIEF CHEMISTS AT THE FACILITY, A MR. ROBERT HELM AND MR. JAZWIN.

THEN THERE WAS ALSO DEPOSITION TESTIMONY BY SOME OF THE FORMER PEOPLE THAT WORKED AT FIRESTONE THAT WERE IN CHARGE OF THE PRODUCTS THAT CAME IN. THEY BASICALLY CHECKED TO SEE THAT THOSE PRODUCTS WERE WHAT THEY ORDERED AND WHAT WAS ON THE APPROVED LIST TO ORDER, AND THAT WOULD INCLUDE RICHARD ELSASS, AS WELL AS WILLIAM IRELAND.

THEN I REVIEWED THE DEPOSITION TESTIMONY OF THEODORE -- I WILL SPELL IT -- G-E-O-R-G-I-A-D-I-S. HE WAS ANOTHER INDUSTRIAL HYGIENIST WITH FIRESTONE. I BELIEVE HE WAS EITHER DURING THE SAME TIME OR AFTER THE TIME THAT GEORGE WILSON WAS THE INDUSTRIAL HYGIENIST.

I ALSO HAD THE DEPOSITION OF RICHARD CAVALLI, HE WAS A FORMER CHEVRON EMPLOYEE, AS WELL AS THE DEPOSITION OF WILLIAM ELLIS, THE DEPOSITIONS OF LINDA HADDOCK.

Q. LET ME JUST STOP YOU. DO YOU REMEMBER WHO WILLIAM ELLIS WAS?

A. THAT ONE IS NOT RINGING A BELL WITH ME. THAT IS WHY I DIDN'T ELABORATE ON IT.

Q. OKAY.

A. JUST IS NOT RINGING A BELL.

I THINK THAT MIGHT BE A FORMER CHEVRON EMPLOYEE AS WELL, BUT I'M NOT SURE.

Q. JUST TESTING YOUR MEMORY. THE JURY KNOWS. THEY HAVE HEARD FROM HIM.

A. IS THAT RIGHT?

Q. I JUST WANTED TO SEE IF YOU REMEMBERED. KEEP GOING.

A. LINDA HADDOCK, I BELIEVE SHE WAS A CURRENT OR FORMER EMPLOYEE I WANT TO SAY AT UNOCAL, BUT I'M NOT POSITIVE.

THE DEPOSITIONS OF CURTIS MYRICK, WHO WAS A SUPERVISOR OF MR. HOOPER DURING HIS EMPLOYMENT.

THE DEPOSITION OF JOHN WILLETT, DAVID KOHLER,

ROBERT MC AMIS. AND I THINK THAT CONCLUDES IT FOR DEPOSITIONS.

THEN I ALSO HAD SEVERAL BOXES FULL OF JUST MISCELLANEOUS MEMORANDA, LETTERS, REPORTS, THINGS, CORRESPONDENCE, BASICALLY, BETWEEN THE FIRESTONE EMPLOYEES AND OTHER INDIVIDUALS OUTSIDE OF FIRESTONE OR WITHIN FIRESTONE. MAYBE IT WAS CORPORATE HEADQUARTERS TO THE ON-SITE SAFETY MANAGER OR VICE VERSA, AS WELL AS A NUMBER OF THE PRODUCT FORMULATION AND THE COMPOUND MASTER SHEETS, AND M.S.D.S. SHEETS WHICH YOU HAVE HEARD ABOUT. AND THIS INFORMATION BASICALLY PROVIDED ME WITH THE SENSE OF WHAT TYPES OF PRODUCTS WERE SUPPLIED TO THE SALINAS PLANT DURING THE PERIOD OF TIME OF INTEREST AND WHAT THE BENZENE CONTENT, IF ANY, WAS OF THOSE PRODUCTS.

SOME OF THESE COMPOUND MASTER SHEETS ARE THE ORIGINAL INGREDIENTS, IF YOU WILL. IT IS LIKE -- THAT SAY WHAT GOES INTO EACH OF THESE DIFFERENT PRODUCTS, LIKE THE 356 THAT YOU HAVE HEARD ABOUT.

I HAVE ALSO REVIEWED THE PUBLISHED LITERATURE IN GENERAL OUTSIDE OF THE MATERIALS THAT I RECEIVED IN THIS CASE ON THE BENZENE CONTENT OF PRODUCTS SUCH AS KEROSENE, BECAUSE MR. HOOPER HAD SAID HE SAW "KEROSENE" STAMPED ON THE DRUMS THAT HE SAID WERE IN THE CATALYTIC SHOP AND I WANTED TO KNOW WHAT THE WORLD KNOWS ABOUT THE BENZENE CONTENT OF KEROSENE.

THEN THERE WAS MATERIALS THAT WERE SENT TO ME THAT WERE WHAT WAS CALLED BULK SOLVENT ANALYSES, AND

THESE ARE TESTS THAT HAVE BEEN DONE ON DIFFERENT CHEMICALS TO FIND OUT WHAT THE CONCENTRATION IS OF THE INGREDIENTS OF THOSE CHEMICALS, INCLUDING BENZENE, AND THERE WERE SEVERAL STUDIES IN THAT REGARD.

I REVIEWED THE PUBLISHED LITERATURE ABOUT THE VAN ERT STUDY THAT YOU HEARD ABOUT IN TERMS ABOUT AIR, ACTUAL AIR MEASUREMENTS THAT WERE COLLECTED AT THE SALINAS PLANT IN JULY OF 1975, AS WELL AS SOME OF HIS OTHER WORK IN WHICH HE PUBLISHED IN THE PEER REVIEW LITERATURE, A PAPER THAT DESCRIBED WHAT THE BENZENE AND OTHER CHEMICAL CONCENTRATIONS WERE IN 10 OTHER TIRE MANUFACTURING FACILITIES ACROSS THE ENTIRE UNITED STATES FROM 1973 TO 1977.

Q. LET ME JUST STOP YOU THERE, BECAUSE I WANT TO FOCUS YOU ON THIS. THE SALINAS DATA OF VAN ERT THAT YOU CONSIDERED WAS ACQUIRED BY VAN ERT WHEN, AS FAR AS YOU CAN TELL?

A. THE SALINAS STUDY YOU ASKED?

Q. YEAH, THE DATA. HIS DATA FOR SALINAS WAS WHEN?

A. IT WAS COLLECTED IN JULY OF 1975.

Q. OKAY. AND YOUR UNDERSTANDING IS THAT MR. HOOPER LAST WORKED AT THE PLANT WHEN?

A. JANUARY OF 1975.

Q. SO, ABOUT FIVE MONTHS LATER.

A. RIGHT.

Q. OKAY. AND THE OTHER VAN ERT DATA YOU WERE REFERRING TO THAT WAS PUBLISHED IN THE PEER REVIEW LITERATURE COVERED WHAT TIME PERIOD?

A. I BELIEVE IT WAS 1973 TO 1977.
Q. OKAY. AND HOW MANY DIFFERENT TIRE BUILDING FACILITIES DID VAN ERT COLLECT DATA FROM?
A. THEY SAID THEY COLLECTED DATA ON 14 TIRE PLANTS, BUT THE REPORTED DATA SEEMED TO BE ON ONLY 10 OF THOSE PLANTS.
Q. OKAY. '73 TO '77, IS THAT WHAT YOU JUST SAID?
A. YES.
Q. OKAY. SORRY TO INTERRUPT YOU.
A. I'M ALMOST DONE.
Q. YOU ARE DOING FINE. COMPLETE YOUR ANSWER.
A. THERE ARE A LOT OF THINGS TO REVIEW.

SO, BESIDES THE AIR DATA THAT WERE COLLECTED IN THIS FACILITY OR SIMILAR TYPES OF FACILITY, I LOOKED, YOU KNOW, OUTSIDE OF THE MATERIALS THAT WERE SENT TO ME, TO THE PUBLISHED LITERATURE TO FIND OUT WHAT THE BENZENE AIR CONCENTRATIONS ARE THAT ARE ASSOCIATED WITH THE LOADING OR UNLOADING OF MATERIALS THAT CONTAIN BENZENE. AND THIS IS BECAUSE MR. HOOPER SAID THAT HE ASSISTED IN THIS PROCESS AT FIRESTONE. THAT HE ASSISTED IN THE UNLOADING OF THE RAIL CARS AS THEY CAME IN AND WE DIDN'T HAVE ANY DATA FOR SALINAS OR TIRE PLANTS IN GENERAL, SO I LOOKED TO THE PUBLISHED LITERATURE ON WHAT DOES THE WORLD KNOW ABOUT BENZENE AIR CONCENTRATIONS FOR A WORKER WHO IS EITHER LOADING OR UNLOADING, YOU KNOW, HANDLING THIS -- ANY KIND OF MATERIAL THAT CONTAINS BENZENE. THE LITERATURE IS MOSTLY FOR GASOLINE, AND JUST SO I COULD USE THAT DATA

IN TERMS OF ESTIMATING WHAT MR. HOOPER MIGHT HAVE BEEN EXPOSED TO WHILE HE PERFORMED THIS TASK.

AND, FINALLY, I LOOKED TO GUIDANCE DOCUMENTS THAT ARE PUBLISHED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND OTHER PUBLISHED LITERATURE THAT HAS BEEN PEER REVIEWED ABOUT DIFFERENT TYPES OF MODELS, SIMPLISTIC MODELS FOR HOW YOU CAN CALCULATE AIR CONCENTRATIONS IF YOU DIDN'T HAVE ACTUAL AIR MONITORING DATA.

SO, FOR EXAMPLE, MR. HOOPER SAID HE WORKED IN THE CATALYTIC SHOP AND OTHER WORKERS WERE SOMETIMES CLEANING THEIR TOOLS IN THAT SHOP WITH WHATEVER MATERIAL WAS AVAILABLE. HE SAID MIGHT HAVE BEEN -- OR THE BARRELS SOMETIMES CONTAINED THE WORD "KEROSENE". PERHAPS IT WAS JUST THE SAME MATERIALS USED BY THE TIRE WORKERS, I -- WE DIDN'T HAVE DATA FOR THE CATALYTIC SHOP OR WHILE SOMEONE IS CLEANING THEIR TOOLS, SO I LOOKED AT THE LITERATURE AND USED A VERY SIMPLE MODEL TO CALCULATE WHAT YOUR AIR CONCENTRATIONS WOULD BE IN A ROOM IF YOU WERE USING A SOLVENT TO CLEAN YOUR TOOLS THAT CONTAINED SOME AMOUNT OF BENZENE.

Q. LET ME STOP YOU, PLEASE.

I HAVE HEARD YOU DESCRIBE MEASURED DATA, VAN ERT'S, AND MEASURED DATA FROM THE PUBLISHED LITERATURE. YES?

A. YES.

Q. OKAY. THEN I HEARD YOU SAY THAT YOU ALSO LOOKED IN THE LITERATURE FOR A, QUOTE, "MODEL", END

QUOTE. RIGHT?

A. DIFFERENT TYPES OF MODELS, YES.

Q. OKAY. JUST EXPLAIN TO THE JURY THE DIFFERENCE TO AN EXPOSURE ASSESSOR OF -- LET ME SAY IT DIFFERENTLY. HOW DOES AN EXPOSURE ASSESSOR USE DATA MEASURED, ON THE ONE HAND, VERSUS A MODEL, ON THE OTHER HAND?

A. WELL, THE GOLD STANDARD IN OUR PROFESSION IS TO USE MEASURED DATA WHENEVER IT IS AVAILABLE. IT IS NOT ALWAYS PERFECT AS I SAID IN THE BEGINNING. IT IS NOT ALWAYS FOR THE EXACT SITUATION, YOU KNOW, THE EXACT TASK, THE EXACT PERSON THAT YOU WANT. AND, IN FACT, WE RARELY HAVE DATA ON AN INDIVIDUAL THAT WE THEN LATER WANT TO KNOW ABOUT, SO YOU GO TO THE LITERATURE. YOU GO TO UNPUBLISHED DATA SETS. YOU GO TO THE GOVERNMENT AND LOOK IN THEIR DOCKETS, AND YOU TRY TO FIND WHATEVER MEASUREMENTS EXIST, BECAUSE BY FAR THAT IS THE BEST DATA THAT YOU HAVE AVAILABLE TO YOU. THEY ARE REAL MEASUREMENTS, ESPECIALLY IF THERE ARE MANY MEASUREMENTS.

THERE IS A DIFFERENCE BETWEEN HAVING ONE MEASUREMENT AND HAVING HUNDREDS OF MEASUREMENTS. IN THIS CASE WE HAD LIMITED DATA ON THE SALINAS PLANT. I THINK THERE WERE ONLY 22 MEASUREMENTS, BUT WE HAD VERY CONSISTENT DATA THAT WERE COLLECTED ACROSS 10 OTHER TIRE PLANTS AND THAT CONSISTED OF HUNDREDS OF MEASUREMENTS, SO THAT IS A GREAT DATA SET. WE OFTEN DON'T HAVE THAT MUCH INFORMATION TO GO ON WHEN THEY ARE

DOING THESE TYPES OF ASSESSMENTS.

IN THOSE SITUATIONS WHERE YOU DON'T HAVE ANY DATA AT ALL, THEN YOU OFTEN RELY ON MODELS. SOMETIMES YOU MIGHT ALSO USE A MODEL FOR OTHER REASONS, BUT IT IS USUAL SECONDARY IF YOU HAVE THE REAL MEASUREMENTS.

YOU WOULD USE A MODEL. THEY CAN BE VERY SIMPLE. THEY CAN BE VERY COMPLEX. THEY HAVE DIFFERENT PARAMETERS YOU HAVE TO PUT IN, SUCH AS IN THIS CASE: WHAT IS THE BENZENE CONCENTRATION OF THE PRODUCT, WHAT ARE YOUR ASSUMPTIONS ABOUT THAT. YOU HAVE TO MAKE ASSUMPTIONS ABOUT WHAT IS THE SIZE OF THE ROOM THAT YOU ARE DEALING WITH, BECAUSE THAT IS IMPORTANT.

Q. LET ME INTERRUPT YOU, BECAUSE WHEN WE GET TO THE CATALYTIC SHOP OPINION YOU ARE GOING TO EXPLAIN MORE ABOUT THIS.

A. SURE.

Q. I JUST WANT TO GET THIS -- I JUST WANT TO, AS A FOUNDATION MATTER, ASK THIS QUESTION: WHERE DOES SOMEBODY LIKE YOU, EXPOSURE ASSESSOR, GO TO FIND THE APPLICABLE MODEL TO USE IN A GIVEN SITUATION?

A. THERE ARE MANY AVAILABLE MODELS, PARTICULARLY. I NORMALLY USE THE MODELS THAT HAVE BEEN DEVELOPED OR APPROVED BY THE E.P.A., ENVIRONMENTAL PROTECTION AGENCY.

Q. WHY? WHY DO YOU DO THAT?

A. BECAUSE SOMETIMES THEY ARE SIMPLER MODELS TO USE. THEY HAVE BEEN AROUND FOR A LONG TIME. PEOPLE CAN UNDERSTAND THEM BECAUSE A LOT OF PEOPLE HAVE BEEN

USING THEM.

SOMETIMES THERE ARE MUCH MORE COMPLICATED MODELS THAT MIGHT BE A BETTER -- A MORE PRECISE JOB, BUT THEY ARE SO COMPLICATED THAT THE REST OF US DON'T KNOW WHAT WE ARE DOING, OR THEY ARE ON SOMEONE'S INDIVIDUAL COMPUTER BECAUSE THEY DID THE PROGRAMING THEMSELVES, WHEREAS THE E.P.A. MODELS, ANYONE CAN DOWNLOAD AND USE THEM. IT IS VERY TRANSPARENT WHAT THE CODE WAS TO WRITE THE PROGRAM, AND, SO, THAT IS WHY WE TYPICALLY USE THOSE MODELS.

Q. OKAY. NOW, BEFORE I DERAILED YOU, YOU WERE TALKING ABOUT MATERIALS THAT YOU USED IN THE CASE AND LET ME JUST ASK YOU ABOUT THOSE.

YOU CAREFULLY REVIEWED MR. HOOPER'S DEPOSITION TESTIMONY IN THIS CASE, SOME 15 HOURS WORTH OF TESTIMONY.

A. I DID, REPEATEDLY.

Q. OKAY. DID I ASK YOU IN ADDITION, ONCE THIS TRIAL STARTED, TO REVIEW HIS TRIAL TESTIMONY GIVEN IN THIS COURTROOM?

A. YES.

Q. AND THE COURT REPORTER TRANSCRIBED IT AND I SENT IT TO YOU AND YOU READ THAT CAREFULLY.

A. YES.

Q. OKAY. HAVE YOU ALSO READ -- WELL, WERE YOU ALSO PRESENT IN COURT AT MY REQUEST DURING A PORTION OF THE TESTIMONY OF KENNETH COHEN?

A. YES.

Q. AND DID YOU READ THE COMPLETE DIRECT AND CROSS-EXAMINATION OF KENNETH COHEN IN THIS TRIAL THAT I SENT YOU?

A. I DID. AND I ALSO READ HIS DEPOSITION IN THE CASE.

Q. OKAY. ALL RIGHT.

AND AT MY REQUEST DID YOU READ THE HYPOTHETICAL QUESTION THAT MR. HARLEY ASKED DR. INFANTE IN THIS TRIAL?

A. YES.

Q. ALL RIGHT. NOW, NEXT TOPIC.

DESCRIBE GENERALLY, PLEASE, WHAT INFORMATION YOU HAD AVAILABLE -- LET ME BACK UP AND START ALL OVER.

DR. WILLIAMS, ULTIMATELY YOU ARE GOING TO TELL THE JURY WHAT YOU THINK MR. HOOPER'S CUMULATIVE BENZENE EXPOSURE WAS, RIGHT?

A. YES.

Q. DID YOU MAKE ANY DISTINCTION IN YOUR OPINION AS TO WHETHER THAT BENZENE EXPOSURE OF HIS WAS DUE TO CHEVRON STUFF VERSUS ANY OTHER CHEMICAL SUPPLIERS MATERIALS?

A. NO, I DID NOT.

Q. WHAT KIND OF INFORMATION DID YOU HAVE AVAILABLE TO YOU WITH RESPECT TO THE BENZENE CONCENTRATIONS OF THE KINDS OF SOLVENTS THAT MR. HOOPER SAID HE WORKED WITH AND AROUND?

A. WELL, SOME OF THAT I COVERED IN THIS LIST, BUT I WILL MENTION THEM AGAIN.

Q. WELL, LET ME -- YOU DID, SO WE WON'T DO THAT AGAIN. LET ME ASK YOU THIS: DID YOU AS PART OF YOUR TASK IN THIS CASE TRY TO BREAK OUT INTO A TABLE INFORMATION LISTING THE FIRESTONE CODE PRODUCT, THE PERCENTAGE OF BENZENE IN THAT PRODUCT FOR CHEVRON, THE CHEVRON PRODUCT THAT MET THE FIRESTONE CODE, AND THE SOURCE MATERIAL, THAT IS TO SAY, THE LETTER, MEMO OR M.S.D.S., WHATEVER IT IS THAT GAVE YOU THAT INFORMATION? DID YOU DO THAT?

A. I DEVELOPED A PARTIAL LIST. IT DOESN'T INCLUDE ALL THE SOURCES OF THAT INFORMATION, BUT IN MY REVIEW OF SOME OF THESE MANY BOXES WORTH OF MATERIALS, I STARTED GENERATING THIS LIST SO I WOULDN'T HAVE TO KEEP GOING BACK AND LOOKING AT THE SAME DOCUMENT TWICE.

Q. OKAY.

A. SO THAT IS A PARTIAL LIST, YES.

Q. ALL RIGHT.

LET ME SHOW YOU WHAT I HAVE MARKED AS EXHIBIT 1322, AND ASK YOU --

MR. HARLEY: TO SHORTEN THE PROCESS, I DON'T HAVE AN OBJECTION TO ITS ADMISSION.

MR. RIFF: I APPRECIATE THAT VERY MUCH.

