



THE MEMPHIS DEPOT TENNESSEE

ADMINISTRATIVE RECORD COVER SHEET

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Note These minutes were approved at the
RAB meeting on September 21, 2000

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MEETING MINUTES
The Memphis Depot
Restoration Advisory Board
July 20, 2000
The Memphis Depot Business Park
"J" Street Cafe, Building 274
Memphis, Tennessee

The Restoration Advisory Board (RAB) meeting was held at 6:00 p.m. on July 20, 2000 at the Memphis Depot Business Park in the "J" Street Cafe, Building 274, 2163 Airways Boulevard, Memphis, Tennessee. The attendance list is attached.

WELCOME AND INTRODUCTION

- 1 MR. PHILLIPS: Good evening. We need to bring the July 20, 2000 Restoration Advisory
2 Board meeting to order. Mr. Clay?
- 3 MR. CLAY I'm happy to see everybody here. We've got a couple of housekeeping
4 issues we need to go over first, and tonight we know it's going to be a very
5 important informational session. A couple of things I would like to talk
6 about at the beginning is the importance of us sticking to the schedule as
7 closely as possible. During the presentation we're going to ask that you
8 guys hold the questions, write them down, and if we can, we're going to
9 ask them during the RAB Comment Period. However, I think it's unlikely
10 we'll be able to ask and answer all the questions that are going to be
11 pertinent after the presentation. I would like for everyone to ask the
12 questions that they feel they need to. It's our responsibility to do so.
13 However, to work within the time frame we have set aside, I would like to
14 talk about the option Mr. Brayon took. Mr. Brayon submitted a letter
15 with, I think, two and a half pages of questions -- very intelligent, very

1 direct questions about the process. We're going to submit those questions
 2 He submitted them in writing -- submitted them to Shawn and his
 3 organization. We're going to ask that all of us do the same so that we can
 4 get written responses to our questions. So don't feel slighted if you don't
 5 get an opportunity to ask every question tonight because it's really not
 6 going to be possible.

7
 8 The second thing I would like to bring up is we're going to try to go
 9 through the first part of the schedule pretty quickly so we can get to our
 10 presentation. Mr. Tyler, you are recognized.

11 MR. TYLER: Stanley Tyler. I know it's important to stick to the schedule. I know it's
 12 important to stay on time, but I've had the luxury of sitting through this
 13 presentation. Five minutes of question time is just not appropriate or fair
 14 to anybody who wants to ask questions because this is a lot of material that
 15 you're going to get, and it's going to be quite a few questions. So I would
 16 hope that we could be courteous enough to extend that five minutes, and I
 17 will try not to overdo it. But be warned that I don't think five minutes is
 18 enough. Thank you

19 MR. CLAY: Shawn, do you have anything? (Brief pause)

20
 21 **REVIEW AND APPROVE JULY AGENDA**

22
 23 MR. CLAY: We are now to the point where we need to look at the agenda and approve
 24 it for tonight's meeting. Has everybody had an opportunity to review it and
 25 have comments or concerns before we move to approve it?

26 MR. TRUITT: Ulysses Truitt. I move for approval.

27 MR. WILLIAMS I second.

28 MR. CLAY: It's been moved and properly seconded to approve tonight's agenda. All in
 29 favor say "aye."

30 THE BOARD: Aye.

31 MR. CLAY: Any opposed? (Brief pause.)

REVIEW AND APPROVE APRIL, MAY AND JUNE MINUTES

MR. CLAY: The next issue on the agenda is to approve the April, May and June minutes. I take it each of you have had an opportunity to review the minutes. We're going to have to see if we have a quorum yet. I see Ms. Brooks is on her way in. As soon as Ms. Brooks signs in, I think we'll have a quorum. Ms. Brooks, the issue on the floor right now is the approval of the April, May and June minutes. The question that I'm asking is has everyone had an opportunity to review the minutes. If there any changes you want to discuss or point out, now would be the time to do it before we get a motion to approve them. (Brief pause.) Do we have a motion, then, to proceed, to go ahead and approve the April, May and June minutes?