THE COURT: IS 1322 BEING OFFERED?

MR. RIFF: YES, YOUR HONOR.

THE COURT: EXHIBIT 1322 IS ADMITTED.

(DEFENDANT'S EXHIBIT NO. 1322 **ADMITTED** INTO EVIDENCE.)

THE COURT: SPEAKING OF RISK ASSESSMENT,

THIS IS ONE OF THE RISKIEST PARTS OF THE WHOLE TRIAL PROCESS.

MR. RIFF: WE HAD A CLOSE ENCOUNTER.

THE COURT: YES.

MR. RIFF: LET'S SEE. IS THIS 1322?

THE WITNESS: YES.

Q. (MR. RIFF:) LET ME DISPLAY A BLOWUP OF WHAT HAS BEEN MARKED, WHAT HAS BEEN ADMITTED AS DEFENDANT'S 1322. AND, BRIEFLY, IF YOU WOULD, TELL US WHAT WE'RE LOOKING AT.

DO YOU UNDERSTAND WHAT I WANT YOU TO DO?

A. TELL YOU WHAT I'M LOOKING AT.

Q. WELL, EXPLAIN TO THE JURY THE INFORMATION CONCERNING BENZENE CONTENT THAT YOU COLLECTED IN THAT EXHIBIT AND GENERALLY HOW YOU USED IT IN YOUR ANALYSIS.

A. WELL, AS I SAID, I HAD A BUNCH OF DIFFERENT BINDERS THAT CONTAINED DIFFERENT MEMOS AND LETTERS AND CORRESPONDENCE, WHAT WERE CALLED THESE TECHNICAL SERVICE REPORTS, MATERIAL SAFETY DATA SHEETS, THE M.S.D.S. SHEETS, MATERIAL INFORMATION BULLETINS. THIS DOESN'T INCLUDE ANY OF THE DEPOSITION TESTIMONY OR ALL OF THE LETTERS OR MEMOS. IT WAS AS I WAS GOING THROUGH CERTAIN BINDERS I STARTED TAKING THESE NOTES AND THEN ENDED UP BEING IN THIS TABLE FORMAT REGARDLESS OF TIME PERIOD, SO THIS COVERS A WIDE SPECTRUM OF DIFFERENT YEARS.

AND I REFERRED TO WHAT THE PRODUCT NAME WAS THAT FIRESTONE USED. THEY TEND TO USE THIS NUMBERING

SYSTEM THAT YOU PROBABLY HEARD ABOUT. AND UNDERNEATH THAT I HAVE WRITTEN IN QUALITATIVE WORDS WHAT THAT NUMBERING SYSTEM REFERS TO. SO, FOR EXAMPLE, FIRESTONE CODE 356 IS WHAT IS CALLED THE RUBBER SOLVENT.

HERE I LISTED THE SOURCE OF THAT INFORMATION AS I SAW IT, WHETHER IT WAS A MEMO OR LETTER FROM SOMEBODY AT CHEVRON OR WHETHER IT WAS A LETTER OR MEMO OR SOMETHING FROM SOMEONE AT FIRESTONE. AND THEN MAYBE WHAT THE SPECIFIC NAME, I GUESS, IF YOU WILL, OF WHAT CHEVRON CALLS THAT PRODUCT. SO, FIRESTONE WOULD CALL SOMETHING AS 356, BUT CHEVRON MIGHT -- THEIR VERSION OF 356 MIGHT BE THIS THINNER 200 OR THE THINNER 183. AND, SO, I JUST LUMPED THEM IN ALL CHEVRON IN MY MIND, LUMPED THEM AS 356.

Q. CONCENTRATE ON THE COLUMN LABELED "PERCENT BENZENE."

A. THIS IS WHAT THAT LETTER OR MEMO OR REPORT SAID WAS THE BENZENE CONTENT OF THIS PRODUCT OR IF IT WAS TESTED AT THAT TIME. IT IS MY UNDERSTANDING THAT SOMETIMES A MATERIAL SAFETY DATA SHEET WILL CONTAIN WHAT THE AVERAGE TYPICALLY IS FOR THAT PRODUCT. I DON'T KNOW IF THEY ALWAYS DERIVED A NEW M.S.D.S. SHEET EVERY SINGLE TIME THEY TAKE A NEW SAMPLE, BUT I'M NOT AN EXPERT ON THAT. THIS IS BASICALLY WHAT WAS REPORTED ON WHATEVER MATERIAL THAT I HAD.

Q. OKAY. PARDON ME FOR CUTTING YOU OFF, BUT PLEASE HAVE A SEAT. AND I NOW WANT TO ASK YOU ABOUT ANOTHER BIT OF INFORMATION THAT YOU CONSIDERED.

YOU HAD INFORMATION ABOUT WHAT MR. HOOPER'S WORK WAS FROM, AMONG OTHER SOURCES, MR. HOOPER, RIGHT?

A. THAT WAS MY PRIMARY SOURCE OF INFORMATION.

Q. OKAY. AND DID YOU --

LET'S SEE. LET ME SEE IF I CAN JUST GET THIS IN, 1334.

LET ME PUT IN FRONT OF YOU, EXHIBIT 1334.

AND, YOUR HONOR, CAN I EXAMINE FROM UP HERE FOR JUST A MOMENT?

THE COURT: YES, CERTAINLY.

Q. (MR. RIFF:) LOOK AT 1334. TELL THE JURY WHAT IT IS, GENERALLY.

A. THIS IS A TABLE THAT I PREPARED TO SHOW WHAT MR. HOOPER SAID IN HIS DEPOSITION IN TERMS OF HOW MUCH TIME HE SPENT IN DIFFERENT LOCATIONS IN THE PLANT.

Q. OKAY. WHAT DID YOU LABEL THAT?

A. TABLE 1, MR. HOOPER'S WORK LOCATIONS AT THE FIRESTONE SALINAS PLANT, PARENS (1972 TO 1975).

MR. HARLEY: AND --

Q. (MR. RIFF:) TAKE MY PEN AND PLEASE CHANGE THAT TITLE TO READ "PER HIS DEPOSITION TESTIMONY."

MR. HARLEY: CORRECT.

THE WITNESS: AND I DO HAVE A FOOTNOTE THAT SAYS THAT, JUST SO YOU KNOW. OKAY.

MR. RIFF: MR. HARLEY AND I HAD A WHISPER DEAL ON THIS AND I'M GOING TO LIVE UP TO IT.

MR. HARLEY: AND I HAVE NO OBJECTIONS TO THE ADMISSION OF 1332 AS PRESENTLY TITLED.

MR. WAGNON: NO, 1324.

THE COURT: 1334; IS THAT CORRECT?

MR. HARLEY: THEN THAT IS THE ONE I HAVE NO OBJECTION TO.

THE WITNESS: MINE SAYS 1324.

THE COURT: IT IS 1324. THAT IS THE NUMBER ON THE TAG. THAT WILL BE THE EXHIBIT AND IT IS ADMITTED AS AMENDED.

THE CLERK: YOUR HONOR, 13 --

THE COURT: 24.

THE CLERK: THANKS.

(DEFENDANT'S EXHIBIT NO. 1324 **ADMITTED** INTO EVIDENCE.)

MR. HARLEY: I DON'T CARE IF YOU CHANGE THE ENLARGED CHART.

MR. RIFF: I'M A TECHNICIAN.

[DRAWING.]

Q. "PER HIS" --

A. I THINK I WROTE "DEPOSITION TESTIMONY."

Q. NOW, THE COLUMN THERE -- WELL, THE COLUMN ON THE FAR LEFT IS "PLANT LOCATION." THESE ARE AREAS THAT HE DESCRIBED IN HIS DEPOSITION WHERE HE WORKED, CORRECT?

A. YES.

Q. THEN THERE IS A "PERCENTAGE" COLUMN RIGHT NEXT TO IT, AND WHERE DID THAT COME FROM?

A. THAT WAS BASED ON WHAT HE SAID.

Q. OKAY. AND THE COLUMN TO THE RIGHT OF THAT ALSO SAYS "PERCENTAGE." WHAT IS THAT BASED ON?

A. HE PRESENTED A RANGE IN TWO INSTANCES OR A LESS-THAN NUMBER AND I JUST WANTED TO GIVE EVERYTHING A WHOLE NUMBER, SO IT IS HIS -- IT IS THE UPPER END OF HIS RANGE IF HE GAVE A RANGE OR IT IS JUST THAT VALUE IF HE GAVE LESS THAN THAT VALUE.

Q. ON THAT SECOND COLUMN LABELED "PERCENTAGE," WHEN YOU ADD IT ALL UP IT EQUALS 64 PERCENT.

A. THAT'S RIGHT.

Q. OKAY. AND HAVING GONE TO HARVARD, DID YOU NOTICE THAT 64 PERCENT IS NOT 100 PERCENT?

A. I DID NOTICE THAT.

Q. WHAT DID YOU DO ABOUT THAT?

A. WELL, THE QUESTION THAT WAS POSED TO MR. HOOPER WAS ASSUME THAT ALL THE TIME YOU SPENT AT THE PLANT WAS 100 PERCENT AND TELL US -- DIVVY OUT WHERE YOU SPENT TIME THROUGHOUT THE PLANT AND GIVE A PERCENTAGE NUMBER FOR EACH OF THOSE. AND, SO, HE HAD A LOT OF LOCATIONS TO LIST AND IT SEEMED TO ME THAT HE DIDN'T HAVE A CHANCE TO GO BACK AND ADD UP THAT THAT WOULD ALL EQUAL 100 PERCENT, SO I GUESS I DID IT FOR HIM, IF YOU WILL, AND THAT IS THE NEXT COLUMN, BY JUST TAKING A STRAIGHT RELATIONSHIP, PRESERVING THE RELATIVE DIFFERENCE BETWEEN THE DIFFERENT AREAS THAT HE SAID.

SO, IN OTHER WORDS, IF HE SAID I SPENT MORE TIME IN THE TIRE PRESS TUNNELS THAN ANYWHERE ELSE, I WANTED TO MAKE SURE THAT THAT WOULD BE REFLECTED IN THE

SAME RELATIVE PERCENTAGE TO THE OTHER PLACES IF ONE ADDED THAT UP TO 100 PERCENT. AND THE ONLY REASON FOR DOING THIS WAS WHEN I DID THE EXPOSURE CALCULATIONS, I WANTED TO MAKE SURE I WAS ACCOUNTING FOR AT LEAST EIGHT HOURS A DAY AND IF I USED HIS NUMBERS I WOULD BE ACCOUNTING FOR LESS THAN EIGHT HOURS A DAY AND I KNEW HE WAS AT THE PLANT FOR AT LEAST EIGHT HOURS A DAY, SO THAT IS WHY I NEEDED TO TAKE THOSE NUMBERS AND INCREASE THEM ALL SO THAT IT ENDED UP 100 PERCENT.

Q. OKAY. LET ME JUST CATCH UP WITH YOU -- WITH MYSELF HERE, PLEASE.

OKAY. NOW, BY THE WAY, IN YOUR EXPOSURE ASSESSMENT FOR MR. HOOPER HOW MANY DAYS A WEEK DID YOU ASSUME HE WORKED?

A. I ASSUMED EIGHT HOURS A DAY FOR SIX DAYS A WEEK.

Q. WHY SIX DAYS A WEEK?

A. BECAUSE HE SAID HE WORKED A LOT OF OVERTIME AND I FELT THERE WERE PROBABLY WEEKS IN WHICH HE ONLY WORKED FIVE DAYS A WEEK, EIGHT HOURS. THERE WERE PROBABLY WEEKS THAT HE WORKED FIVE DAYS A WEEK FOR NINE OR 10 HOURS A DAY. THERE WERE PROBABLY WEEKS THAT HE WORKED SIX DAYS A WEEK. MAYBE THERE WERE OTHER DAYS HE WORKED SEVEN DAYS A WEEK. BUT ON AVERAGE, I FELT THAT WHEN SOMEONE SAID THEY WORKED OVERTIME, 40 HOURS A WEEK FOR EVERY WEEK FOR THAT YEAR WAS A REASONABLY CONSERVATIVE THING TO DO.

Q. OKAY.

I HOPE I'M NOT GETTING AHEAD OF MYSELF, BUT -- I SEE ON THIS EXHIBIT BEFORE US THERE IS NO REFERENCE TO MR. HOOPER CLEANING TOOLS. OF COURSE THAT IS BECAUSE THAT IS -- I WITHDRAW THE QUESTION. LET ME START OVER.

WHAT ASSUMPTION DID YOU MAKE IN DOING YOUR ANALYSIS WITH RESPECT TO WHETHER MR. HOOPER DID OR DID NOT CLEAN HIS TOOLS?

A. I MADE THE ORIGINAL ASSUMPTION THAT HE DID NOT CLEAN HIS TOOLS BECAUSE HE SAID HE DIDN'T RECALL DOING THAT. BUT HE DID SAY HE RECALLED OTHER PEOPLE CLEANING THEIR TOOLS WHEN HE WAS IN THE CATALYTIC SHOP, SO FOR THE TIME THAT HE SAID HE WAS IN THE CATALYTIC SHOP, THAT -- I DID CALCULATE WHAT HIS EXPOSURES MIGHT BE IN THAT ROOM WHILE SOMEONE WAS CLEANING THEIR TOOLS.

Q. OKAY. WHAT ASSUMPTION DID YOU MAKE WITH RESPECT TO WHETHER HE DID OR DID NOT UNLOAD RAIL CARS?

A. HE SAID HE UNLOADED RAIL CARS. HIS SUPERVISOR, MR. MYRICK, SAID THAT WASN'T --

MR. HARLEY: WELL, OBJECT, HEARSAY.

THE COURT: SUSTAINED.

MR. RIFF: YOUR HONOR, I'M NOT OFFERING IT FOR THE PROOF OF IT. I'M OFFERING IT FOR HOW SHE DID HER ANALYSIS.

THE COURT: I THINK YOU HAVE TO APPROACH IT IN A DIFFERENT FASHION, PERHAPS WITH A HYPOTHETICAL QUESTION.

MR. RIFF: OKAY.

Q. WELL, LET ME GET TO THE BOTTOM LINE.

ULTIMATELY, AS PART OF YOUR ANALYSIS, DID YOU INCLUDE HIS UNLOADING RAIL CARS AS PART OF YOUR ANALYSIS?

A. YES, I DID.

Q. OKAY. I THINK THAT IS PROBABLY --

NOW, WHAT DID YOU ASSUME WITH RESPECT TO AN EXPOSURE TO MR. HOOPER ON SUNDAYS FROM HIS BEING PRESENT WHEN JANITORS WERE USING SOMETHING TO CLEAN THE FLOORS?

A. I DIDN'T MAKE ANY PARTICULAR DISTINCTION FOR THAT. I ASSUMED THAT HE WORKED SIX DAYS A WEEK. ONE OF THOSE DAYS MIGHT HAVE BEEN A SUNDAY, IF NOT THE SATURDAY.

Q. OKAY. NOW, DO YOU UNDERSTAND FROM THE MATERIALS THAT YOU RECEIVED THAT AT LEAST ONE DAY A WEEK THE PLANT WAS, QUOTE, "DOWN," END QUOTE, NOT IN PRODUCTION?

A. IT IS MY UNDERSTANDING THAT WAS ON SUNDAYS.

Q. OKAY. AND THE OTHER DAYS IT WAS UP AND RUNNING; IS THAT TRUE?

A. THAT IS CORRECT.

Q. AND IN DOING YOUR WORK AND ASSUMING THESE SIX DAYS OF WORK FOR MR. HOOPER, DID YOU REDUCE THAT SUNDAY WORK AT ALL FOR THE PLANT BEING, QUOTE, "DOWN," END QUOTE, WITH RESPECT TO HIS EXPOSURE?

A. NO.

Q. YOU JUST ASSUMED THE THING WAS CHUGGING AWAY

SIX DAYS A WEEK?

A. OR THAT MR. HOOPER WAS STILL EXPOSED TO SOMETHING, NO MATTER WHAT WAS GOING ON.

Q. FINE. OKAY. LET'S MOVE ON.

NOW, DID YOU COLLECT OUT FROM THE MATERIALS THAT WE SENT YOU THE MEASURED AIRBORNE CONCENTRATIONS OF BENZENE BY DEPARTMENT AT THE SALINAS PLANT IN 1975 FROM VAN ERT'S WORK? DID YOU COLLECT THAT OUT AND PUT IT ON A TABLE?

A. YES, I DID.

Q. OKAY. AND LET ME SHOW YOU WHAT HAS BEEN MARKED AS 1325 AND ASK --

I GUESS I'M SHOWING COUNSEL TO SEE IF I CAN SIMPLY OFFER THIS.

MR. HARLEY: I HAVE NO OBJECTION TO IT BEING USED PROVISIONALLY. I MAY HAVE A MOTION TO STRIKE AFTER CROSS-EXAMINATION.

THE COURT: ALL RIGHT. THEN YOU MAY DISPLAY THE EXHIBIT IF YOU WISH TO AND THE COURT WILL RESERVE ON THE ULTIMATE ADMISSIBILITY ISSUE AS TO 1325.

MR. RIFF: THANK YOU, YOUR HONOR.

Q. 1325 IS NOW BEFORE YOU, AND LET ME SEE IF I HAVE MY BLOWUP OF THAT.

THESE BLOWUP SEEMED LIKE A GREAT IDEA BACK IN THE HOTEL ROOM.

THE COURT: THAT IS WHY WE USE THE NOMAD.

I'M NOT PICKING ON MR. RIFF. EVERYBODY THAT DEALS WITH THESE LARGE BLOWUPS HAVE THESE PROBLEMS IN

OUR CONFINED SPACE.

Q. (MR. RIFF:) OKAY. AND, BRIEFLY, IF YOU WOULD, TELL THE JURY WHAT WE'RE LOOKING AT IN 1325.

A. THESE ARE THE DATA, THE FAMOUS DATA NOW THAT YOU HAVE HEARD ABOUT THAT WERE COLLECTED BY DR. VAN ERT DURING THE JULY 1975 WALK-THROUGH THAT HE DID OF THE SALINAS PLANT IN WHICH HE COLLECTED A NUMBER OF DIFFERENT MEASUREMENTS OF BENZENE AND OTHER COMPOUNDS AND REPORTED WHERE HE COLLECTED THEM, WHAT DEPARTMENT, ANY OTHER DESCRIPTION ABOUT WHAT WAS GOING ON IN THAT DEPARTMENT WHEN HE COLLECTED THE SAMPLES, WHAT THE SAMPLE DURATION WAS FOR THAT PARTICULAR SAMPLE, AND WHAT THE CONCENTRATION WAS OF BENZENE IN THAT SAMPLE.

THE LAST COLUMN I THINK MIGHT -- I DON'T RECALL IF HE REPORTED THAT OR WHETHER I JUST AVERAGED THE VALUES FOR EACH OF THOSE DEPARTMENTS.

Q. WHY DON'T YOU TAKE A COUPLE OF EXAMPLES TO SEE WHAT WE'RE LOOKING AT HERE. THE VERY FIRST ENTRY THERE -- PROBABLY NOT EVERYBODY ON THE JURY CAN READ -- IT SAYS "CEMENTERS ON 10-INCH TREAD TUBER LINE."

THEN IT SAYS "SAMPLE DURATION 37 MINUTES AND CONCENTRATION AND PARTS PER MILLION 1.98."

DO YOU SEE THAT?

A. YES.

Q. AND INTERPRET THAT. PUT THAT IN ENGLISH FOR US IN A COUPLE OF SENTENCES. WHAT IS YOUR UNDERSTANDING OF WHAT IS BEING REPORTED THERE?

A. WELL, THE WORKER AT THIS -- THE EXTRUDER AREA,

WHICH IS THE TUBER AREA, DEPARTMENT 126, IT IS MY UNDERSTANDING THAT THIS SAMPLE WAS COLLECTED WHEN HE IS DIPPING IN WHAT HAS BEEN TERMED SOMETHING COMPARABLE TO A PAINT BRUSH. YOU WOULD DIP IT IN THIS CEMENT-TYPE MIXTURE THAT CONTAINS SOLVENT AND THEN YOU WOULD APPLY IT OVER THE TREAD, WHICH IS JUST PART OF THE RUBBER THAT IS GOING TO BE USED AS THE TREAD ON THE FINAL TIRE.

AND WHILE HE IS ENGAGED IN THIS PROCESS DOING HOWEVER MANY TREADS ONE DOES WITHIN A 37 MINUTE WINDOW, THAT IS THE AVERAGE CONCENTRATION OF BENZENE MEASURED IN HIS BREATHING ZONE, HE IS WEARING A SAMPLER ABOUT RIGHT HERE.

[INDICATING.]

Q. ON HIS LAPEL?

A. THAT IS WHAT IS CALLED ON YOUR LAPEL. AND THAT IS THE AVERAGE CONCENTRATION OF BENZENE, 1.98 OVER THAT ENTIRE 37 MINUTE PERIOD FOR WHICH HE IS ON MULTIPLE OCCASIONS DIPPING HIS BRUSH IN THIS CEMENT SOLVENT-LIKE MIXTURE AND APPLYING IT ON TO THE RUBBER MATERIAL.

Q. NOW, WOULD YOU EXPECT, BASED ON YOUR EXPERIENCE AND KNOWLEDGE IN THE FIELD, THAT DURING THAT 37 MINUTES THAT THAT PERSON IS DOING THAT TASK, THAT, IN FACT, THERE IS GOING TO BE PEAKS AND VALLEYS IN THAT PERSON'S EXPOSURE TO BENZENE FROM THE SOLVENT?

A. SURE. DEFINITELY.

Q. OKAY. AND WE WILL JUST DO A COUPLE MORE EXAMPLES JUST TO MAKE SURE WE ARE COMMUNICATING HERE.

LET'S JUST LOOK AT THE VERY NEXT ONE. IT IS A CEMENTER AT THE 8- TO 10-INCH TUBER LINE. HERE IS AN EXAMPLE OF 64 MINUTES WITH A BENZENE CONCENTRATION OF 0.37. RIGHT?

A. YES.

Q. OKAY. LET'S SEE. IN THE BEAD DIP AREA -- THIS IS THE SECOND COLLECTION OF DATA, BEAD DIP TANK AREA, THERE IS A 34 MINUTE SAMPLE WITH A MEASUREMENT OF 1.8 PARTS PER MILLION ON AVERAGE DURING THAT TIME PERIOD, TRUE?

A. YES.

Q. ONE MORE JUST FOR THE HECK OF IT, ABOUT MIDWAY THROUGH IN THE PASSENGER TIRE BUILDING, THE PASSENGER TIRE BUILDER, THIS IS THE TIRE BUILDER AT MACHINE NUMBER E-9 FOR 35 MINUTES. THERE IS A CONCENTRATION OF 0.4 PARTS PER MILLION. DID I GET THAT RIGHT?

A. YES.

Q. WHAT IS YOUR UNDERSTANDING, VERY BRIEFLY, OF HOW A TIRE BUILDER USES SOLVENT?

A. IT IS MY UNDERSTANDING THAT A TIRE BUILDER IS USING SOLVENT PERHAPS ON MULTIPLE OCCASIONS TO SERVE AS WHAT IS TERMED TACKIFIER, I HOPE I'M SAYING THAT CORRECTLY, TO TRY TO MAKE THE RUBBER MORE STICKY OR TACKY. AND HE HAS ALL OF THESE COMPONENTS OF THE TIRE THAT HAVE COME TOGETHER IN HIS STATION THAT HE HAS GOT TO PUT TOGETHER AND SOME OF THEM MAY HAVE BEEN LOST OF THEIR TACKINESS AND THAT IS HOW THEY GET THESE VARIOUS TREADS AND PLIES AND ALL THESE PIECES TO STICK

TOGETHER. AND SOMETIMES HE MIGHT USE -- I THINK THE TERM THAT HAS BEEN USED HERE IS A SWAB. JUST A PIECE OF CLOTH OR STEEL MESH IS MY UNDERSTANDING ATTACHED TO A STICK-LIKE STRUCTURE AND HE WILL DIP THAT INTO A CONTAINER, A SOLVENT AND THEN SORT OF SWAB THE SURFACE AREA OF THE TIRE OR THE PIECE THAT HE IS DEALING WITH TO GET IT TO BECOME MORE STICKY.

Q. OKAY. SO THAT IS THE SALINAS DATA THAT YOU CONSIDERED IN YOUR ANALYSIS IN THIS CASE.

A. THAT IS CORRECT.

Q. NOW, LET ME ASK YOU -- YOU ALSO CONSIDERED VAN ERT'S DATA FROM THE REPORTED LITERATURE OF 10 OTHER TIRE PLANTS, TRUE?

A. TRUE. I WANTED TO SEE IF THAT DATA WAS CONSISTENT WITH THIS DATA SET.

Q. OKAY. SO, I'M GOING TO PERHAPS DISPLAY EXHIBIT 1326.

MR. HARLEY: I'M GOING TO OBJECT TO THAT AS HEARSAY.

MR. RIFF: OKAY.

Q. THEN LET ME DO IT A LITTLE MORE FORMALLY.

LET ME PUT IN FRONT OF YOU EXHIBIT 1326 AND ASK YOU JUST WHAT IS IT. DON'T TELL US THE CONTENT OF IT. JUST DESCRIBE THE DOCUMENT, PLEASE.

A. THIS IS A TABLE SIMILAR TO THIS ONE IN THAT IT REPORTS THE NUMBER OF SAMPLES IN THE MEAN CONCENTRATION OF BENZENE FOR THOSE SAMPLES COLLECTED IN DIFFERENT DEPARTMENTS AT THESE 10 DIFFERENT TIRE PLANTS ACROSS

THE UNITED STATES FROM THE '73 TO 1977 TIME PERIOD.

Q. OKAY. AND FOR THOSE -- AND THE SOURCE OF THIS DATA IS VAN ERT'S PUBLISHED STUDY?

A. IT IS A LATER PUBLISHED STUDY BY VAN ERT.

Q. LATER PUBLISHED STUDY --

A. IT WASN'T PUBLISHED UNTIL 1980, BUT THE DATA WAS COLLECTED BETWEEN '73 AND '77.

Q. OKAY. AND DID YOU CREATE THE TABLE THAT IS THAT EXHIBIT?

A. I CREATED THIS TABLE BASED ON WHAT WAS PUBLISHED IN THAT PAPER.

Q. OKAY. AND YOU CONSIDERED THAT DATA FOR THE PURPOSES OF THE ASSIGNMENT IN MR. HOOPER'S CASE.

A. CORRECT.

MR. RIFF: WELL, I'M GOING TO OFFER, YOUR HONOR, 1326.

MR. HARLEY: I OBJECT. IT IS HEARSAY. IT IS VERBATIM DATA FROM A PUBLISHED STUDY.

THE COURT: ALL RIGHT. I'M GOING TO RESERVE ON THE OFFERED EXHIBIT. I THINK THIS IS AN ISSUE WE DISCUSSED PREVIOUSLY ON THE MC DONALD AND LAND CASE AND IT IS RESERVED.

MR. RIFF: OKAY. WOULD IT BE PERMISSIBLE, YOUR HONOR, TO DISPLAY IT WITH A LIMITING INSTRUCTION THAT IT IS NOT BEING OFFERED FOR THE TRUTH OF THE MATTER, BUT TO SHOW WHAT THE WITNESS HAS RELIED UPON AND CONSIDERED IN FORMING HER OPINIONS?

THE COURT: ANY OBJECTION TO THAT,

MR. HARLEY?

MR. HARLEY: YES, YOUR HONOR.

THE COURT: ALL RIGHT. FOR THE TIME BEING, NO, WE WILL REFRAIN FROM DOING THAT.

Q. (MR. RIFF:) LET ME ASK YOU THIS: DID THE DATA FROM VAN ERT'S STUDY THAT IS IN 1326, THESE 10 OTHER TIRE PLANTS, GENERALLY SPEAKING, WAS IT CONSISTENT WITH THE DATA THAT WE SAW FROM SALINAS OR WAS IT INCONSISTENT?

A. IT WAS VERY CONSISTENT WITH THE DATA.

Q. AND WHAT IS THE SIGNIFICANCE OF THAT TO YOU AS AN EXPOSURE ASSESSOR?

A. WELL, IT CERTAINLY INCREASES MY CONFIDENCE LEVEL THAT THE SALINAS DATA ARE PROVIDING A REPRESENTATIVE PICTURE OF WHAT THE BENZENE CONCENTRATIONS WERE IN A TIRE -- IN THIS TIRE PLANT DURING THIS PARTICULAR PERIOD OF TIME. AND THAT VERY SIMILAR CONCENTRATIONS HAVE BEEN MEASURED IN 10 OTHER PLANTS ACROSS THE UNITED STATES DURING A SIMILAR TIME PERIOD IN WHICH THEY ARE ALSO USING BENZENE-CONTAINING SOLVENTS. SO, IT INCREASES MY COMFORT LEVEL THAT THIS DATA SET, WHICH I THINK IS 22 SAMPLES, IS A GOOD DATA SET AND VERY CONSISTENT WITH WHAT ELSE HAS BEEN PUBLISHED IN THE LITERATURE THAT CONTAIN SEVERAL HUNDRED SAMPLES.

Q. OKAY. NOW, WHAT I'M GOING TO DO IS I'M GOING TO CLEAR THE DECK A BIT, AND WE'RE GOING TO GET TO YOUR OPINION ABOUT MR. HOOPER.

IN THINKING ABOUT MR. HOOPER AND HIS EXPOSURE TO BENZENE AT THE FIRESTONE PLANT, HOW MANY DIFFERENT EXPOSURE SCENARIOS DID YOU CONSIDER?

A. THREE GENERAL CATEGORIES.

Q. TELL THE JURY WHAT THOSE THREE GENERAL CATEGORIES WERE, PLEASE.

A. THE FIRST GENERAL CATEGORY RELATED TO MR. HOOPER'S GENERAL WORK AS A PIPEFITTER THROUGHOUT THE PLANT. HE SAID IN HIS DEPOSITION TESTIMONY THAT HE SPENT A LARGE AMOUNT OF TIME AS A PIPEFITTER WORKING ON PIPES, WORKING ON VALVES THAT ARE ATTACHED TO THOSE PIPES, AND, IN PARTICULAR, WORKING ON STEAM PIPES. SINCE THERE ARE MANY STEAM PIPES GOING THROUGH THIS FACILITY, HE SPENT QUITE A BIT OF HIS TIME HE SAID WORKING ON STEAM PIPES, AND PARTICULARLY IN THE TIRE PRESS AREA.

SO, MY FIRST GENERAL SCENARIO WAS WHAT WOULD HIS CONCENTRATION OR WHAT WOULD HIS EXPOSURE TO BENZENE BE WHILE WORKING THROUGHOUT THIS PLANT ON A DAILY BASIS WHILE HE IS GOING TO DIFFERENT AREAS WORKING ON THESE STEAM PIPES, FOR EXAMPLE.

Q. OKAY. AND WE'RE GOING TO GET TO THAT. TELL US WHAT THE SECOND CATEGORY OF MR. HOOPER'S WORK THAT YOU CONSIDERED.

A. THE SECOND CATEGORY I CONSIDERED WAS THE TIME HE SAID HE SPENT IN THE CATALYTIC SHOP. AND HE MENTIONED THAT ON SOME OCCASIONS OTHER PIPEFITTERS OR OTHER WORKERS IN THAT SHOP MIGHT BE USING A

BENZENE-CONTAINING SOLVENT OR SOME MATERIAL TO CLEAN THEIR TOOLS, AND THAT WAS THE SECOND GENERAL SCENARIO I CONSIDERED.

Q. WHAT WAS THE THIRD GENERAL CATEGORY?

A. THE THIRD CATEGORY AS WE TALKED ABOUT WAS WHEN HE SAID HE ASSISTED IN THE UNLOADING OF PRODUCTS THAT CAME IN FROM RAIL CAR.

Q. OKAY.

YOUR HONOR, I PRESUME YOU WILL INTERRUPT ME WHEN YOU ARE READY TO TAKE OUR BREAK.

THE COURT: YES, I WASN'T SURE ABOUT YOUR COMMENT JUST A MOMENT AGO, WHETHER YOU WERE ABOUT TO CONCLUDE OR WHETHER YOU HAVE SUBSTANTIALLY MORE.

MR. RIFF: I'M NOT ABOUT TO CONCLUDE, BUT I DON'T THINK I HAVE SUBSTANTIALLY MORE, BUT NOT BEFORE A BREAK.

THE COURT: ALL RIGHT. LET'S GO AHEAD SINCE WE HAVE PAUSED ANYWAY. LET'S GO AHEAD AND TAKE OUR BREAK.

10 MINUTES, LADIES AND GENTLEMEN.

(WHEREUPON, COURT WAS IN RECESS.)

---OOO---

(WHEREUPON, THE FOLLOWING PROCEEDINGS WERE HELD IN OPEN COURT.)

THE COURT: THANK YOU.

MR. RIFF, YOU MAY RESUME WITH YOUR EXAMINATION.

MR. RIFF: THANK YOU.

Q. WE HAD A QUESTION ABOUT EXHIBIT 1325, WHICH I

HAVE PROPPED UP NEXT TO YOU. I THINK YOU CAN SEE IT.

OUR COLUMN ON THE RIGHT SAYS "AVERAGE CONCENTRATION," AND TO THE LEFT IT SAYS "CONCENTRATION P.P.M." ARE YOU WITH ME?

A. YES.

Q. WHAT DOES THE COLUMN "AVERAGE CONCENTRATION" REFER TO IN THAT EXHIBIT?

A. THIS WAS JUST MY ATTEMPT TO AVERAGE ACROSS THE INDIVIDUAL CONCENTRATION VALUES FOR EACH OF THESE PARTICULAR DEPARTMENTS.

Q. SO, FOR EXAMPLE, FOR THE TUBER AREA, THE AVERAGE CONCENTRATION OF THE SAMPLES TAKEN BY VAN ERT IN '75, THE AVERAGE OF 1.98, 0.37, 0.7 AND 0.25, IS 0.83.

[DRAWING.]

A. THAT IS CORRECT.

Q. WHAT IS THE RELATIONSHIP OF THAT AVERAGE CONCENTRATION FIGURE TO THIS CONCEPT WE'RE TALKING ABOUT OF A 8-HOUR TIME WEIGHTED AVERAGE, IF ANY?

A. THEY ARE NOT THE SAME AS THIS AVERAGE IS BEING USED BECAUSE THE INDIVIDUAL SAMPLES HERE WERE FOR 37 -- BETWEEN 30 AND 60 MINUTES, FOR EXAMPLE, SO MY AVERAGE IS JUST AN AVERAGE OF THOSE SAMPLES COLLECTED OVER THAT SHORT AMOUNT OF TIME. I DIDN'T ATTEMPT TO SORT OF STACK THEM TOGETHER TO COME UP WITH AN 8-HOUR T.W.A. SO, THIS IS STILL AN AVERAGE OVER A 30 TO 60 MINUTE SAMPLE, BASICALLY.

Q. OKAY. IT IS AN AVERAGE OVER THAT DURATION, 30

TO 60 MINUTES, OF PEOPLE DOING THAT JOB.

A. OF THESE DIFFERENT JOBS WITHIN THE TUBER AREA.

Q. OKAY.

A. IT WAS THE AVERAGE OF THESE FOUR MEASUREMENTS IN THE TUBER AREA.

Q. OKAY. NOW, JUST HYPOTHETICALLY TO TEST THE PREMISE, LET'S SAY THAT A TUBER WORKER, THE CEMENTER AT THE 10-INCH TUBER LINE RATHER THAN BEING THERE FOR 37 MINUTES, THAT PERSON THAT DAY NEVER LEFT THAT LOCATION FOR EIGHT HOURS. NEVER WENT TO THE BATHROOM. NEVER WENT TO LUNCH. JUST WAS THERE EIGHT HOURS DOING THAT SAME THING DAY IN FOR THAT WHOLE PERIOD OF TIME.

COULD WE THEN CONCLUDE THAT ON AN 8-HOUR TIME WEIGHTED AVERAGE, MORE OR LESS, HIS EXPOSURE WOULD BE 1.98?

A. YES, AND ACTUALLY DR. VAN ERT CAME TO THAT SAME CONCLUSION IN HIS WRITE-UP.

Q. OKAY. FOR THAT WORKER WHO DOES STEP AWAY, GOES TO LUNCH, GOES TO THE BATHROOM, THE MACHINE SHUTS DOWN, WHAT IS GOING TO HAPPEN TO THAT NUMBER ON AN 8-HOUR TIME WEIGHTED AVERAGE?

A. WELL, IF HE IS NOT DOING -- WHEN HE IS NOT PERFORMING THAT TASK THAT UTILIZES THE SOLVENT, IF HE IS DOING SOMETHING ELSE, LIKE HAVING LUNCH IN THE CAFETERIA, THAT NUMBER WILL GO DOWN.

Q. FOR THE 8-HOUR TIME WEIGHTED AVERAGE.

A. FOR THE 8-HOUR TIME WEIGHTED AVERAGE.

Q. FOR THE PURPOSES OF YOUR ANALYSIS OF

MR. HOOPER'S TIME SPENT IN THE PLANT AS A PIPEFITTER -- NOT IN THE CATALYTIC SHOP, NOT AT THE RAILROAD SITE, BUT IN THE PLANT, WHAT DID YOU ASSUME AS AN OVERALL AVERAGE CONCENTRATION OF BENZENE IN THE BREATHING ZONE?

A. .2 PARTS PER MILLION.

Q. I'M GOING TO -- 0.2 P.P.M.?

A. THAT WAS MY INITIAL ESTIMATE, YES.

Q. INITIAL BASED ON WHAT?

A. TWO DIFFERENT ESTIMATES. ONE WAS BASED ON HIS TESTIMONY THAT HE DIDN'T WORK DIRECTLY WITH THE MATERIAL AND THAT HE WASN'T DIRECTLY IN THE VICINITY OF THE MATERIAL BEING USED. THAT HE HAD -- HE WOULD BE EXPOSED TO A CONCENTRATION, SOME FRACTION OF THAT, OF WHAT THE OPERATORS WOULD BE EXPOSED TO, THE TIRE BUILDERS, WHILE THEY WERE USING THE SOLVENT THEMSELVES.

THEN I MADE A SECOND CALCULATION ABOUT EVEN IF HE WAS EXPOSED TO THE SAME AVERAGE CONCENTRATION THAT THESE TIRE BUILDERS WERE EXPOSED TO, WHAT WOULD HIS EXPOSURE BE. SO, I SORT OF DID A TYPICAL AND UPPER-BOUND TYPE SCENARIO.

Q. FOR THAT SECOND CALCULATION, IF YOU ASSUME HE HAD THE SAME BENZENE IN HIS BREATHING ZONE AS A TIRE BUILDER, WHAT CONCENTRATION DID YOU ASSUME?

A. 1 PARTS PER MILLION.

Q. OKAY. NOW, IN REACHING OR USING THIS 1 PARTS PER MILLION FIGURE FOR A TIRE BUILDER, DID YOU DRAW UPON VAN ERT'S CONCLUSIONS IN SOME WAY?

A. YES.

Q. TELL THE JURY HOW WHAT VAN ERT CONCLUDED RELATES TO WHAT YOU USED FOR THIS 1.0 FIGURE FOR TIRE BUILDERS.

A. VAN ERT CONCLUDED -- AND THIS WAS A CONCLUSION REACHED IN THAT MULTI-TIRE PLANT ANALYSIS AS WELL -- THAT FOR INDIVIDUAL DEPARTMENTS AND INDIVIDUAL WORKERS YOU WOULD HAVE A RANGE OF BENZENE EXPOSURE CONCENTRATIONS DURING THAT TASK THAT THEY WERE PERFORMING, WHICH WAS DURING THE USE OF A SOLVENT THAT CONTAINED BENZENE, BUT THAT ON AVERAGE IF YOU TOOK ALL OF THAT DATA IN TOTALITY, THAT THE AVERAGE EXPOSURE FOR THIS TYPE OF -- FOR ANY TYPE OF WORKER IN THE PLANT WOULD BE ON THE ORDER OF 1 PART PER MILLION. SO, NOT EVERY WORKER, NOT EVERY DEPARTMENT, BUT ON AVERAGE, 1 PART PER MILLION WAS A GOOD ESTIMATE OF AN AVERAGE EXPOSURE LEVEL.