MR. WILLIAMS: I move that we go ahead and proceed with the vote.

MS. BROOKS: Second the motion.

MR. CLAY: Okay, the motion was properly seconded that we approve the meeting minutes for April, May and June. All in-favor say "aye."

THE BOARD: Aye.

MR. CLAY: Any opposed say "nay." (Brief pause.) It's been unanimously approved

OLD BUSINESS: COMMENTS/QUESTIONS FROM JUNE MEETING

MR. PHILLIPS: On Old Business, I have some announcements to make here. Hopefully I can be as brief as possible. First of all, at the request of Mr. Brayon -- as Mr. Clay said -- Mr. Brayon put some very good questions to the page and sent us a letter. The questions arose from the presentation last month on the results of our Main Installation sampling during last month's meeting. A lot of those questions will be answered during the risk assessment presentation this time. There are still very important questions that folks who might not be able to get out here tonight might have. So, with your

1 permission, I would like to take that letter and enter it into the record
 2 during the Public Comment Period for our Proposed Plan

3 MR BRAYON Eugene Brayon. You have my permission

4 MR PHILLIPS Thank you. We will do that Also, I believe Mr Clay wanted to attach
 5 that letter to tonight's meeting minutes when we mail that out to the RAB
 6 members so the other RAB members could see the questions that Mr.
 7 Brayon had.

8
 9 **OLD BUSINESS: COMMUNITY RAB HOUSEKEEPING ISSUES**

10
 11 MR PHILLIPS: Another order of business: the TAPP contractor. The contracting officer
 12 sent a letter to Environmental Reality Incorporated (ERI), which was our
 13 former TAPP contractor. That letter notified the contractor that his
 14 contract has been terminated. We don't have a response from ERI yet, but
 15 we've mailed our letter, and we have basically quit doing business with that
 16 previous TAPP offerors. The contracting officer's plan is to look at the
 17 write-up that the TAPP subcommittee and the RAB had over our interview
 18 process with these TAPP offers and go to the next offer down the line. I
 19 don't recall who that is, but I believe I might know who that is But it
 20 would be premature for me to say that. That's what the contracting officer
 21 is planning on doing.

22
 23 Also, I received some bad news this week. The news was not explained
 24 very well. Basically, it's just a letter of resignation with no explanation from
 25 Mr. Garrison. So I was hoping he might be here tonight to explain what
 26 that was all about. I have not had a chance to talk with him on the
 27 telephone. I'll try to do that early next week or so, but it looks like the
 28 membership subcommittee is going to have to get together again and look
 29 at this vacancy.
 30

1 As the agenda reads tonight, CWM Update is down at the very bottom
2 Mr. Clyde Hunt and Ms Elizabeth Burks couldn't be with us tonight
3 Before Clyde left, he left me with a series of his weekly briefings to hand
4 out tonight, and I believe that is in front of all the RAB members If you
5 don't have it, it's at the back table. If you have any questions, Clyde will be
6 back over at the trailer starting next Monday. You can call him and ask
7 him your questions directly. I believe that's all my Old Business. Mr. Clay,
8 did you have something?

9 MR. CLAY: I briefly want to remind you that even though Clyde and Elizabeth are not
10 here today, they're continuing to have community -- the weekly briefings
11 on Wednesdays in the Community Outreach room on the Main Installation.
12 So you also can call him by telephone and ask questions, or find out when
13 they are going to have the briefings and get copies of the past releases that
14 they've had. So don't forget that we will continue to have the weekly
15 updates. They have just been moved from, what is it, the south end of
16 Dunn Field over to the Main Installation