Q. OKAY. NOW, WHY DID YOU THINK IT WAS APPROPRIATE IN YOUR FIRST CALCULATION WITH MR. HOOPER TO USE A FIGURE OF 20 PERCENT OF A TIRE BUILDER'S EXPOSURE RATHER THAN A FULL TIRE BUILDER'S EXPOSURE?

A. MY EXPERIENCE IN THE FIELD, AS WELL AS THE EXPERIENCE OF OTHERS IN THE FIELD, WHICH HAS BEEN REPORTED ON IN THE PUBLISHED LITERATURE, IS THAT IF YOU ARE NOT DIRECTLY WORKING IN THE IMMEDIATE VICINITY OF A SOURCE -- AND IN THIS INSTANCE A SOURCE IS DEFINED AS THE SOLVENT THAT CONTAINS BENZENE -- IF YOU ARE NOT THE PERSON STANDING THERE, YOU KNOW, APPLYING THIS MATERIAL WITH YOUR LAPEL CAPTURING THAT -- YOUR LAPEL SAMPLE

CAPTURING THAT AIR CONCENTRATION VALUE WHILE YOU ARE APPLYING IT AND YOU ARE STANDING SOME DISTANCE AWAY FROM THAT IN THE FACILITY WHERE THERE ISN'T SUCH A SOURCE, THAT YOUR CONCENTRATION DECREASES DRAMATICALLY DEPENDING ON HOW FAR AWAY THAT YOU ARE.

Q. CAN YOU THINK OF AN EXAMPLE FROM OUR EVERYDAY LIFE THAT ILLUSTRATES THAT PRINCIPLE?

A. IT IS NOT EXACTLY THE SAME, BUT AN ANALOGY MIGHT BE IF YOU WERE STANDING NEAR SOMEONE THAT WAS WEARING COLOGNE OR PERFUME AND YOU WERE STANDING RIGHT NEXT TO THEM, YOU WOULD PROBABLY GET A MUCH STRONGER WHIFF THAN IF YOU STOOD FIVE FEET AWAY OR 10 FEET AWAY OR EVEN FURTHER THAN, THAT YOU PROBABLY WOULDN'T SMELL ANYTHING. SO THAT WOULD BE A COMPARABLE ANALOGY ABOUT HOW THE FURTHER YOU ARE FROM THE SOURCE OF SOMETHING THAT IS EMITTING VAPORS, THE CONCENTRATION WILL DIFFER IN SPACE.

Q. OKAY. NOW, LET ME ASK YOU SORT OF AN ULTIMATE OPINION AND THEN WE CAN BACK OUT HOW YOU GOT THERE.

TELL THE JURY, PLEASE, FIRST, WHETHER YOU FORMED AN OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY AS TO WHAT MR. HOOPER'S LIKELY RANGE OF CUMULATIVE BENZENE EXPOSURE WAS DURING THE 25 OR SO MONTHS HE WAS AT THE FIRESTONE FACILITY WHILE HE WAS WORKING DOING TASKS IN THE PLANT. NOT IN THE CATALYTIC SHOP. NOT RAILROAD UNLOADING.

SO, FIRST OF ALL, DID YOU REACH SUCH AN OPINION?

A. YES, I DID.
Q. OKAY. WHY DON'T YOU TELL US THEN, WITH THAT COMPONENT, WHAT YOUR OPINION IS, PLEASE.
A. WELL, IN THE FIRST EXAMPLE OF WHICH I ASSUME THAT THERE WAS SOME -- HE HAD SOME FRACTION OF EXPOSURE, SOME FRACTION OF WHAT THE TIRE BUILDERS HAD, THAT IS THE .2 P.P.M. SCENARIO, I CALCULATED A CUMULATIVE EXPOSURE OF 0.3 P.P.M.-YEARS.
Q. NOW, IF YOU DON'T MIND, STEP UP TO THE BOARD AND SHOW US THE MATH.
A. CAN I TAKE THIS?
Q. AND YOU CAN ERASE THAT BOX IF YOU PREFER, IF YOU CAN REACH IT.
A. [DRAWING.]

THIS SMELLS A LOT BECAUSE I'M STANDING RIGHT HERE.

SO, I HAVE 0.2 P.P.M. IS THE EXPOSURE POINT CONCENTRATION THAT I ASSUMED FOR MR. HOOPER WHILE HE WAS WORKING ON STEAM PIPES AND SUCH THROUGHOUT THE PLANT. AND THEN THERE ARE A COUPLE OTHER VARIABLES THAT HE WITH TALKED ABOUT THAT I HAVEN'T PUT YET ON THE BOARD.

I ASSUMED THAT HE WAS EXPOSED SIX OUT OF FIVE DAYS PER WEEK, AND WE TALKED EARLIER ABOUT JUST ASSUME, YOU KNOW, IT WAS 5 OUT OF FIVE DAYS A WEEK. I WILL GO BACK TO THAT. THIS IS BECAUSE FOR A WORKER WE JUST TYPICALLY ASSUME EIGHT HOURS A DAY, FIVE DAYS A WEEK UNLESS YOU KNOW OTHERWISE. SO, IN THIS CASE I ASSUMED

SIX DAYS A WEEK. BECAUSE THE SIX IS OVER THE FIVE, I WILL BE INCREASING HIS EXPOSURE VALUE THAN IF I JUST ASSUMED HE WORKED FIVE DAYS A WEEK.

Q. SO YOU GAVE HIM THE EXTRA DAY.

A. I GAVE HIM AN EXTRA DAY BECAUSE HE SAID HE WORKED OVERTIME.

Q. UNDERSTOOD. OKAY.

A. WHICH SHOULD BE RIGHT HERE BUT I WILL PUT IT HERE BECAUSE I FORGOT IT.

[DRAWING.]

SO, THEN, OUT OF THE 8 HOUR DAYS THERE WAS SOME PART OF THE TIME HE JUST WORKED THROUGHOUT THE PLANT VERSUS THE OTHER PART OF THE TIME WHERE HE WAS IN THE CATALYTIC SHOP OR UNLOADING OR WHATEVER, AND SO BASED ON THAT TABLE WE SAW EARLIER WHERE I APPORTIONED HIS TIME TO 100 PERCENT OF THE DAY, ALL OF THOSE AREAS THAT HE WORKED IN THAT WERE OUTSIDE OF -- WHEN HE WASN'T UNLOADING, WHEN HE WASN'T IN THE CATALYTIC SHOP, WHEN HE DIDN'T HAVE LUNCH, LEFT US WITH 4.8 HOURS PER DAY TO BE WORKING ON AVERAGE -- TO BE WORKING THROUGH THE PLANT, WORKING ON THE PIPES, SO THEN THAT IS PART OF THE EQUATION AS WELL.

AND THEN I'M GOING TO CARRY ON OVER HERE, BUT IT STILL SHOULD BE PART OF THE SAME LINE. WE HAVE JUST 50 OUT OF 50 WEEKS PER YEAR. THIS IS A TYPICAL, WHAT WE CONSIDER TYPICAL IN THE OCCUPATIONAL WORLD. WE ASSUME THAT SOMEBODY TAKES TWO WEEKS OF VACATION, SO THIS IS SORT OF A FIXED VALUE 50. AND I ASSUME THAT

MR. HOOPER WORKED EVERY WEEK OUT OF THE YEAR EXCEPT FOR THE TWO WEEKS THAT HE MAY HAVE BEEN OFF FOR VACATION OR HOLIDAY, SO 50 OUT OF 50 JUST CANCELS ITSELF OUT.

[DRAWING.]

THEN TIMES THE 2.08 YEARS, WHICH IS TWO YEARS PLUS THE ONE MONTH IN JANUARY. AND ALL OF THAT GIVES ME 0.3 P.P.M.-YEARS, BECAUSE A BUNCH OF THESE UNITS CANCEL OUT.

[DRAWING.]

I MUST BE MISSING SOMETHING HERE.

ANYWAY, THE UNITS CANCEL OUT SOMEWHERE AND ENDS UP BEING 0.03 P.P.M.-YEARS.

Q. OKAY. IF YOU ARE WRONG, DR. WILLIAMS, AND, IN FACT, MR. HOOPER'S EXPOSURE WAS FIVE TIMES HIGHER THAN YOU THOUGHT -- ARE YOU WITH ME? ARE YOU STILL WORRIED ABOUT YOUR UNITS?

A. YEAH, I SHOULDN'T HAVE BEEN CROSSING OUT LIKE THIS BECAUSE THEORETICALLY IT IS ALL SIX DAYS WEEK INSTEAD OF FIVE DAYS A WEEK AND IT ALL CANCELS OUT.

Q. ULTIMATELY, YOU END UP WITH A PARTS PER MILLION YEAR UNIT.

A. THAT IS CORRECT.

Q. OKAY. BUT IF YOU ARE WRONG AND RATHER THAN MR. HOOPER HAVING ABOUT 20 PERCENT OF THE EXPOSURE OF A TIRE BUILDER WHO IS APPLYING THIS SOLVENT AS WE HAVE DESCRIBED, IF YOU ARE WRONG AND IT IS ACTUALLY FIVE TIMES HIGHER THAN THAT, SO THAT HIS AVERAGE EXPOSURE WAS 1 PART PER MILLION, LIKE THOSE TIRE BUILDERS, THEN

WHAT IS YOUR OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY WITH RESPECT TO HIS CUMULATIVE DOSE OF BENZENE WHILE WORKING AT FIRESTONE DOING TASKS IN THE PLANT?

A. WELL, I DID THAT CALCULATION AS AN UPPER BOUND. AS I SAID, FOR THAT VERY REASON, USING THE TIRE BUILDER DATA AS REPRESENTATIVE OF WHO THE MOST HIGHLY EXPOSED PEOPLE IN THE PLANT WOULD BE AND SAYING THAT MR. HOOPER WOULDN'T BE EXPOSED TO ANYTHING HIGHER, BUT LET'S JUST SAY FOR SAKE OF ARGUMENT HE WAS EXPOSED TO THE SAME LEVELS. THEN, HIS CUMULATIVE EXPOSURE I ESTIMATED TO BE 1.5 P.P.M.-YEARS.

Q. SO THE MATH THERE IS PRETTY SIMPLE. IF THIS IS ONE-FIFTH, THEN YOU MULTIPLY THAT BY 5, 0.3 TIMES 5 IS 1.5.

A. RIGHT. AND ALL THE OTHER VARIABLES HERE STAY THE SAME.

Q. ALL RIGHT.

NOW, THE SECOND COMPONENT IS IN THE CATALYTIC SHOP, RIGHT?

A. YES.

Q. NOW, FOR THIS YOU TELL US YOU UTILIZED A MODEL. YES?

A. YES.

Q. AND JUST TELL US THE NAME OF THE MODEL THAT YOU USED OR DESCRIBE IT.

A. THIS WAS A SIMPLE -- THERE WERE TWO TYPES OF MODELS: A SIMPLE EMISSIONS MODEL AND A BOX MODEL. ON

ONE HAND, YOU HAVE TO ESTIMATE HOW MUCH -- AN EMISSIONS MODEL, YOU WANT TO ESTIMATE HOW MUCH OF THE BENZENE IS COMING OFF OF THE SURFACE OF THE LIQUID. AND THEN YOU WANT TO APPLY THE BOX MODEL TO SAY, OKAY, WHAT SIZE ROOM IS THAT EMISSION COMING OFF IN AND THE OTHER VARIABLES SUCH AS AIR TURNOVER IN THE ROOM AND OTHER PARAMETERS TO SAY WHAT WOULD THE CONCENTRATION BE IN THAT PARTICULAR ROOM.

Q. OKAY. SO, WHAT INFORMATION DID YOU HAVE WITH RESPECT TO HOW MANY HOURS OR MINUTES PER DAY MR. HOOPER WAS IN THE CATALYTIC SHOP DOING WHATEVER HE WAS DOING?

A. AT .6 HOURS PER DAY.

Q. AND THAT PIECE OF INFORMATION CAME FROM WHOM?

A. WELL, THE ORIGINAL NUMBER CAME FROM HIS DEPOSITION TESTIMONY AND I INCREASED THAT NUMBER IN RELATIVE TERMS TO COME UP TO 100 PERCENT OF HIS WORKDAY.

Q. SO, THAT PIECE OF DATA COMES FROM MR. HOOPER'S TESTIMONY IN HIS DEPOSITION, SCALED UP TO 100 PERCENT.

A. YES.

Q. GOT IT.

AND WHAT EMISSIONS WERE YOU ASSUMING EXISTED IN THAT CATALYTIC SHOP WHILE HE WAS PRESENT?

A. WELL, AGAIN, I MADE TWO CALCULATIONS, ONE OF WHICH WAS BASED ON THE ASSUMPTION IF HE USED SOMETHING LIKE KEROSENE. AND I WENT TO THE LITERATURE TO SEE WHAT THE BENZENE CONTENT OF KEROSENE WAS, AND IT IS VERY LOW.

Q. LIKE HOW LOW?
A. AROUND .02 PERCENT, I BELIEVE.
Q. LET'S JUST --
A. AND THAT IS WHEN IT IS REPORTED. SOMETIMES IT IS REPORTED AS NOT CONTAINING ANY MEASURABLE QUANTITIES.
Q. .02 PERCENT.
A. CORRECT.
Q. AS COMPARED WITH 356, WHICH IS 1.5 PERCENT. I DON'T KNOW IF I CAN DO THE MATH, BUT KEROSENE WOULD BE -- A WHOLE LOT LESS.
A. THANK YOU.
Q. I WAS A HISTORY MAJOR.
A. YEAH.
Q. OKAY. YOU WERE TALKING ABOUT EMISSIONS IN THE CATALYTIC SHOP AND YOU WERE TALKING ABOUT KEROSENE.
A. WELL, I DID TWO CALCULATIONS. ONE, IF IT WAS SOMETHING LIKE EITHER KEROSENE, LIKE KEROSENE, AND HAD A SMALL AMOUNT OF BENZENE IN IT SUCH AS .02 PERCENT, AND THEN I DID A SECOND CALCULATION, IF, FOR EXAMPLE, THEY WERE USING THE RUBBER SOLVENT TO CLEAN THEIR TOOLS AT 1.5 PERCENT.
Q. WHAT ASSUMPTIONS DID YOU MAKE ABOUT WHETHER MR. HOOPER WAS USING THE STUFF TO CLEAN HIS TOOLS?
A. SINCE HE DID NOT RECALL DOING THAT, BASED ON HIS TESTIMONY, I DIDN'T ASSUME THAT HE DID THAT.
I DID DO YET A THIRD CALCULATION THAT WHAT WOULD HIS DERMAL EXPOSURES BE, FOR EXAMPLE, IF HE WAS

CLEANING THE TOOLS HIMSELF.

Q. OKAY. THAT IS WHAT I WAS WAITING TO HEAR. SO, DID YOU MAKE A CALCULATION THAT DID ASSUME THAT HE, IN FACT, WAS CLEANING TOOLS?

A. ONLY FOR THE DERMAL COMPONENT, BECAUSE THE OTHER COMPONENT IS JUST DEALING WITH THE GENERAL AMBIENT CONCENTRATIONS IN THE ROOM.

Q. OKAY. WE HAVEN'T COVERED THIS WITH ANY OTHER WITNESS MUCH. HYDROCARBONS CAN BE ABSORBED IN THE BODY THROUGH SKIN?

A. YES.

Q. AND THE RATE AT WHICH THEY ARE ABSORBED IS KNOWN TO SCIENCE?

A. WELL, THERE IS SOME UNCERTAINTY, BUT THERE IS PUBLISHED DATA AND REPORTS ON WHAT THE RATE MIGHT BE, YES.

Q. OKAY. AND THE AMOUNT OF BENZENE THAT WILL ENTER THE BODY IN A HYDROCARBON MIXTURE LIKE THIS, LIKE A 356, THAT IS INFORMATION THAT YOU CAN DERIVE FROM SCIENTIFIC LITERATURE.

A. IT IS INFORMATION -- I RELIED UPON THE SCIENTIFIC LITERATURE THAT REPORTED SOME OF THOSE VALUES. I DID NOT DERIVE A NEW VALUE MYSELF.

Q. RIGHT, NO. BUT WHAT I'M SAYING IS YOU DIDN'T MAKE IT UP.

A. RIGHT SURE.

Q. YOU WENT TO THE LITERATURE AND FOUND DATA ON THIS.

A. THAT IS CORRECT.
Q. OKAY. SO, THE THIRD CALCULATION IN THE CATALYTIC SHOP INCLUDED A DERMAL ABSORPTION THROUGH MR. HOOPER'S SKIN, ASSUMING HE WAS ACTUALLY CLEANING TOOLS WITH THE STUFF, RIGHT?
A. IF HE HAD DONE THAT, YES.
Q. OKAY. AND THE STUFF -- DID YOU ASSUME THE 1-AND-A-HALF PERCENT?
A. I DID IT UNDER BOTH --
Q. ALL RIGHT.
A. -- SCENARIOS, EITHER .02 OR 1.5 PERCENT.
Q. OKAY. SO, TELL US YOUR OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY AS TO WHAT YOU THINK MR. HOOPER'S CUMULATIVE DOSE OF -- CUMULATIVE EXPOSURE OF BENZENE WAS DURING THAT COMPONENT OF HIS TIME AT FIRESTONE WHILE HE WAS IN THE CATALYTIC SHOP, PLEASE.
A. IF THE SCENARIO IS THAT THE SOLUTION CONTAINED 0.02 P.P.M. BENZENE, LIKE KEROSENE, THEN THE CALCULATION WAS 0.004 P.P.M.-YEARS. THIS IS WITHOUT ANY DERMAL COMPONENT.
Q. ALL RIGHT. AND?
A. AND IF THE SCENARIO WAS SUCH THAT HE USED SOMETHING LIKE RUBBER SOLVENT AND THAT RUBBER SOLVENT CONTAINED 1.5 PERCENT BENZENE, THEN HIS CUMULATIVE EXPOSURES WOULD BE .3 P.P.M.-YEARS.
Q. 0.3?
A. CORRECT.
Q. GOT IT.

A. AND THIS, OF COURSE, ASSUMES THE MAXIMUM LEVEL OF BENZENE IN THE SOLUTION AND IT ASSUMES THAT IT WOULD ALWAYS BE AT 1.5 PERCENT.

Q. I SUPPOSE IF THEY WERE ACTUALLY USING THE 374, WHICH IS 0.1 PERCENT BENZENE, RATHER THAN 356, WHICH IS 1.5 PERCENT BENZENE, IT IS 15 TIMES LESS BENZENE IN SOLUTION, RIGHT?

A. WELL, I DON'T KNOW WHETHER 374 IS POINT -- BUT IF YOU TELL ME IT WAS --

Q. LET ME ASK YOU TO ASSUME THAT THE 374 SOLVENT IS 0.1 PERCENT BENZENE. OKAY?

A. THEN WHAT YOU SAID WOULD BE TRUE.

Q. IT WOULD BE 15 TIMES LESS BENZENE. BUT YOU USED THE 356 FOR PURPOSES OF YOUR OPINION, TRUE?

A. ANY SOLVENT THAT CONTAINED 1.5 PERCENT BENZENE.

Q. FAIR ENOUGH.

NOW, THE THIRD SCENARIO HAS HIM IN THE CATALYTIC SHOP DOING WHATEVER HE IS DOING PLUS CLEANING TOOLS, RIGHT, SO THERE IS A DERMAL COMPONENT.