17 MR. PHILLIPS: I'm sorry. I meant to mention something else, and I don't have this fully
18 quantified yet, but we're sure this is going to happen So it's time to tell the
19 RAB about it. The work under the tent -- the vapor containment structure
20 at Dunn Field. Due to some issues with the heat and OSHA (Occupation
21 Safety and Health Act) -- having workers under certain heat stress
22 situations for certain periods of time -- our digging has gone much slower
23 than we thought it was going to be going. But we anticipated being off of
24 that job site by August, but we're not going to make that. I don't have a
25 good idea as to how long it's going to take us now. I know we'll speed
26 back up again as September comes along with everyone -- sometimes we
27 forget September is still hot in Memphis. Also we're digging, we're sifting
28 every shovel of dirt. So that's taking longer than we anticipated. Next
29 month, if I have a better handle on that, I will let you guys know what our
30 new schedule is to be completed. Mr. Clay, did you have any other
31 housekeeping issues? Well, with that ---

1 MR. CLAY I just wanted to remind you that also you could voice your comments on
2 the Environmental Information Line at 554-0618 So there is another
3 opportunity for us to have some feedback to the DLA (Defense Logistics
4 Agency)

5 MR. PHILLIPS. Mr. Tyler?

6 MR. TYLER: Stanley Tyler. In terms of the chemical warfare removal, for those of you
7 who are unable to come to the meeting at ten o'clock, you can ask Mr.
8 Hunt and Ms. Burks to fax you a copy of the press statement. Have it
9 faxed to you. They will be happy to do it. When I cannot attend, I have
10 them fax it to me immediately so we can try to keep up with what's going
11 on so you don't have to, you know, take time off your job, out of your busy
12 schedule to come to that. Also, you know, some evenings if you just want
13 to stop by there and see what's going on, you can make an appointment
14 with them, and they will give you the tour after five o'clock so you can see
15 what's going on. Maybe after 7:00 p.m., or whenever is convenient. So I
16 urge y'all RAB members to please try to stop by and see what's going on
17 and try to use all this electronic information they have that's available at
18 your disposal Are we still under housekeeping? I've got a couple more
19 issues

20 MR. PHILLIPS. Yes, Mr. Tyler

21 MR. TYLER It's sad to me that we have a reading room and once had a computer in
22 there with a hard drive. I was in there the other day to cut it on, and the
23 hard drive is missing. That was a donated computer, and someone had the
24 nerve to take the hard drive. So we can't have it anymore. Now, I'm not
25 saying anyone had any mean spiritness in them, but I think it's a donated
26 piece of equipment to the community. We at least should see that that
27 computer is up and running. I have been told that it's been missing at least
28 one month for sure, maybe two So we need to work on that problem
29 immediately so we can get this solved Because on occasion I have been
30 known to accidentally drop in there, and look at the documents, and read
31 them and accidentally play on the computer. Since it was a donated

1 computer, we need to be courteous to the people of the community and
2 keep that computer in good working order

3 MR. PHILLIPS: Thank you Mr. Tyler. I took that down, thank you

4 MR. TYLER: One other issue. The grass around Dunn Field at Person and Dunn is
5 getting about three to four feet tall. Now, I don't know who's in charge of
6 housekeeping, but I would appreciate at least by the middle of August that
7 the grass gets cut -- sometime before August 15th. Thank you.

8 MR. PHILLIPS: Thank you. Ms. Brooks, how is it like on Hays? I have not been over there
9 in over a week.

10 MS. BROOKS: It's horrible. It's horrible. We have had persons to come to mow the outer
11 edge, which you would think to be the sidewalk area. But inside that
12 fence, there are some tall weeds inside of Dunn Field. It looks as though
13 some sediment or sand had been disbursed at one time to -- you know,
14 what it looks like? You see some tall weeds, and then it's something sort
15 of sandy looking. But now some people have come to -- okay, I think they
16 did the inside of the fence of maybe 12 feet, just a couple of feet, you
17 know, just a little bit

18 MR. PHILLIPS: A buffer?

19 MS. BROOKS: Yes.

20 MR. PHILLIPS: Okay

21 MS. BROOKS: And then outside also, you know, that outside edge of the fence they did
22 some cutting, but it's not done consistently. It is not done on a regular
23 basis. So it looks like it's a sort of a throwaway area. So that edge of
24 Dunn Field, the area of Hays near Dunn Field, it's pretty bad also

25 MR. PHILLIPS: Thank you ma'am and I apologize for that appearance. That is our job.
26 Are there any other comments before we begin tonight's presentation? We
27 have another RAB member joining us -- Mr. Covington.