A. THE DERMAL COMPONENT, YES.

Q. TELL US ABOUT THAT.

A. AGAIN --

Q. WHAT IS YOUR OPINION TO A REASONABLE DEGREE --

A. I HAVE TWO VALUES.

Q. LET ME FINISH IT, PLEASE. WHAT IS YOUR OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY ON THAT POINT?

A. WELL, THERE ARE TWO VALUES. THE FIRST AGAIN IS

IF THE PRODUCT CONTAINED .02 PERCENT BENZENE, AND THAT WOULD BE .001 P.P.M.-YEARS.

Q. .001 -- OKAY. GOT IT.

A. IF, INSTEAD, THE SOLVENT CONTAINED 1.5 PERCENT BENZENE, THEN THE DERMAL EXPOSURE WOULD EQUATE TO .1 P.P.M.-YEARS.

Q. 0.1 P.P.M.-YEARS, RIGHT?

A. RIGHT.

Q. OKAY. AND THIS IS DERMAL.

OKAY. THEN THE THIRD SCENARIO IS THE RAIL CAR UNLOADING, RIGHT?

A. YES. AND I WOULD LIKE TO JUST CLARIFY THAT. THE OTHER -- FOR THE CATALYTIC SHOP, ALL OF THOSE VALUES CONSIDER THIS EXPOSURE OCCURRING FOR .6 HOURS PER DAY OUT OF AN 8-HOUR DAY, BUT STILL FOR SIX DAYS A WEEK.

Q. OH.

A. AND 50 WEEKS A YEAR FOR THE WHOLE 2.08 YEARS.

Q. GOOD. THANK YOU FOR CLARIFYING THAT.

MR. HARLEY: WELL, I DIDN'T UNDERSTAND WHAT SHE JUST SAID. SHE ASSUMED .6 HOURS.

THE COURT: I'M NOT SURE THAT IS AN OBJECTION, MR. HARLEY.

MR. HARLEY: I'M SORRY.

THE COURT: YOU CAN COME BACK ON CROSS-EXAMINATION.

MR. RIFF: LET ME SEE IF I UNDERSTOOD IT.

Q. YOUR ASSUMPTION CONCERNING MR. HOOPER BEING IN

THE CATALYTIC SHOP ON A DAILY BASIS WAS WHAT ON THIS POINT THAT YOU WERE JUST CLARIFYING?

A. THAT HE WORKED IN THE SHOP EVERYDAY SIX DAYS A WEEK FOR 50 WEEKS OUT OF THE YEAR DURING HIS ENTIRE EMPLOYMENT PERIOD FOR .6 HOURS A DAY.

Q. OKAY. AND THAT .6 HOURS A DAY COMES FROM WHERE?

A. FROM HIS DEPOSITION TESTIMONY WITH MY ADJUSTMENTS -- MY UPWARD ADJUSTMENTS TO IT TO MAKE IT EQUAL 100 PERCENT OF THE DAY.

Q. GOT IT. OKAY.

GOOD QUESTION. WHAT ASSUMPTION DID YOU HAVE WITH RESPECT TO THE DURATION OF TIME ON THE DERMAL CONTACT?

A. THAT IS A GOOD QUESTION.

LET ME SEE. THAT THAT WAS FOR THE ENTIRE .6-HOURS A DAY, SO THE ENTIRE TIME THAT HE WAS IN THE SHOP.

Q. SO, FOR THAT PERIOD YOU ARE ASSUMING THAT THE WHOLE TIME HE IS SITTING IN THERE CLEANING HIS TOOLS.

A. THAT HE HAS SOME DERMAL CONTACT.

Q. GOT IT.

NOW, LET'S GO TO THE RAIL CAR UNLOADING SCENARIO. FIRST OF ALL, WHAT DID YOU ASSUME CONCERNING A DURATION OF TIME?

A. 1.3 HOURS PER DAY.

Q. WHERE DID THAT COME FROM?

A. THE SAME THING, HIS DEPOSITION TESTIMONY SCALED

UPWARDS TO 100 PERCENT.

Q. OKAY. AND WHERE DID YOU GET THE DATA WITH RESPECT TO THE BENZENE CONCENTRATION IN A WORKER'S BREATHING ZONE DURING RAIL CAR UNLOADING OPERATIONS?

A. FROM THE PUBLISHED LITERATURE.

Q. OKAY. AND YOU HAVE LISTED THE SOURCES IN YOUR REPORT.

A. THAT IS CORRECT.

Q. MR. HARLEY HAS HAD YOUR REPORT SINCE AT LEAST YOUR DEPOSITION.

A. YES.

Q. OKAY. AND IN A BALLPARK KIND OF WAY, WHAT KIND OF EXPOSURE CONCENTRATIONS OF BENZENE DO WE SEE IN, FOR EXAMPLE, GASOLINE WORKERS UNLOADING GASOLINE FROM RAIL CARS OR LOADING AND UNLOADING FROM RAIL CARS?

A. AT THE TIME THAT I PULLED TOGETHER THE LITERATURE I DIDN'T HAVE VERY MANY PAPERS THAT WERE SPECIFIC TO RAIL CARS, SO I ALSO INCLUDED DATA FOR TANKER TRUCKS. AND THERE WAS QUITE A BIT OF VARIABILITY IN THE DATA, BUT -- WHICH WOULDN'T BE UNUSUAL. I THINK THE VALUES TENDED, THE AVERAGE VALUES DURING SUCH A TASK TENDED TO RANGE FROM LESS THAN .05 P.P.M. ALL THE WAY UP TO 7 P.P.M., WITH MOST CONCENTRATIONS FALLING WITHIN THE RANGE OF .3 TO 3 P.P.M. AND IN MY CALCULATIONS, WHICH IS LOOKING AT SORT OF THE WEALTH OF ALL OF THAT DATA, I ASSUMED THAT MR. HOOPER WAS EXPOSED TO 1 PARTS PER MILLION, WHICH WAS SORT OF IN THE MIDDLE OF THAT RANGE OF ALL THE DATA

SETS THAT I HAD AVAILABLE TO ME.
Q. OKAY. DID YOU ATTEMPT AS PART OF YOUR JOB IN THIS CASE TO FIGURE OUT WHAT IN REALITY MR. HOOPER WAS UNLOADING FROM THOSE RAIL CARS, BE IT OIL, BE IT SOLVENT, BE IT SOMETHING ELSE?
A. NO.
Q. OKAY. SO, WHAT OPINION DID YOU REACH BASED ON THE ASSUMPTIONS THAT YOU HAVE NOW STATED WITH RESPECT TO MR. HOOPER'S CUMULATIVE EXPOSURE FROM THE RAIL CAR UNLOADING OPERATIONS, OF COURSE TO BENZENE, WHICH OPINION DO YOU HOLD TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY?
A. .4 P.P.M.-YEARS. AND THAT IS BASED ON THE ASSUMPTION THAT EVERY TIME HE UNLOADED, HE WAS UNLOADING A SOLVENT THAT CONTAINED BENZENE.
Q. OKAY. NOW, I DON'T KNOW IF YOU HAVE DONE THIS YET, BUT HAVE YOU ADDED UP BASICALLY THE LOWER RANGE OF THESE NUMBERS AND THE HIGHER RANGE OF THESE NUMBERS TO COME TO A -- WELL, TO COME TO WHAT THE RANGE WOULD BE?
A. IN MY REPORT I HAD ADDED UP TO SOME OF THOSE AND THE VALUE I CAME UP WITH WAS .7 P.P.M.-YEARS. AND THAT WAS BASED ON THE .3 FOR TASK 1, THE .004 FOR TASK 2. AND THE .4 FOR TASK 3.
Q. OKAY. SO, PER YOUR REPORT, YOU USED THE DATA ON THIS EXHIBIT --
WHICH, YOUR HONOR, FOR IDENTIFICATION I WOULD LIKE TO CALL EXHIBIT 1759, WHICH IS --
THE COURT: YOU ARE REFERRING TO THE

MATERIAL THAT YOU HAVE JUST PLACED ON THE BOARD?

MR. RIFF: YES. I HAVE BEEN MAKING SOME NOTES AS DR. WILLIAMS HAS BEEN TESTIFYING AND HOPEFULLY RECORDING WHAT SHE HAS BEEN SAYING. SO, JUST FOR THE RECORD I'M GOING TO CALL THIS 1749. WHETHER IT IS EVER ADMITTED WE WILL FIND OUT.

THE COURT: ALL RIGHT. IT MAY BE MARKED FOR IDENTIFICATION AS 1759.

MR. RIFF: THANK YOU.

(DEFENDANT'S EXHIBIT NO. 1759 WAS MARKED FOR IDENTIFICATION.)

Q. (MR. RIFF:) SO, FOR YOUR REPORT, AT LEAST, USING THIS DATA, YOU CAME UP WITH A CUMULATIVE BENZENE DOSE OF WHAT?

A. .7 P.P.M.-YEARS.

Q. I GUESS IT IS NOT A RANGE. 0.7.

[DRAWING.]

A. WELL, I HAVE ALL OF THOSE INDIVIDUAL VALUES IN THE REPORT, BUT THIS WAS WHAT I FELT HIS MOST LIKELY CUMULATIVE EXPOSURE -- "CUMULATIVE" MEANING ALL OF THOSE TASKS COMBINED BASED ON HIS DEPOSITION TESTIMONY.

Q. OKAY.

A. WHICH WAS THAT HE NEVER WORKED WITH ANY SOLVENT HIMSELF, HE NEVER RECALLED CLEANING HIS TOOLS WITH ANY SOLVENT. AND THAT IS WHY I PICKED THOSE PARTICULAR THREE VALUES TO ADD UP.

Q. OKAY. HAVE YOU REVISED YOUR OPINION AND ESTIMATE BASED ON WHAT MR. HOOPER HAS ACTUALLY

TESTIFIED TO NOW IN TRIAL?
A. I HAVEN'T DONE IT QUANTITATIVELY, BUT, YES, I WOULD SAY THAT IF WHAT HE HAS SAID NOW IS TRUE THAT HE DID -- THAT HIS CUMULATIVE EXPOSURES WOULD BE SOMEWHAT HIGHER THAN MY ORIGINAL ESTIMATE OF .7 P.P.M.-YEARS.
Q. AND -- IT DIDN'T WORK.
WELL, ARE YOU PREPARED TO GIVE US AN OPINION TO A REASONABLE DEGREE OF SCIENTIFIC PROBABILITY OF WHAT MR. HOOPER'S LIKELY CUMULATIVE DOSE TO BENZENE WAS BASED ON WHAT HE SAID IN COURT?
A. WELL, I WOULD GIVE IT -- I WOULD QUALIFY IT STILL AS AN UPPER BOUND VALUE. I WOULDN'T NECESSARILY QUALIFY IT AS A MOST LIKELY VALUE, IN WHICH IN THE FIRST SCENARIO I WOULD USE THE 1.5 P.P.M. YEAR NUMBER AS AN UPPER BOUND, BECAUSE EVEN IF YOU TOOK INTO ACCOUNT WHAT HE SAYS HE DID NOW, WHICH WAS SOMETIMES HAVE CONTACT WITH THE SOLVENT, I STILL WOULD NOT -- MY OPINION WOULD STILL BE THAT HE WASN'T EXPOSED TO THE SAME LEVEL ON A DAILY BASIS AS A TIRE WORKER BECAUSE HE WASN'T WORKING WITH THE SOLVENT ALL DAY EVERYDAY LIKE THE TIRE WORKERS WERE.
Q. OKAY. SO, ASSUMING AN UPPER BOUND EXPOSURE AS YOU JUST DESCRIBED IT, THEN WHAT WOULD WE DO? WE WOULD ADD THE 1.5.
A. WE COULD ADD THEN HIS CLAIM NOW THAT HE DID CLEAN HIS TOOLS. WE COULD ADD THE .3 AT THE 1.5 PERCENT. AND WE COULD ADD THE DERMAL COMPONENT. AND I THINK WE WOULD GET SOMEWHERE ON THE ORDER OF LESS THAN

4 P.P.M.-YEARS.
Q. WELL, LET'S SEE.
1.5 PLUS 0.3, SO NOW WE ARE AT 1.8. AGREED?
A. YES.
Q. PLUS DERMAL OF -- THE HIGHEST DERMAL IS ANOTHER .1, SO NOW WE ARE AT 1.9. RIGHT?
A. UH-HUH.
Q. YES?
A. YES.
Q. SO, THE RAIL CAR OF .4, SO WE ARE AT 2.3. IS THAT ABOUT --
A. YES, THAT IS ABOUT RIGHT, YES.
Q. YOU SAID LESS THAN 4 AND I'M SAYING APPROXIMATELY 2.3, BUT YOU ARE THE ONE TESTIFYING, NOT ME. DO YOU AGREE WITH ME OR NOT?
A. BASED ON THOSE NUMBERS, YES.
Q. OKAY. NOW, A COUPLE OF QUESTIONS AND THEN WE WILL BE DONE. I WANT TO ASK YOU SOME QUESTIONS OF A HYPOTHETICAL NATURE, I GUESS. I WANT YOU TO -- I WON'T.
WELL, HOW DO I DO THAT?
I WANT YOU TO ASSUME THAT THIS JURY HAS RECEIVED TESTIMONY FROM AN EXPERT IN THIS CASE TO THE EFFECT THAT MR. HOOPER'S EXPOSURE WAS IN FAR GREATER LEVELS THAN A TIRE BUILDER. OKAY? ASSUMING THAT TO BE TRUE, I JUST ASK YOU FOR YOUR ASSESSMENT OF THAT STATEMENT.
A. YOU DON'T WANT ME TO ASSUME THAT THAT STATEMENT

IS TRUE --

Q. NO, I'M JUST TRYING TO TELL YOU -- I'M ASKING YOU TO ASSUME THE STATEMENT WAS MADE IN COURT.

A. OKAY.

Q. AND I WANT YOU TO GIVE THE JURY THE BENEFIT OF YOUR VIEWS BASED ON YOUR WORK IN THIS CASE AS TO WHETHER THAT IS TRUE OR NOT.

A. THAT IS NOT THE OPINION THAT I REACHED IN THIS CASE. TO ME, THAT SEEMS IMPLAUSIBLE, GIVEN THAT HE DID NOT WORK WITH THE SOLVENTS THAT CONTAINED BENZENE ALL DAY EVERYDAY LIKE THE TIRE WORKERS DID.

Q. BUT DIDN'T YOU HEAR MR. HOOPER EXPLAIN OR READ THAT HE WAS DOWN THERE OPENING PIPES THAT HAD SOLVENT AND THERE WOULD BE MATERIAL SPILLING OUT?

A. I DID. I READ THAT. AND I --

Q. GO AHEAD.

A. AND I WENT BACK TO A LOT OF MY MATERIALS BECAUSE IT DIDN'T -- I DIDN'T RECALL SEEING ANYWHERE THAT THEY HAD MANY, IF ANY, SOLVENT LINES RUNNING THROUGH THIS FACILITY, AND IT SEEMED TO DEFY COMMON SENSE TO ME THAT YOU WOULD HAVE HIGHLY FLAMMABLE LIQUIDS RUNNING THROUGH PIPES IN VERY HOT AREAS IN A FACILITY. SO I WENT BACK AND LOOKED AT A NUMBER OF THE TESTIMONY BY THE FORMER FIRESTONE WORKERS, LIKE SAFETY JONES AND ROBERT HELM AND JAZWIN, AND ALL THAT I COULD FIND IN ALL THE LITERATURE MATERIALS I HAD SUGGESTED THAT THE ONLY SOLVENT PIPES THAT HE HAD IN THIS FACILITY ARE ONES THAT RUN FROM THE UNDERGROUND STORAGE

BINS OUTSIDE INTO THE CEMENT HOUSE WHERE THEY DO THE MIXING OF THESE CHEMICALS, AND THEN FROM THE MIXING HOUSE TO THE EXTRUDER, WHICH IS THAT TUBER AREA. AND THAT IS IT. I DIDN'T READ ANYTHING ELSE ABOUT THERE BEING SOLVENT LINES IN THE FACILITY. SO, IF MR. HOOPER OPENED SOLVENT LINES, IT IS POSSIBLE, BUT THEY WOULD HAVE -- THERE WOULD HAVE BEEN VERY FEW SOLVENT LINES RELATIVE TO ALL THE OTHER PIPING IN THAT FACILITY, SO IT DIDN'T SEEM TO ME THAT HE COULD HAVE DONE SUCH A THING ON A VERY FREQUENT BASIS.

Q. BUT DIDN'T YOU HEAR THE TESTIMONY THAT THOSE JANITORS WERE USING THAT RUBBER SOLVENT THAT THEY WERE USING TO BUILD TIRES, TO MOP-UP THE FLOOR ALL THE TIME?

A. I DID HEAR THAT TESTIMONY.

Q. AND DID YOU ASSESS THAT TESTIMONY AND CONSIDER IT?

A. I CONSIDERED IT, BUT, AGAIN, I DIDN'T THINK THAT WAS A VERY LIKELY SCENARIO.

Q. WHY?

A. GIVEN THAT ALL OF THE INFORMATION THAT I HAVE SUGGESTS THAT THE JANITORS HAD CERTAIN APPROVED MATERIALS THAT THEY COULD USE TO CLEAN THE FLOOR, AND THEY WEREN'T FLAMMABLE. I MEAN, IT WOULD BE VERY UNLIKELY THAT YOU WOULD HAVE SOMEBODY MOPPING ENTIRE FLOORS WITH A HIGHLY FLAMMABLE LIQUID IN A HOT TIRE PRESS AREA. AND ALL THE LITERATURE THAT I HAVE SEEN SUGGESTS THAT THEY HAD SOMETHING CALLED R.P. 1400 AS AN APPROVED SAFETY CLEANER AND AS AN APPROVED CLEANER TO

CLEAN THE TIRE MACHINES AND TO CLEAN THE FLOOR. AND THESE WOULD BE PRODUCTS THAT WOULD BE REVIEWED WHEN THEY FIRST ENTERED THE FACILITY AND WOULD BE APPROVED FOR PEOPLE LIKE THE JANITORS TO USE.

Q. OKAY. WELL, I WANTED TO MAKE SURE I UNDERSTAND SOMETHING ABOUT YOUR 1 P.P.M. FIGURE THAT YOU USED IN PART OF YOUR ANALYSIS. ARE YOU TELLING THE JURY THAT YOU THINK THAT ON AVERAGE IN THAT PLANT IN ALL LOCATIONS THE AMBIENT AVERAGE CONCENTRATION WAS 1.0 PARTS PER MILLION?

A. NO, THAT IS NOT WHAT I'M SAYING.

Q. WHAT ARE YOU SAYING?

A. I'M SAYING THAT THE AVERAGE CONCENTRATION IN THE BREATHING ZONE OF A WORKER AT -- WHILE HE IS DOING HIS JOB OF APPLYING THE SOLVENT IS 1 PARTS PER MILLION, WHICH IS NOT THE SAME AS WHAT THE CONCENTRATION WOULD BE IN OTHER PARTS OF THE PLANT WHERE THERE WASN'T A SOURCE NEARBY.

Q. AND WHAT DO YOU BASE THAT ON?

A. MY EXPERIENCE IN THE FIELD, MY EXPERIENCE REVIEWING COUNTLESS OTHER DATA SETS WHERE THEY COMPARE AND COLLECT WHAT IS CALLED BACKGROUND SAMPLES OR AREA SAMPLES THAT ARE NOT COLLECTED IN THE IMMEDIATE VICINITY OF A WORK BUT ARE MAYBE 10 OR 20 FEET AWAY.

Q. WELL, DR. WILLIAMS, HOW DO YOU ANSWER THE ALLEGATION IF ONE WERE MADE THAT THIS IS ABSOLUTE RANK SPECULATION AND THAT YOU ARE JUST MAKING IT UP AS YOU GO ALONG. IS THAT WHAT YOU ARE DOING?