28

29

30 **NEW BUSINESS: MAIN INSTALLATION REMEDIAL INVESTIGATION REPORT,**
31 **PART II**

32

1 MR. PHILLIPS: Okay, let me preface tonight's presentation by saying we started this last
 2 month with the presentation of the Remedial Investigation results. There
 3 were a lot of questions that came up like, "How bad is this? How bad is
 4 that?" We deferred most of those questions to the risk assessment
 5 discussion tonight. It's a very detailed presentation. We've put a lot of hard
 6 work into it -- the EPA (Environmental Protection Agency) and our
 7 consultant, CH2M Hill. Stanley Tyler has had a chance to see this, and he's
 8 right. This is going to create a lot of questions. I would like to urge you
 9 if you don't get a chance to ask your questions tonight, as Mr. Clay
 10 suggests, please put them in writing, please. With no further adieu, I
 11 would like to introduce our first presenter.

12
 13 Dr. Ted Simon has been to the Memphis Depot on a couple of previous
 14 occasions -- a couple of years ago and again this last January. He is a
 15 toxicologist with EPA -- Region Four. In 1988, Dr. Simon received his
 16 Ph.D. in Neuro science from Georgia State University. He's been with the
 17 EPA since 1993, and he serves as a technical resource for all the DOD
 18 (Department of Defense) programs -- all the DOD environmental sites at
 19 EPA Region Four. So he's involved with all the military facilities in the
 20 whole southeast area of the country. He's a very well respected
 21 toxicologist, and we've enjoyed his visits here before. Dr. Simon?

22 DR. SIMON: Thank you very much, Mr. Phillips. I'm going to do a couple of things
 23 before I start. Number one; can everybody hear me?

24 MR. PHILLIPS: We're going to get to you a lapel microphone.

25 DR. SIMON: I have a microphone. I wanted to see whether or not I needed to use it.
 26 Clearly, I do. How is that? Okay, the other thing I would like to do, if I
 27 could, is take my coat off.

28 RAB MEMBER: Or you can take your shirt off. (Laughter)

29 DR. SIMON: I'll keep my shirt on, but I'll take my coat off. I'm going to talk to you
 30 tonight about risk assessment in general so that we have an understanding
 31 of the risk assessment process and how it's performed at EPA. Following

1 my presentation, Dr. Vijaya Mylavarapu of CH2M Hill will talk to you
2 about the specific risk assessment that was done for the Depot Main
3 Installation
4

5 So what is risk assessment? Well, it's a process that was developed by
6 EPA in the 1980s, and it's used at Superfund sites, National Priority List
7 sites and hazardous waste sites. It's a science-based tool that provides
8 decision makers estimates of the risks to human health and the environment
9 at these NPL sites so they can go ahead and decide whether or not to
10 perform a cleanup, and how extensive of a cleanup to perform. It's a
11 structured method to evaluate the risk of health affects to exposures to soil,
12 groundwater, surface water or sediment. The way EPA does risk
13 assessments is at the end of the process we end up with a protective -- and
14 I want to stress this -- a protective in other words one that is perhaps more
15 protective than it might need to be, a protective estimate of the risk at the
16 site
17

18 What we also get from the risk assessment is the areas that we need to
19 clean up and an indication of how much we need to clean these up. It
20 answers the following questions: Is the site safe? Real simple question.
21 And if it's not safe, how bad is it? What kind of land use is appropriate for
22 the site? Certainly there are some places where they're sufficiently bad that
23 we wouldn't want to put residences. We might want to use that for some
24 industrial activity. Cleaner areas would be okay to build residences on. So
25 given this specific land use -- I've mentioned two of them now, industrial
26 and residential -- which location should be cleaned up to meet the
27 requirements of this specific land use, and what needs to be cleaned up?
28