A. NO, I WOULD SAY THAT IS NOT TRUE.
Q. HAVE YOU HAD TO MAKE SOME ASSUMPTIONS ALONG THE WAY?
A. YES.
Q. AND IS THAT UNUSUAL IN A DOSE ASSESSMENT OR -- I'M SORRY. IN AN EXPOSURE ASSESSMENT SITUATION, IS IT UNUSUAL FOR AN EXPOSURE ASSESSOR TO HAVE TO MAKE SOME ASSUMPTIONS ABOUT DURATIONS OR CONCENTRATIONS?
A. NO, I MEAN, THAT IS NOT AT ALL UNUSUAL. IN FACT, ALL OF THE INPUT PARAMETERS FOR AN EXPOSURE ASSESSMENT ARE ASSUMPTIONS. SOMETIMES YOU HAVE BETTER DATA THAN OTHERS AND SOMETIMES YOU RELY ON YOUR PROFESSIONAL JUDGMENT OR MEASURED DATA OR MODEL DATA, BUT THEY ARE ALL ASSUMPTIONS THAT GO INTO YOUR ASSESSMENT.

MR. RIFF: THAT IS ALL THE QUESTIONS THAT I HAVE FOR THE WITNESS, YOUR HONOR.

THE COURT: ALL RIGHT.

MR. RIFF: THANK YOU.

THE COURT: DOES ANYONE NEED A BREAK BEFORE WE GO ON?

OKAY. MR. HARLEY.

CROSS-EXAMINATION OF

PAMELA WILLIAMS

BY MR. HARLEY:

Q. LET'S DEAL WITH ONE MATTER RIGHT AT THE BEGINNING, EXHIBIT 258.

I WANT TO SHOW YOU WHAT HAS BEEN PREVIOUSLY

MARKED AS 258, AN ARTICLE ENTITLED "WORKER EXPOSURES TO CHEMICAL AGENTS IN THE MANUFACTURE OF RUBBER TIRES: SOLVENT VAPOR STUDY." DO YOU SEE THAT?

A. YES.

Q. THIS IS THE PUBLISHED 10 OR 11 PLANT SURVEY OUT OF VAN ERT OUT OF NORTH CAROLINA; IS THAT CORRECT?

A. THAT IS CORRECT.

Q. AND, IN FACT, IN HIS SPECIFIC REPORT TO SALINAS, THAT SINGLE REPORT HAS NEVER BEEN PUBLISHED BY ITSELF; IS THAT CORRECT?

A. I'M NOT AWARE THAT IT HAS.

Q. OKAY. AND HE DOESN'T GIVE IN THAT SINGLE REPORT AN AVERAGE EXPOSURE FOR THE PRODUCTION WORKERS OR FOR THE AREA SAMPLES THAT HE COLLECTED IN TERMS OF A PLANT-WIDE AVERAGE, DOES HE?

A. I WOULD HAVE TO LOOK BACK AT HIS STUDY TO SEE WHETHER HE SAID THAT OR NOT.

Q. WELL, I DON'T WANT TO TAKE THE TIME TO DO THAT, BUT IT IS IMPORTANT ON THIS FIRST DATA POINT THAT YOU WERE JUST BEING ASKED ABOUT. YOU SAID THAT THAT 1 PARTS PER MILLION WAS FOR THE PRODUCTION WORKERS AND THAT THE AREA SAMPLES WOULD BE MUCH LOWER. DO YOU REMEMBER SAYING THAT?

A. I DIDN'T SAY THAT FOR THIS FACILITY, NO.

Q. OKAY. LET'S GET THAT STRAIGHT, BECAUSE WHAT I WANT TO TALK ABOUT IS -- WELL, WERE YOU TALKING ABOUT TIRE FACILITIES GENERALLY?

A. WELL, THERE IS A DIFFERENCE BETWEEN DIFFERENT

TYPES OF AREA SAMPLES, SO I THINK MAYBE THAT IS WHERE THE CONFUSION IS COMING IN.

Q. WELL, I WANT TO KNOW A VERY CLEAR OPINION, DO YOU HAVE AN OPINION AS TO WHAT THE AVERAGE AREA SAMPLE WOULD BE IN A TYPICAL TIRE MANUFACTURING FACILITY USING BENZENE-CONTAINING SOLVENTS IN THE '70S?

A. IF THE AREA SAMPLERS WERE PLACED IN THE IMMEDIATE VICINITY OF THE WORKER PERFORMING THAT TASK, FOR EXAMPLE, IF I'M HERE AND THE AREA SAMPLER IS PLACED RIGHT HERE, I WOULD EXPECT THE CONCENTRATIONS TO BE VERY SIMILAR TO ONE ANOTHER.

[INDICATING.]

Q. LET'S SEE WHAT ACTUALLY THE BEST STUDY OF AREA SAMPLES WE HAVE, UNFORTUNATELY -- THE '70S STUDY OR THE REPORTED STUDIES OF THE NORTH CAROLINA GROUP FOR TIRE MANUFACTURING, AT LEAST; IS THAT CORRECT?

A. I THINK -- YES, AND THE SALINAS REPORT I BELIEVE CONTAINS A COUPLE OF AREA MEASUREMENTS AS WELL.

Q. OKAY. AND IF YOU WILL TURN TO THE LAST PAGE, THE VERY BOTTOM OF THE FIRST -- NO, THE PAGE BEFORE THAT. THE VERY BOTTOM OF THE FIRST COLUMN OF THE LAST PARAGRAPH.

WILL YOU ENLARGE THAT FOR US, THE LAST PARAGRAPH?

OKAY.

"BENZENE HAS RECEIVED A GREAT AMOUNT OF ATTENTION IN RECENT MONTHS, SO RESULTS FOR THIS COMPOUND MAY BE OF SPECIAL INTEREST. THE MEAN

CONCENTRATION YIELDED BY ALL BENZENE DETERMINATIONS MADE IN OUR CROSS-SECTIONAL SURVEYS, 300 AREA AIR SAMPLES, IS 1.11 PARTS PER MILLION. THE MEAN VALUES FOUND FOR PERSONNEL AND AREA SAMPLES WERE 1.06 PARTS PER MILLION AND 1.3 P.P.M. RESPECTIVELY."

MR. RIFF: 1.23.

MR. HARLEY: "1.23 RESPECTIVELY."

Q. DO YOU SEE THAT?

A. YES.

Q. IN FACT, THE AREA SAMPLES WERE HIGHER THAN THE PERSONNEL SAMPLES IN THE RUBBER PLANT; ISN'T THAT CORRECT?

A. IN THIS SENTENCE THEY ARE, YES.

Q. AH --

A. I MEAN, NOT ALL SAMPLES.

Q. THAT IS WHAT IS REPORTED IN THE PEER REVIEWED LITERATURE, PART OF WHICH YOU CONSIDERED IN THIS -- AS BACKGROUND FOR CALCULATING YOUR DATA POINT. AND YOU DECIDED THAT BECAUSE MR. HOOPER WAS PRIMARILY WORKING IN THE AREA AND NOT A PRODUCTION WORKER, IT WAS APPROPRIATE TO TAKE A FACTOR OF ONE-FIFTH OF THE PRODUCTION WORKERS RATHER THAN USE THE GENERAL AREA SAMPLE; ISN'T THAT CORRECT?

A. AGAIN, YOU ARE TALKING ABOUT THE DIFFERENCE BETWEEN DIFFERENT TYPE OF AREA SAMPLERS THAT I CAN EXPLAIN IF YOU WOULD LIKE ME TO, BUT I DID TAKE ONE-FIFTH OF THE ONE IN MY ORIGINAL ESTIMATE, YES.

Q. THESE SAMPLES, THESE 300 SAMPLES THAT HE

AVERAGED OUT INCLUDED THE BANBURY AREAS; ISN'T THAT CORRECT?

A. I WOULD HAVE TO LOOK BACK, BUT IT IS POSSIBLE.

Q. THESE ARE ACTUAL SAMPLES OF THE ENTIRE MANUFACTURING AREA, INCLUDING CURING, CALENDARING, ALL SORTS OF THINGS; ISN'T THAT CORRECT?

A. NO, THAT IS NOT CORRECT. IT SAYS IN THE PAPER EXACTLY WHERE THE SAMPLES WERE COLLECTED AND I DON'T THINK -- IN FACT, IT DOES NOT SAY THEY WERE COLLECTED IN THE BANBURY AREA.

MR. HARLEY: WILL YOU GO TO TABLE 1, PLEASE, THE SECOND PAGE?

Q. AND THIS IS -- HE ACTUALLY DEFINES ALL THE AREAS OF TIRE-MAKING AND ABOVE THIS THERE IS ACTUALLY A CHART OF ALL OF THESE AREAS; IS THAT CORRECT?

A. THAT IS CORRECT.

Q. AND THEN HE GIVES ONE --

GO TO THE NEXT PAGE, PLEASE, TABLE 2.

THIS IS JUST ONE SET OF SAMPLES FROM ONE TIRE PLANT THAT HE DOESN'T IDENTIFY WHICH ONE; IS THAT CORRECT?

A. NO, THAT IS FROM MULTIPLE PLANTS. UNDER THE PLANT COLUMN IT SAYS, A, B, C, ET CETERA, SO THEY DIDN'T IDENTIFY THE NAME OF THE PLANTS. THEY JUST GAVE IT A LETTER.

Q. A LETTER. AND IT GOES ON FOR TWO PAGES. BUT THERE ARE NOT 300 REPORTED SAMPLES HERE, ARE THERE?

A. I DON'T THINK I ADDED THEM ALL UP.

Q. OKAY.
A. WELL, IN PARENS IT INDICATES THE NUMBER OF SAMPLES PER EACH ROW, SO, YOU ARE RIGHT, THAT IF YOU ADDED ALL OF THESE LINES IT WOULDN'T ADD TO 100 OR 300, BUT IF YOU ADDED UP IN PARENS ALL THE SAMPLES, IT PROBABLY WOULD ADD UP TO THAT, BUT I'M NOT SURE THAT I HAVE DONE THAT.
Q. OKAY. NOW, ANOTHER AREA, JUST -- THAT IS ONE ASSUMPTION YOU HAVE TO MAKE IS WHAT THE AMBIENT AREAS IN THE PRODUCTION AREAS ARE; ISN'T THAT CORRECT?
A. I MADE AN ASSESSMENT, NOT NECESSARILY IN THE PRODUCTION AREA, BUT IN OTHER PARTS OF THE FACILITY THAT WERE NOT IN THE IMMEDIATE VICINITY OF THE PRODUCTION AREA. I'M REFERRING TO THAT MORE AS BACKGROUND CONCENTRATIONS, WHICH ARE NOT THE SAME AS AREA.
Q. WELL, OKAY. I WANT TO MOVE ON.
DID YOU MAKE AN ASSUMPTION AS TO WHAT THE AVERAGE AREA -- AVERAGE EXPOSURE WOULD BE IN PRODUCTION AREAS?
A. FOR THE OPERATOR, THAT WAS 1 PARTS PER MILLION.
Q. HOW ABOUT JUST BEING NEAR THE TUBER; DID YOU MAKE THOSE KINDS OF CALCULATIONS?
A. I DID NOT.
Q. OR BEING IN THE CEMENT AREA?
A. I DIDN'T MAKE THAT CALCULATION.
Q. OR IN THE BEAD ROOM.
A. NO.

Q. OKAY. AND, SO, ANOTHER -- SO, YOU START OUT WITH AN ASSUMPTION OF -- SOME KIND OF AN ASSUMPTION OF GENERAL EXPOSURE, AND THAT IS ONE.

AND THE SECOND -- ONE OF THE PRIMARY SOURCES THAT YOU USE WAS THE VAN ERT STUDY IN LOOKING -- IN FACT, YOU EVEN HAVE A TABLE OF ALL THE VAN ERT MEASUREMENTS IN SALINAS; IS THAT CORRECT?

A. YES.

MR. HARLEY: NOW, CAN WE SWITCH OVER TO THIS? WHAT IS THIS EXHIBIT NUMBER?

Q. 1332. DO YOU HAVE THAT STILL IN FRONT OF YOU?

THIS WAS ONE OF THESE THINGS THAT HE HAD ON POSTER.

A. I HAVE IT.

Q. OKAY. THIS IS A LIST OF THE BENZENE CONTENT.

NOW, IN THE EARLY -- STARTS AT 1.9 PERCENT AT 61. BUT STARTING IN 69, IT IS 1.5 PERCENT. THERE IS AN ODD NUMBER HERE, A .7, BUT THAT IS ON AN UNDATED INFORMATION SHEET; ISN'T THAT CORRECT?

A. WELL, I HAVE A DATE ASSIGNED TO IT, SO I WOULD HAVE TO LOOK BACK AT IT, IF YOU ARE TELLING ME IT REALLY DOESN'T HAVE THAT DATE.

Q. WHAT DOES N/A MEAN?

A. I'M SORRY. MUST NOT HAVE DATA ON IT, YOU ARE CORRECT.

Q. OKAY. SO WE DON'T KNOW WHAT DATE THAT .7 CAME FROM.

A. I'M ASSUMING THAT IS WHAT I MEANT BY PUTTING

N/A DOWN.

Q. LET'S LOOK AT THE ONE WE KNOW. WE HAVE 1.5. 1.5. WE HAVE CHEVRON 183. DID YOU UNDERSTAND THAT THAT ALSO CONTAINED 5 PERCENT HEXANE IN THAT ONE OR NOT?

A. I THINK I READ THAT LATER, YES.

Q. OKAY.

AND THEN WE HAVE 1.5 PERCENT. 1.5 PERCENT. 1.5 PERCENT. 1.4 PERCENT. ALL OF THESE IN '73.

AND THEN THERE IS THINNER WITH AN (E) AFTER IT, 183 (E) ON A DATE OF SEPTEMBER 18TH, '73. DO YOU SEE THAT?

A. YES.

Q. YOU NOW, KNOW THAT THAT (E) STANDS FOR EL SEGUNDO?

A. YES.

Q. SO WE CAN DISREGARD THAT .9 PERCENT ENTIRELY, BECAUSE THAT IS THE WRONG FACILITY, RIGHT?

EL SEGUNDO SHIPPED TO THE SOUTH GATE FACILITY, GENERALLY?

A. I GUESS I DON'T RECALL THAT, SORRY.

Q. THEN WE HAVE 1.5 PERCENT.

THEN WE ARE DOWN IN LATE '74 AND WE GET A FIRESTONE MEMO AT 1 PERCENT.

THEN WE GET AGAIN 1 TO 1-AND-A-HALF PERCENT IN LATE '74.

AND THEN WE GET ON MARCH 24TH -- THIS IS TWO MONTHS AFTER MR. HOOPER LEFT THE FACILITY; ISN'T THAT

CORRECT?
A. BASED ON HIS TESTIMONY, YES.
Q. BUT THIS IS FOUR MONTHS OR THREE MONTHS, REALLY, THREE-AND-A-HALF MONTHS BEFORE THE VAN ERT STUDY; ISN'T THAT CORRECT?
A. YES.
Q. AND IT SHOWS A CONCENTRATION OF ONE-HALF PERCENT IN 356. ISN'T THAT CORRECT?
A. YES.
Q. THAT IS A 66-AND-TWO-THIRDS PERCENT REDUCTION IN THE BENZENE CONTENT OF 356; ISN'T THAT CORRECT?
A. IT DEPENDS ON WHAT YOU ARE COMPARING IT TO.
Q. TO THE YEARS PREVIOUS. THE 1-AND-A-HALF PERCENT NUMBERS -- 1-AND-A-HALF OR 1.4 WE SAW CONSISTENTLY, '72, '73 AND '74.
A. I'M SORRY, I MUST HAVE MISSED WHAT YOU SAID ABOUT THE 1 --
Q. .5 PERCENT.
A. THE ONE IN '74, THE FIRESTONE INTEROFFICE MEMO AT .1 PERCENT?
Q. NO, THE 3/24/75. DO YOU SEE THAT?
A. NO, I UNDERSTAND THAT. I WAS JUST ASKING A CLARIFYING QUESTION.
Q. OKAY. THAT, IN FACT, YOU WOULD HAVE TO MULTIPLY THIS BY 3 TO GET THE BENZENE CONTENT OF THE SOLVENT IN USE WHEN MR. HOOPER WAS THERE. ISN'T THAT CORRECT?
A. NO, I DON'T AGREE WITH THE WAY YOU FRAMED THAT.

Q. WELL, TO GET FROM .5 PERCENT TO 1-AND-A-HALF PERCENT DON'T YOU HAVE TO MULTIPLY BY 3?
A. IF YOU ARE COMPARING IT TO THE 1-AND-A-HALF PERCENT, BUT THERE ARE OTHER VALUES THERE.
Q. WELL, LET'S SAY THAT. WE HAVE A .1 PERCENT ON AN INTEROFFICE MEMO AGAIN AT A TIME WHEN MR. HOOPER HAS COMPLETED 98 -- 90 PERCENT OF HIS WORK THERE; ISN'T THAT CORRECT?
A. HE WAS NO LONGER AT THE FACILITY AT THAT TIME, THAT IS CORRECT.
Q. AND, SO, WHAT I'M ASKING IS, ISN'T THE MOST LIKELY INFERENCE IS WHEN THE VAN ERT STUDY WAS DONE IN 1975, THEY WERE USING THE MATERIAL WITH .5 PERCENT BENZENE?
A. THAT IS NOT MY UNDERSTANDING, NO.
Q. WELL --
A. BASED ON THIS ONE DATA SHEET.
Q. WELL, BUT DR. VAN ERT NEVER MEASURED THE BENZENE CONTENT OF THE SOLVENT OF THE 356 FOR SALINAS, DID HE?
A. NOT WHILE HE WAS THERE.
Q. NOT WHILE HE WAS THERE.
AND THE MOST RECENT DATA SHEET FROM CHEVRON IN MARCH OF '75 IMMEDIATELY PRECEDING THAT SHOWS A BENZENE CONTENT OF .5 PERCENT. WHAT SPECIFIC INFORMATION DO YOU HAVE THAT THAT ISN'T THE 356 IN USE WHEN DR. VAN ERT DID HIS STUDY?
A. I DON'T HAVE SPECIFIC INFORMATION ONE WAY OR

ANOTHER.

Q. YOU ASSUMED THAT THE BENZENE BEING USED AT THE TIME VAN ERT DID HIS STUDY WAS THE SAME, THE BENZENE CONTENT OF THE RUBBER SOLVENT, THE BASIC RUBBER SOLVENT, WAS THE SAME AS WHEN MR. HOOPER WORKED THERE, DIDN'T YOU?

A. I DIDN'T SEE ANYTHING THAT SUGGESTED IT HAD CHANGED DRAMATICALLY OVER THAT TIME PERIOD, NO.

Q. WELL, YOU DID SEE SOMETHING THAT SUGGESTED IT CHANGED RIGHT HERE ON THE MARCH 24TH, 1975 REPORT, DIDN'T YOU?

A. BUT I HAD OTHER INFORMATION AND TESTIMONY THAT SUGGESTED IT HADN'T CHANGED.

Q. THAT IS WHAT I'M ASKING YOU FOR RIGHT NOW. WHAT IS THE OTHER PIECE OF INFORMATION THAT SUGGESTED IT HADN'T CHANGED?

A. THERE IS TESTIMONY BY EUGENE JONES THAT HE CLEARLY WALKS THROUGH ALL THE PROCESSES IN CONJUNCTION WITH THE VAN ERT STUDY AND TALKS ABOUT THE DIFFERENT PRODUCTION PROCESSES AND MATERIALS THAT WERE USED. AND HE SPECIFICALLY SAYS IN MOST OF THOSE INSTANCES THAT THERE HAD NOT BEEN ANY CHANGE DURING HIS TENURE AT THE FACILITY.

Q. WHAT MR. JONES SAID IS THEY WERE STILL USING 356; ISN'T THAT CORRECT? THIS IS STILL 356, ISN'T IT?

A. RIGHT, BUT HE --

Q. MR. JONES DENIED EVEN KNOWING WHAT THE BENZENE CONTENT OF 356 WAS, DIDN'T HE?

A. I'M NOT AWARE THAT HE DENIED THAT. THERE IS --
Q. AT THE TIME DIDN'T HE SAY HE DID NOT HAVE AN UNDERSTANDING IN 1972, '73 AND '74 OF THE BENZENE CONTENT OF 356; THAT HE LEARNED THAT LATER?
A. I DON'T RECALL THAT.
Q. THIS IS AN IMPORTANT FACTOR IF THE BENZENE CONTENT 356 IS THE DOMINANT BENZENE-CONTAINING PRODUCT AT SALINAS, ISN'T IT?
A. IT IS DEFINITELY ONE OF THE MAJOR PRODUCTS THAT WAS USED, YES.
Q. THEY WERE USING APPROXIMATELY 250,000 GALLONS OF THIS PRODUCT A YEAR; ISN'T THAT CORRECT?
A. I HAVEN'T SEEN THE FIGURES, BUT --
Q. YOU DIDN'T SEE THE SHIPPING RECORDS FOR CHEVRON PRODUCTS THAT MET THIS CODE SPEC?
A. I MAY HAVE SEEN THEM, BUT I DON'T REMEMBER WHAT THE NUMBERS WERE.
Q. OKAY. AND, IN FACT, IN COMPARISON TO 374 AND THESE OTHER SOLVENTS -- OH, THAT IS ANOTHER THING I WANTED TO SHOW YOU. DO YOU KNOW WHAT 332 IS?
A. THAT IS MY UNDERSTANDING THAT IS COMPARABLE TO THE 356.
Q. IN FACT, MR. WILSON AND MR. JONES, AND I THINK MR. HELMS, ALL TESTIFIED THAT 356 AND 332 WERE THE SAME THING.
A. I RECALL SEEING THAT FROM SOMEONE'S TESTIMONY, YES.
Q. AND ALSO IN MARCH OF 1975 IT IS BEING REPORTED

AT HALF A PERCENT BENZENE CONTENT; ISN'T THAT CORRECT?
A. YES.
Q. IF, IN FACT, THE BASIC RUBBER SOLVENT BEING USED AT SALINAS WHEN VAN ERT DID HIS TESTING IS .5 PERCENT INSTEAD OF 1-AND-A-HALF PERCENT, THAT DRAMATICALLY AFFECTS HOW YOU COULD APPLY THOSE IN A BACKWARD MANNER; ISN'T THAT CORRECT?
A. IF AT THE TIME THAT THE VAN ERT -- I THINK THIS IS WHAT YOU ARE ASKING. IF AT THE TIME THE VAN ERT STUDY WAS CONDUCTED THERE WAS A DIFFERENT PERCENTAGE OF BENZENE IN ALL OF THE PRODUCTS THAT WERE USED, THEN ALL OF THE PRODUCTS THAT WERE USED DURING HOOPER'S EMPLOYMENT, THEN I WOULD SAY THAT THE CONCENTRATIONS WOULD BE DIFFERENT.
Q. OKAY. WHAT YOU SAID IS THAT THE -- ACROSS-THE-BOARD OF THE 10 OR 11 PLANTS, THERE WAS MORE OR LESS CONSISTENCY IN THE VAPOR RELEASE; IS THAT CORRECT.
A. THEY WERE CONSISTENT WITH THE VAN ERT STUDIES IS WHAT I SAID, YES.
Q. AND IF YOU LOOK AT EXHIBIT 1292. IT IS A DEFENSE EXHIBIT THAT YOU HAVE THERE.
DID YOU GIVE HER 1292?
THIS IS ANOTHER VAN ERT REPORT OF THE -- THIS IS ACTUALLY THE BASIS OF THE PUBLISHED STUDY; IS THAT CORRECT?
A. I WOULD HAVE TO LOOK AT IT FOR A FEW MINUTES. I DON'T --

Q. OKAY.
A. IF YOU WANT TO -- DO YOU WANT ME TO JUST TO TAKE YOUR WORD ON IT, I WILL.
Q. TAKE A QUICK LOOK. IT HAS THE SAME TABLES, THE SAME GRAPHS.
A. IT APPEARS THAT THERE IS MORE INFORMATION PERHAPS IN THIS THAN THE PUBLISHED PAPER.
Q. RIGHT.
A. BUT IT DOES LOOK LIKE THERE IS SOME DATA THAT LOOKS LIKE IT IS PROBABLY THE SAME.
Q. DO YOU REMEMBER YOU BROUGHT THIS TO YOUR DEPOSITION?
A. I'M SURE I DID. I BROUGHT EVERYTHING WITH ME.
Q. OKAY. LOOK AT TABLE 5 TOWARDS THE BACK. IT IS ABOUT FIVE OR SIX PAGES.
A. OKAY. I HAVE IT.
Q. DO YOU SEE THE BENZENE CONTENT OF THE BASIC RUBBER SOLVENTS?
MR. RIFF: I'M GOING TO OBJECT, YOUR HONOR, TIME RELEVANCE. THIS IS 1977.
THE WITNESS: THESE ARE NOT SALINAS, I DON'T THINK.
THE COURT: HOLD ON JUST A SECOND. THERE IS AN OBJECTION.
THE WITNESS: SORRY.
THE COURT: TIME RELEVANCE.
MR. RIFF: TIME RELEVANCE.
THE COURT: AND YOUR RESPONSE?

MR. HARLEY: MY RESPONSE SHE RELIED ON THIS IN FORMULATING THE BASIS OF HER OPINIONS THAT THE VAN ERT STUDIES WERE RELIABLE.

THE COURT: THE OBJECTION IS OVERRULED.

Q. (MR. HARLEY:) EACH OF THE BENZENE CONTENT OF THE RUBBER SOLVENTS REPORTED IN TABLE 5 IS LOWER THAN 1-AND-A-HALF; ISN'T THAT CORRECT?

A. THAT IS CORRECT.

Q. AND TWO OF THEM ARE, IN FACT, AT .5.

A. ONE IS AT .5 AND ONE IS AT .55.

Q. AND ONE IS ALMOST 1 AND ONE IS SLIGHTLY OVER 1 AND ONE IS SLIGHTLY OVER 73; IS THAT CORRECT?

A. YES.

Q. THESE WOULD AVERAGE ABOUT HALF OF THE BENZENE CONTENT AT 356 IN USE FROM '72 TO '75.

A. IN USE IF YOU ASSUME 1.5 PERCENT, YES.

Q. YOU DID ASSUME FOR YOUR PURPOSES IT WAS 1.5 PERCENT, DIDN'T YOU?

A. FOR MY CALCULATION IN THE CATALYTIC SHOP.

Q. WELL, YOU ASSUMED WHEN YOU INTERPRETED THE VAN ERT STUDY AND APPLIED IT TO THE TIRE PLANT GENERALLY THAT THE VAN ERT STUDY WAS MEASURING RUBBER SOLVENTS THAT HAD 1-AND-A-HALF PERCENT BENZENE, WEREN'T YOU? DIDN'T YOU MAKE THAT BASIC ASSUMPTION?

A. NO, I MADE THE ASSUMPTION THAT THE VAN ERT STUDY WAS MEASURING CONDITIONS, WHATEVER THEY HAPPENED TO BE.

Q. WELL --

A. I MEAN, I HAVE ALWAYS SAID THERE WAS SOME REPORTED RANGE IN THE BENZENE CONCENTRATIONS AND THE MAXIMUM WAS 1-AND-A-HALF PERCENT.

Q. AND, IN FACT, THE MAXIMUM OF THE RANGE THAT YOU REPORTED WAS 1.9 PERCENT, WASN'T THAT CORRECT?

A. EARLIER THAN THE TIME PERIOD OF INTEREST, IF YOU WANT TO INCLUDE THAT EARLIER DATE, THEN YES.

Q. OKAY. BUT WHAT HAPPENED TO BENZENE -- AND THIS IS REPORTED IN THE RUBBER LITERATURE IN THE MC MICHAEL'S STUDIES, IS THE BENZENE CONTENT STARTING IN THE MID-1970S, THE BENZENE CONTENT IN RUBBER SOLVENTS BECAME A MATTER OF CONCERN IN THE INDUSTRY. THAT IS WHY WE HAVE THE MC MICHAEL/VAN ERT STUDIES; ISN'T THAT CORRECT?

A. THAT WAS --

Q. PART OF THE REASON.

A. I'M NOT SURE I'M FAMILIAR WITH THE MC MICHAEL'S STUDY YOU ARE REFERRING TO.

Q. MC MICHAEL'S WAS THE LEAD EPIDEMIOLOGY INVESTIGATOR THAT THESE DOSE ASSESSMENTS WERE USED TO SUPPORT THE ULTIMATE EPIDEMIOLOGY; ISN'T THAT CORRECT?

A. I HAVEN'T REVIEWED THE EPIDEMIOLOGY LITERATURE FOR THIS CASE, SO I DON'T WANT TO --

Q. AND THAT, IN FACT -- WELL, WHAT YOU ARE -- IF, IN FACT, THE BASIC RUBBER SOLVENT IN USE AT THE TIME OF THE VAN ERT STUDY HAD ONE-THIRD THE BENZENE AS THE RUBBER SOLVENT IN USE EARLIER, THEN THAT MEANS ALL OF HIS MEASUREMENTS, AT LEAST REGARDING BENZENE, COULD BE

MULTIPLIED BY A FACTOR OF 3 TO GET A REASONABLE ESTIMATE OF WHAT THE EXPOSURES WERE EARLIER, DOESN'T IT?

A. I WOULDN'T MAKE A CALCULATION THAT WAY, NO.

Q. WELL, THEN, ON THE OTHER HAND, WOULD YOU JUST HAVE TO DISCARD THE VAN ERT?

A. I WOULDN'T -- WOULD NOT THINK THEY WOULD GIVE YOU THE SAME CONCENTRATION. I DON'T KNOW THAT I WOULD DISCARD THEM ON ONE HAND. BUT, ON THE OTHER HAND, I DON'T KNOW THAT I COULD JUST MAKE A BLANKET CLAIM AND MULTIPLY THEM ALL BY 3.

Q. WHEN YOU DID YOUR ROOM CONCENTRATION ANALYSIS AND YOU -- I'M GOING TO GO THROUGH THIS LATER, BUT YOU WENT THROUGH THIS WHOLE THING AND FOR THE MATERIAL THAT WAS .02 YOU ENDED UP FINDING THAT IF IT WAS .02 IN THE MATERIAL, IT WAS .02 IN THE AIR. ISN'T THAT HOW IT TURNED OUT?

A. IT TURNED OUT THAT WAY, BUT IT IS NOT --

Q. AND WHEN IT WAS 1.5 IN THE MATERIAL, IT TURNED OUT TO BE 1.5 IN THE AIR; ISN'T THAT CORRECT?

A. BY HAPPENSTANCE IT TURNED OUT TO BE THE SAME NUMBER.

Q. AND, SO, YOU ARE SAYING THAT IF IT WAS .5 IT WOULDN'T HAVE TURNED OUT TO BE .5 IN THE AIR?

A. IN THAT EXAMPLE IT WOULD HAVE BEEN REALLY LINEAR.

Q. WHAT YOU WERE GIVING AS AN EXAMPLE, WHAT YOU WERE CALCULATING IS THE RELEASE OF BENZENE FROM A

MIXTURE OF A SOLVENT; ISN'T THAT CORRECT?

A. RIGHT, BUT THERE ARE OTHER PARAMETERS THAT GO INTO THAT ASSESSMENT.

Q. RIGHT. ONE OF THE -- BUT I'M TRYING TO FIGURE OUT IS IF, IN FACT, THE SOLVENTS IN USE VAN ERT'S, THE BASIC RUBBER SOLVENT, 356 WAS .5 PARTS PER MILLION, HOW CAN YOU TAKE HIS RAW NUMBERS OF BENZENE CONCENTRATIONS AND APPLY THEM TO MR. HOOPER?

A. IT WAS NOT MY UNDERSTANDING THAT THEY HAD CHANGED OVER THAT TIME PERIOD AND THAT IS WHY I RELIED UPON THE DATA.

Q. I UNDERSTAND THAT, BUT I'M ASKING YOU NOW TO MAKE AN ASSUMPTION. ASSUME, IN FACT, THE DOCUMENTS, CHEVRON'S M.S.D.S.S ARE, IN FACT, CORRECT, AND THAT BY 1975 THEY HAD REDUCED THE BENZENE CONTENT IN THE BASIC RUBBER SOLVENT TO .5 PERCENT.

A. UH-HUH.

Q. I'M GOING TO ASK YOU TO MAKE THAT ASSUMPTION, AND I'M GOING TO ASK YOU TO ASSUME THAT THOSE WERE THE MATERIALS IN USE WHEN DR. VAN ERT DID HIS STUDIES. DO YOU STILL BELIEVE THAT YOU CAN TAKE THE RAW BENZENE NUMBERS AS A BASIS FOR MR. HOOPER'S EXPOSURE IN '72 TO '74?

A. I WOULDN'T RELY ON THOSE NUMBERS BY THEMSELVES.

Q. NOW, SECONDLY, THE OTHER THING YOU HAVE TO CONSIDER -- SO, ONE OF THE ASSUMPTIONS YOU MADE WAS BENZENE CONTENT OF 356, YOU ASSUME 1.5 PERCENT MAY HAVE BEEN .5 PERCENT. IS THAT FAIR?

A. I DIDN'T MAKE ASSUMPTIONS THAT IT MAY HAVE BEEN .5 PERCENT SPECIFICALLY.

Q. NO, YOU ASSUMED IT WAS 1.5 PERCENT OR IN THAT RANGE WHEN HE DID HIS MEASUREMENTS, DIDN'T YOU?

A. NO, WE JUST TALKED ABOUT THAT. I ASSUMED THAT IT WAS WHATEVER IT WAS AND THERE WAS SOME RANGE, BUT THE MAXIMUM SPECIFICATION AT THE TIME WAS 1.5 PERCENT.

Q. OKAY. YOU SAY THAT IN YOUR REPORT TOO, THAT FIRESTONE HAD A MAXIMUM SPECIFICATION OF 1.5 PERCENT.

A. THAT WAS MY UNDERSTANDING BASED UPON A REVIEW OF THE MATERIALS, YES.

Q. IN FACT, AT THE TIME WASN'T THE SPECIFICATION FOR RUBBER SOLVENTS A MAXIMUM AROMATIC HYDROCARBON CONTENT OF 5 PERCENT?

A. I THINK THAT MAY HAVE BEEN ANOTHER SPECIFICATION.

Q. WOULD YOU SHOW ME THE DOCUMENT OR A DATED DOCUMENT BEFORE JANUARY 1975 WHERE THE MAXIMUM BENZENE CONTENT BY FIRESTONE OF ANY RUBBER SOLVENT WAS SPECIFIED?

A. I DON'T KNOW IF I HAVE A MEMO OR A DOCUMENT TO THAT EFFECT.

Q. OKAY. YOU RECEIVED THE '72 TO '73 AIR MEASUREMENTS, FOR LACK OF A BETTER WORD, MADE BY FIRESTONE OF VAPORS; ISN'T THAT CORRECT?

A. I OBTAINED THAT DOCUMENT MYSELF.

Q. AND THOSE DOCUMENTS --

A. OH, I'M SORRY.

Q. BY WILSON AND HIS INDUSTRIAL HYGIENE TEAM, YOU SAW THEY WENT OUT ON A COUPLE, THREE OCCASIONS AND MADE TOTAL VAPOR MEASUREMENTS. THAT WAS GIVEN TO YOU.

A. I MISUNDERSTOOD. MAYBE YOU CAN GO BACK. I WAS THINKING OF THE '73 TO '77 STUFF.

Q. YEAH. NO, I'M TALKING ABOUT DURING '72 THROUGH '74.

A. OKAY.

Q. DO YOU RECALL BEING PROVIDED WITH FIRESTONE DOCUMENTS WHICH SHOWED THEIR INDUSTRIAL HYGIENISTS WERE TAKING TOTAL VAPOR MEASUREMENTS?

A. THESE ARE THOSE SALINAS PLANT --

Q. RIGHT.

A. -- REPORTS, YES.

Q. SALINAS PLANT I.H. SURVEYS.

A. WHATEVER IT WAS CALLED. IT HAD THE DATE ON IT, YES.

Q. DID YOU HAPPEN TO NOTICE THEY TOOK SEVERAL DATA POINTS THAT WERE EXACTLY THE SAME DATA POINTS AT LEAST BY DESCRIPTION AS DR. VAN ERT?

A. DO YOU MEAN SAMPLES IN THE SAME TYPE OF LOCATION?

Q. YES.

A. AND PROCESS?

Q. LIKE A NUMBER 10 TUBER.

A. SURE.

Q. OKAY. DID YOU COMPARE THEM?

A. NO, THEY WERE IN -- ONE WAS IN BENZENE AND ONE

WAS TOTAL HYDROCARBON.

Q. WELL, IN AT LEAST SEVERAL INSTANCES DR. VAN ERT DOES REPORT TOTAL VAPOR CONCENTRATION AND I THINK HE EXPLAINS IT IN HIS DEPO. HE CALLS IT IN HEXANE TOTAL VAPOR. DO YOU REMEMBER THAT?

A. I DO.

Q. DID YOU COMPARE THEM?

A. I DID NOT.

Q. THAT MIGHT GIVE YOU AN IDEA OF WHETHER THE METHODS IN USE IN JULY OF '75 WERE THE SAME AS THE METHODS IN USE OF 1973 OR '74, WOULDN'T THEY?

A. IF THE SAMPLE IS COLLECTED IN THE SAME MANNER AND AT THE SAME LOCATION AND FOR THE SAME PERIOD OF TIME, YES, IT MIGHT.

Q. WELL, DO YOU REMEMBER READING DOCUMENTS OF EXPLOSIVE LEVELS OF VAPORS IN THE AREA OF THE NUMBER 10 TUBER DRIP PAN?

A. I DO.

Q. DID VAN ERT REPORT THAT THERE EVEN EXISTED SUCH A THING AS A DRIP PAN ON THE NUMBER 10 TUBER?

A. I DON'T RECALL HIM MENTIONING THAT, NO.

Q. IN FACT, THERE IS A 1974 MEMO, IN LATE '74, I THINK IT IS DECEMBER OF '74, INDICATING THAT THAT PROBLEM WAS BEING CORRECTED; ISN'T THAT CORRECT?

A. NO, I ACTUALLY NEVER SAW A FOLLOW-UP ABOUT THE DRIP PAN MEMO, WHICH OCCURRED BEFORE MR. HOOPER'S EMPLOYMENT.

Q. DID YOU SEE THAT IN THE BEAD ROOM THERE WERE

CORRECTIONS MADE -- DID YOU UNDERSTAND THAT THERE HAD BEEN A SUBSTITUTION OF SOLVENTS IN THE BEAD ROOM FROM WHAT WAS USED IN '74 TO WHAT WAS USED IN '75?

A. I WOULD HAVE TO LOOK AT DOCUMENTS TO REFRESH MY MEMORY. I'M NOT SURE.

Q. DO YOU RECALL THAT DR. VAN ERT DESCRIBED IN THE BEAD DIP OPERATION -- I'M NOT CALLING -- THERE IS A BEAD MANUFACTURER OPERATION, THAT IS SEPARATE. BEAD DIP OPERATION HE DESCRIBED A DIP TANK WITH A SILICONE-BASE SOLVENT AND THEN WITH A PETROLEUM-BASE SOLVENT. DO YOU REMEMBER THOSE TWO DIFFERENT DIP TANKS?

A. I THINK YOU MIGHT BE REFERRING TO THE DOPER AREA AND NOT --

Q. NO, I'M TALKING ABOUT THE BEAD ROOM. THE DIP TANKS IN THE BEAD ROOM.

A. THEN I'M NOT SURE. I WOULD HAVE TO LOOK BACK AT THE DOCUMENTS. I DON'T RECALL THAT.

Q. DO YOU RECALL IN THE DOCUMENTS THAT MR. JONES AND MR. WILSON DECIDED TO SUBSTITUTE A SILICONE-BASED DIP FOR A SOLVENT-BASED DIP IN THE BEAD ROOM AND THIS WAS DONE IN EARLY '75?