29 Now, I've got a list here of soil, sediment, surface water and groundwater.
30 I'm going to start calling these *environmental media* or just *media*, and I
31 want to put this definition in front of you right now. *Media* refers to these

1 four items In other words -- soil -- we all know what soil is Groundwater
2 -- if we drill a well, the water that comes out of the ground, that's
3 groundwater. Surface water is the water that occurs in a stream or a lake,
4 and sediment is the mud that we get in the bottom of the stream or the
5 lake. These are the four *environmental media* that we can consider. I just
6 want to have this out there so that when I say "*media*," instead of "soil,
7 sediment, surface water and groundwater," which will make you tongue-
8 tied; everybody knows what I'm talking about. Okay, and for these *media*,
9 we can also calculate the acceptable cleanup levels in the risk assessment.

10
11 DR. SIMON:

12 There's one principal I really want to have you take home with you, that
13 life itself is just -- there's no such thing as a no-risk situation. Everything
14 we do -- I flew on an airplane to come to Memphis from Atlanta There
15 was a certain risk involved in taking an airplane. I stayed at a motel a short
16 distance from here. I got in a car to come to this meeting. There's a risk
17 involved in that There are -- I use air fresheners in my home There's a
18 risk involved in using those air fresheners and subjecting myself to the
19 chemicals in those. I swim in a swimming pool. They use chlorine to kill
20 the bacteria in the swimming pool. That generates certain other chemicals
21 to which I'm exposed has a risk at that, and I have to balance those risks

22 The swimming for example. I have to balance the risk of say, I like to get
23 exercise, I'm not getting exercise, and its benefits versus subjecting myself
24 to these chemicals. So everything's a trade-off, and there's no such thing as
25 zero risk.

26
27 I want to talk to you about acceptable risk and what the EPA considers
28 acceptable risk. Now, we have a risk range, and so we consider it as a low
29 end of the range at which the risks we consider negligible, essentially, close
30 enough to zero that we would ignore them. Then we have a range of

1 these risks over which we would consider appropriate for making our
2 decisions as to whether or not to clean up the site

3
4 Now, this acceptable risk -- and I'm talking about cancer now So of the
5 chemicals we've talked about that cause cancer, and those are the ones I'm
6 dealing with now, the acceptable risk is from one chance in a million to a
7 hundred chances in a million. As you listen to the risk assessment
8 presentation for the Depot that Dr. Mylavarapu is going to -- present after
9 I finish, you're going to hear risk numbers of 30 in a million, 40 in a million,
10 two in a million. The cut-off number that you need to keep in mind is a
11 hundred in a million. If it gets over a hundred in a million, the risk is
12 unacceptable The EPA at that point considers the risk unacceptable.
13 Again, the bottom bullet. (Indicating)

14
15 DR. SIMON: We also want to consider chemicals that cause affects other that cancer.
16 We have a different way of dealing with these. We end up -- there's a
17 threshold for these chemicals. They come into our bodies. Our bodies are
18 able to physiological -- through biological mechanisms to detoxify these
19 chemicals and make them less harmful, and then they pass out of our
20 bodies Now, there's a point at which we get enough chemicals so that
21 these natural defenses that we have are swamped, are overtaken. We
22 consider that a threshold.

23
24 We have this term "hazard index." This hazard index refers to this
25 threshold. So when we have a hazard index of one, we're right at the
26 threshold. So as you go through and you hear Dr. Mylavarapu's talk, she
27 will mention hazard indices of less than one. Those are levels that EPA
28 considers safe. Hazard indices of greater than one are levels that EPA
29 considers unsafe.

1 Here's the risk assessment model that EPA uses. The first part we have -- I
2 forgot my laser pointer. So you will have to forgive my walking around
3 **Hazard identification**. We go out -- this is what you got last month, the
4 results of the Remedial Investigation sample. We go out and we sample
5 the *environmental media* at the site. We see what chemicals are present.
6 We go ahead and try to decide which ones are present in sufficiently high
7 levels that we need to be potentially concerned about, and we go through
8 the rest of the risk assessment.