A. I JUST DON'T RECALL. IF YOU WANT TO SHOW ME SOMETHING, THAT WOULD BE GREAT.

Q. I'M GOING TO SHOW YOU WHAT HAS PREVIOUSLY BEEN MARKED AS 119, WHICH IS A --

CAN YOU BRING THAT UP, PLEASE?

MS. MISLUK: UH-HUH.

Q. (MR. HARLEY:) WHICH HAS BEEN ADMITTED. AND I'M GOING TO ASK YOU TO LOOK AT THE NUMBER 2 -- THERE IS A WHOLE BUNCH OF STUFF ON HERE.
A. OKAY.
Q. BUT I JUST WANTED TO GO TO --
WOULD YOU GO TO THE THIRD PAGE?
AND IT IS TALKING AT THE END OF ABOUT THE BEAD INSERT OPERATION AND PROBLEMS WITH A SOLVENT MIXTURE. DO YOU SEE THAT, R.P. 4732; DO YOU SEE THAT?
A. YES.
MR. HARLEY: THEN GO TO THE NEXT ONE. THE NEXT PAGE, TOP OF THE PAGE.
Q. THIS IS A WATER-BASED MATERIAL WHICH CAN BE USED INSTEAD, AND WOULD ELIMINATE THE HAZARD. DO YOU SEE THAT?
NEXT PAGE. IT IS RIGHT ON THE PAGE WITH THE SIGNATURE.
A. I'M JUST LOOKING AT THE DATE OF THIS, WHICH IS FEBRUARY OF '75.
Q. RIGHT. FEBRUARY OF '75.
A. I WAS TRYING TO FIND THE BEGINNING.
Q. THAT IS EXACTLY WHAT I'M TRYING TO DRAW YOUR ATTENTION TO.
AFTER MR. HOOPER LEFT AND BEFORE VAN ERT ARRIVED, THERE WERE CORRECTIONS BEING MADE TO THE PLANT TO REDUCE EXPOSURES OF ALL KINDS; ISN'T THAT CORRECT?
A. WELL, THIS IS THE R.P. 4732, WHICH IS THE ISOPROPYL ALCOHOL.

Q. NO, THAT IS NOT THE ISOPROPYL ALCOHOL.

MR. RIFF: WELL, HE IS ARGUING WITH THE WITNESS. THERE IS A CODE BOOK.

THE COURT: IT IS NOT CLEAR TO ME WHETHER THE DISCREPANCY RELATES TO NOT LOOKING AT THE SAME ITEM OR SOMETHING ELSE, SO LET'S CLARIFY.

MR. HARLEY: OKAY.

THE WITNESS: IT CARRIES OVER TO THE NEXT PAGE.

Q. (MR. HARLEY:) IT CARRIES OVER TO THE NEXT PAGE AND IT IS SEPARATED.

IT IS YOUR -- I WON'T SAY IT.

MR. RIFF -- YOU BELIEVE THAT THAT SOLVENT IS ISOPROPYL ALCOHOL; IS THAT CORRECT?

A. THAT IS MY UNDERSTANDING.

Q. OKAY. DID YOU REVIEW WHETHER CORRECTIONS WERE MADE TO THE 10-10 TUBER AREAS TO REDUCE LEVELS OF EXPOSURE BY ADDING ADDITIONAL VENTILATION?

A. I THINK THERE WERE SOME MEMOS THAT INDICATED THROUGHOUT THERE WERE RECOMMENDATIONS TO INCREASE CAPTURE VELOCITY VENTILATION AT SPECIFIC UNITS. I DON'T RECALL THE EXACT TIME PERIODS OF WHEN THAT WAS RECOMMENDED VERSUS WHEN THOSE CHANGES WENT INTO EFFECT.

Q. BY THE WAY, HOW MANY OF THE AREAS WHERE THERE WERE EXCESSIVE -- EXCESSIVE VAPOR CONCENTRATIONS FOUND BY WILSON'S TEAM WERE CORRECTED BEFORE THE ARRIVAL OF DR. VAN ERT?

A. I'M NOT SURE I UNDERSTAND THAT QUESTION. HOW

MANY WERE CORRECTED?

Q. YES.

A. I DON'T -- I HAVEN'T SEEN ANYTHING THAT SUGGESTED WHAT WAS CORRECTED AND WHAT WASN'T IN TERMS OF THE VAPOR CONCENTRATIONS.

Q. DO YOU REMEMBER SEEING AN APRIL '72 MEMO FROM WILSON CONCERNING VENTILATION AND VENTILATION DEFICIENCIES WHERE HE SAID THE SITUATION IS OUT OF HAND, DESCRIBING THE PROBLEMS WITH VENTILATIONS?

A. I WOULD HAVE TO LOOK AT THE MEMO.

Q. YOU ALSO TOLD ME DURING -- YOU DIDN'T TELL ME. I ACTUALLY HAVE NEVER GOTTEN TO MEET YOU UNTIL THIS TRIAL OUT IN THE HALLWAY; ISN'T THAT CORRECT?

A. THAT IS CORRECT.

Q. YOU TOLD MY ASSOCIATE KELLY MC MEEKIN THAT YOU BELIEVED THAT THE FACILITY AT SALINAS -- LET ME SEE IF I CAN -- WAS DRAFTY AND WINDY INSIDE. DO YOU REMEMBER THAT?

A. THERE WAS TESTIMONY BY FORMER WORKERS SUCH AS MR. HELM SUGGESTING OR INDICATING THAT AREAS SUCH AS THE TIRE BUILDING SECTION WAS LIKE A WIND TUNNEL.

Q. YEAH. AND MR. HELM ACTUALLY SAID THAT A COOL OCEAN BREEZE FLOWED THROUGH THIS FACILITY; ISN'T THAT WHAT HE SAID?

A. I DON'T REMEMBER THAT SENTENCE, BUT I HAVE THE FEELING LIKE A WIND TUNNEL AND THE WINDOWS ARE FREQUENTLY OPENED.

Q. SO YOU CONCLUDED FROM THAT THAT THE VENTILATION

WAS GOOD OR ADEQUATE AND THAT IT WAS DRAFTY AND WINDY AT TIMES. ISN'T THAT YOUR CONCLUSION; THAT IS WHAT YOU TOOK OUT OF IT?

A. I THINK I REPORTED WHAT I HAD READ BASED ON THAT TESTIMONY AND ALSO THE TESTIMONY OF SAFETY JONES, WHO INDICATED THAT THERE WAS -- HE DID ROUTINE CHECKS THROUGH THE FACILITY AND THAT THERE WAS ADEQUATE VENTILATION IN THE FACILITY.

Q. WHAT DO YOU BELIEVE THE AVERAGE TEMPERATURE WAS IN THE FACILITY?

A. SOME OF THE DEPOSITION TESTIMONY BY -- I CAN'T REMEMBER WHETHER IT WAS MR. JONES OR MR. JAZWIN OR MR. HELM, SUGGESTED IT WAS AT TIMES IN THE 60S OR 70S AND OTHERS SUGGESTED IT WAS COLDER IN THE WINTER AND HOTTER IN THE SUMMER. I HAVEN'T SEEN ANY ACTUAL TEMPERATURE, REPORTED TEMPERATURE DATA FOR THE FACILITY.

Q. I'M HAVING A NAME BLOCK RIGHT NOW, BUT DID YOU REVIEW THE TESTIMONY OF THE SALINAS EMPLOYEE WHO CAME AND EXPLAINED TO US ALL HOW THEY MADE TIRES IN SALINAS?

A. MR. NEWELL?

Q. MR. NEWELL.

A. I DID.

Q. OKAY. DID YOU HEAR HIM SAY THAT THE TEMPERATURES IN THERE WERE HOT?

A. I BELIEVE HE DID SAY THAT.

Q. IN FACT, IT IS DESIRABLE TO AT LEAST HAVE IT VERY WARM TO PRESERVE THE TACKINESS AND MALLEABILITY OF

THE RUBBER DURING THE MANUFACTURING PROCESS; ISN'T THAT CORRECT?

A. I THINK HE SAID THAT, YES.

Q. DOESN'T THAT SEEM LOGICAL TO YOU?

A. HUM -- SURE.

Q. AND --

A. BUT I ALSO READ MEMOS THAT SUGGESTED IT WAS COOL AT TIMES AND IT WASN'T THAT TACKY.

Q. DR. VAN ERT, WHAT DID HE MEASURE THE TEMPERATURE TO BE?

A. I DON'T RECALL HIM REPORTING THAT.

Q. HE REPORTED THE VENTILATION WAS ALL IN GOOD SHAPE AND IN GOOD WORKING ORDER WHEN HE WAS THERE, DIDN'T HE?

A. I'M NOT SURE, BECAUSE THERE WAS -- I'M NOT SURE EXACTLY WHAT HE SAID ABOUT THAT. I KNOW THERE WAS FOLLOW-UP CORRESPONDENCE AFTER HIS VISIT OF WHICH THERE WERE MANY RECOMMENDATIONS, SOME OF WHICH WERE TO IMPROVE VENTILATION IN CERTAIN AREAS.

Q. YEAH, HE CERTAINLY SUGGESTED IN TWO OR THREE AREAS TO ADD VENTILATION, BUT WHAT WAS THERE HE DESCRIBED WAS IN GOOD ORDER.

A. PERHAPS. I WOULD HAVE TO LOOK AT HIS TESTIMONY AGAIN TO LOOK AT HIS WORDING.

Q. BUT IN ORDER TO DECIDE HOW MUCH WEIGHT TO GIVE TO THE VAN ERT STUDY, YOU HAVE TO MAKE AN INDEPENDENT JUDGMENT AS TO HOW COMPARABLE THE CONDITIONS WERE WHEN MR. HOOPER WAS THERE DAY IN AND DAY OUT AS COMPARED TO

DR. VAN ERT'S TWO OR THREE DAYS AT THE FACILITY; ISN'T THAT CORRECT?

A. YES.

Q. AND YOU UNDERSTOOD THAT ALL OF THE VAN ERT INSPECTIONS, ALL THE NORTH CAROLINA INSPECTIONS TO ALL OF THE FACILITIES WERE ANNOUNCED WELL IN ADVANCE.

A. I DON'T KNOW WHAT "WELL IN ADVANCE" IS. I BELIEVE I READ SOMETHING THAT THEY KNEW THEY WERE COMING.

Q. AND DID YOU NOTE THAT HE MADE NO NOTES OF POOR HOUSEKEEPING AT THE PLANT? DID YOU SEE THAT? HE MADE NO COMMENT ON THAT.

A. I WOULD HAVE TO GO BACK AND LOOK TO SEE IF THAT IS TRUE.

Q. DID YOU SEE THE TESTIMONY BY HOOPER, RYAN, NEWELL, AND THE WORKER COMPLAINTS THROUGHOUT '74 AND '75 ABOUT POOR HOUSEKEEPING AT THE PLANT?

A. I DON'T THINK I READ ANYTHING RELATED TO WORKER COMPLAINTS, BUT CERTAINLY I READ THE DEPOSITION OF THE OTHER PEOPLE THAT YOU MENTIONED.

Q. DID YOU READ THAT THE SKYLIGHTS WERE MAINTAINED AS CLOSED?

A. ONE PERSON, AT LEAST, TESTIFIED TO THAT.

Q. ONE PERSON NOT ONLY TESTIFIED TO THAT, HE TESTIFIED THAT HE COMPLAINED ABOUT IT; ISN'T THAT CORRECT?

A. I DON'T REMEMBER WHETHER HE SAID HE COMPLAINED ABOUT IT.

Q. DO YOU KNOW WHETHER THOSE SKYLIGHTS WERE FUNCTIONING WHEN VAN ERT WAS THERE?
A. I DON'T KNOW.
Q. IS THERE LITERATURE ON BENZENE-CONTAINING SOLVENT SPILLS OR GASOLINE SPILLS?
A. THAT MIGHT BE REPORTED IN CERTAIN PAPERS.
Q. DID YOU LOOK FOR SUCH LITERATURE?
A. FOR GASOLINE SPILLS, NO, NOT IN THIS CASE.
Q. OR FOR SOLVENTS WITH 1-AND-A-HALF, 2 PERCENT TYPE LEVELS OF SOLVENTS CONTAINING BENZENE.
A. I DON'T BELIEVE I DID A SPECIFIC LITERATURE SEARCH FOR BENZENE SPILLS.
Q. FOR INSTANCE, WHEN YOU WERE TRYING TO LOOK FOR RAILROAD CAR INFORMATION YOU ACTUALLY LOOKED AT GASOLINE INFORMATION BECAUSE THEY ARE KIND OF COMPARABLE TO THE SOLVENTS; ISN'T THAT CORRECT?
A. I LOOKED TO WHATEVER WAS AVAILABLE. THEY JUST HAPPENED TO BE DEALING WITH THE TRANSPORT OF GASOLINE.
THERE WAS ONE STUDY THAT EXCLUDED THE TRANSPORT OF BENZENE MIXTURES THAT WAS NOT NECESSARILY GASOLINE, BUT THAT IS ALL THAT WAS AVAILABLE IN THE LITERATURE.
Q. DO YOU REMEMBER IN DR. VAN ERT'S REPORTS OF ONE HIS COMPLAINTS OF AN IMMEDIATE FIX WAS THAT THERE WAS A COUPLING CONNECTION PROBLEM ON THE SOLVENT BEING PIPED TO THE AUTOMATIC DOPER?
A. I THINK I DO RECALL SOMETHING LIKE THAT, YES.
Q. SO THERE WAS PIPING GOING TO THE AUTOMATIC DOPER.

A. I DON'T KNOW THAT THAT REFERRED TO THE PIPING IN WHAT WE THINK ABOUT PIPES GOING TO THE PLANT. I THINK THAT MIGHT HAVE BEEN TUBING JUST FOR THAT PARTICULAR NOZZLE OR INSTRUMENT.

Q. WHAT IS YOUR UNDERSTANDING OF HOW THIS AUTOMATIC DOPER GOT SOLVENTS TO SPRAY?

A. I'M NOT SURE WHAT IT WAS ATTACHED TO, BUT SOMETHING THAT WOULD HAVE CONTAINED THE SOLVENT. IT WAS NOT MY UNDERSTANDING THAT THAT WAS PIPED IN, ONLY BECAUSE I HAVEN'T READ ANYTHING TO THAT EFFECT.

Q. OKAY. AND DO YOU KNOW -- HOW MUCH EXPOSURE -- DID YOU MAKE ANY CALCULATION OF EXPOSURE OF MR. HOOPER'S REPAIRING OF THE DOPER?

A. I DID NOT. HE DID NOT CLAIM TO DO THAT IN HIS ORIGINAL DEPOSITION TESTIMONY.

Q. LET'S TALK ABOUT THAT. MR. HOOPER WAS DEPOSED VERY EARLY IN THE LITIGATION; ISN'T THAT CORRECT?

MR. RIFF: OBJECTION, LACK OF FOUNDATION.

Q. (MR. HARLEY:) WELL, WHAT WAS THE DATE OF THE DEPOSITION YOU REVIEWED?

A. I WOULD HAVE TO LOOK IT UP. IT IS IN MY REPORT. I DON'T REMEMBER OFFHAND.

Q. WELL, DO YOU RECALL THAT DURING THE TIME OF HIS DEPOSITION HE WAS UNDERGOING CHEMOTHERAPY?

A. I DON'T RECALL THAT EITHER. I WASN'T LOOKING FOR THOSE SORTS OF DETAILS.

Q. APPROXIMATELY DECEMBER OF LAST YEAR. DO YOU RECALL THAT?

A. HUM --
Q. NOVEMBER MAYBE?
A. IT LOOKS LIKE I HAVE DECEMBER OF --
Q. 2003 OR 4?
A. 2004.
Q. YEAH.
A. AND -- YES, 2004.
Q. AND AT THAT TIME HE WAS BEING ASKED QUESTIONS, WERE ANY OF THESE DOCUMENTS PRESENTED TO HIM THAT YOU CAN REMEMBER?
A. ANY OF WHICH DOCUMENTS?
Q. ANY OF THESE DOCUMENTS THAT YOU GOT TO REVIEW.
A. OH, I DON'T KNOW WHAT HE HAD AVAILABLE TO HIM, NO.
Q. NOTHING LIKE THAT WAS ATTACHED TO HIS DEPOSITION, WAS IT?
A. NO, I DON'T ALWAYS GET THE ATTACHMENTS TO THE DEPOS. I DON'T RECALL WHAT I RECEIVED IN THAT REGARD.
Q. AND YOU MADE THE ASSUMPTION WHEN HE ONLY COULD COME UP WITH 60 PERCENT OF HIS TIME OR 65 PERCENT OF HIS TIME, YOU MADE THE ASSUMPTION HE REMEMBERED EVERYTHING HE DID, HE JUST DIDN'T ASSOCIATE ENOUGH TIME WITH EACH FUNCTION. ISN'T THAT THE ASSUMPTION YOU MADE?
A. YES, PRETTY MUCH.
Q. OKAY. A DIFFERENT CONCLUSION TO BE DRAWN FROM THAT IS HE -- THIS IS AS MUCH AS HE CAN REMEMBER HE DID, BUT THERE IS 35 PERCENT OF THE TIME HE IS DOING

THINGS HE CAN'T REMEMBER. ISN'T THAT ANOTHER INTERPRETATION OF THAT?

A. I SUPPOSE, BUT HE DIDN'T FRAME IT THAT WAY.

Q. WELL, ACTUALLY WHAT HE SAID AT THE VERY END OF HIS WHOLE LISTING IS "THAT IS ALL I CAN REMEMBER." ISN'T THAT WHAT HE SAID?

A. I DON'T REMEMBER IF THAT IS EXACTLY WHAT HE SAID, BUT I WILL TAKE YOUR WORD ON IT.

Q. AND DID HE EVER SAY THAT IS ABSOLUTELY EVERYTHING I DID, THIS IS AN EXCLUSIVE LIST OF WHAT I DID, I'M SURE I DIDN'T DO ANY OTHER THINGS?

A. I DON'T RECALL HIM SAYING THAT. I JUST RECALL THAT HE SAID THERE WASN'T ANYWHERE ELSE THAT HE WENT THAT HE SPENT MORE THAN 5 PERCENT OF HIS TIME.

Q. OKAY. AND IT IS NOT -- HAVE YOU DONE A LOT OF THESE INDIVIDUAL WORKER RECONSTRUCTIONS?

A. IT DEPENDS ON WHAT YOU MEAN BY "A LOT."

Q. HOW MANY OF SINGLE WORKERS?

A. SINGLE WORKERS. I DON'T KNOW IF I CAN COME UP WITH THAT NUMBER OFF THE TOP OF MY HEAD. I WOULD SAY IT IS DEFINITELY HAS BEEN -- ARE WE TALKING BENZENE ONLY OR ANYTHING?

Q. ANYTHING.

A. PROBABLY MORE THAN FIVE, LESS THAN 20.

THE COURT: LET ME PAUSE YOU HERE. UNLESS YOU ARE JUST ABOUT TO CONCLUDE WITH YOUR CROSS, WE WILL TAKE OUR AFTERNOON RECESS.

MR. HARLEY: WELL, YOU ARE GOING TO HAVE

REDIRECT ANYWAY, AREN'T YOU?

MR. RIFF: IF I SAY NO, WILL YOU LET HER GO?

MR. HARLEY: IF YOU SAY NO, I CAN FINISH IN LESS THAN FIVE MINUTES.

MR. RIFF: WELL, I'M GOING TO HAVE REDIRECT ANYWAY.

THE COURT: OKAY. LADIES AND GENTLEMEN, WE WILL TRY TO STICK TO OUR SCHEDULE AS BEST WE CAN SO WE WILL TAKE OUR RECESS.

9:30 TOMORROW. THE USUAL ADMONITION APPLIES.

HAVE A GOOD EVENING. THANK YOU.

(WHEREUPON, PROCEEDINGS WERE CONTINUED TO WEDNESDAY, AUGUST 3, 2005.)

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