9
10 The second part is the **exposure assessment**. The exposure assessment, I
11 will say more about this later. We consider the manner in which people
12 come in contact with these contaminated *media*.

13
14 DR. SIMON: The third part down below is **toxicity assessment**. We think about what
15 chemicals are present and the possible affects that they might have on
16 humans. These two are brought together in **risk characterization**. We
17 consider the effects to -- the exposure assessment, how people come in
18 contact with chemicals-- the toxicity assessment, how these chemicals
19 affect people. We try to get a quantitative -- a numerical estimate of risks
20 that we can pass along to decision-makers that they can use to guide their
21 actions.

22
23 Okay, as I said, I'm going to talk about all four of those. So we're going to
24 talk about hazard identification first. This begins with the Remedial
25 Investigation results. Dr. Mylavarapu will give you in her talk for each of
26 the Functional Units at the Depot the Remedial Investigation results. We
27 go into hazard identification, we identify chemicals in the *environmental*
28 *media* that are higher than either background values -- and I'll say some
29 more about that in a minute -- or screening values. I'll say some more
30 about that too, in a minute. From this, we develop a list of chemicals of
31 potential concern (COPCs).

1
2 So, there are two kinds -- there are two lists I want to leave you with now
3 The first is the Remedial Investigation results. These are all the chemicals
4 that were detected at the site. We go through a screen, and we end up at
5 the beginning of the risk assessment with a list of chemicals of potential
6 concern -- we've used this term so much, we've abbreviated it as COPCs --
7 and you see that down at the bottom. (Indicating)
8

9 DR. SIMON: We arrived at the list of COPCs by screening first against background.
10 There are -- what is background? There are chemicals that occur naturally.
11 These are metals. For example: sodium, calcium, cadmium, arsenic occur
12 naturally in the environment. We want to ensure that the levels of these
13 chemicals that we see on site are, in fact, related to site activities, to human
14 activities that produce a specific waste stream that got these chemicals on
15 site. Then we're not considering in the risk assessment chemicals that
16 occur naturally in the environment.
17

18 There is another kind of chemical, and that occurs from widespread human
19 activities. For example, automobile exhaust. There are automobiles
20 everywhere. As I'm sure we know, one of the things you get from
21 automobile exhaust that you will hear about more tonight are these
22 chemicals called PAHs and stands for a bunch of big words, polynuclear
23 aromatic hydrocarbons. I'm going to refer to them as PAHs. They come
24 from auto and diesel exhaust. They come from creosote that's used in the
25 crossties of railroads. They are found in asphalt. They are very, very
26 common in cities. They are common near roads. They are common near
27 railroad tracks.
28

29 Screening values, now, this is a different kind of screening and background.
30 I just covered background, and we talked about naturally occurring
31 background and background resulting from widespread human activities.

1 Screening values are a little bit different. These are levels that are
2 considered by EPA to be safe, and we calculate these using risk-based
3 methods. These screening values are based on a one-in-a-million risk for
4 cancer. So if we find a chemical on site that is present at levels below
5 which would cause -- or would cause a risk of cancer of less than one in a
6 million, say one in ten million or one in a hundred million, a very, very
7 negligible risk, we would not consider those chemicals in the risk
8 assessment.

9
10 Similarly, for chemicals that don't cause cancer, if we found a chemical on
11 site that had a hazard index, in other words, in relationship to this
12 threshold, of point one so that the chemical is present at only one-tenth the
13 threshold level, we would also not consider that chemical in the risk
14 assessment. But if chemicals are present in greater -- in levels greater than
15 would cause a one-in-a-million risk or greater than would cause lung
16 cancer affects at the hazard index level of point one, these would become
17 chemicals of potential concern and move along with the risk assessment.
18 Let me stop here, there are some concepts here, and take just one or two
19 questions for clarification, just real briefly.

20 MR. BRAYON: What about air pollution? There's nothing there about air pollution. Do
21 you test for that?

22 DR. SIMON: Of the four media, do we consider it in the risk assessment?

23 MR. BRAYON: Yes.

24 DR. SIMON: Risk assessment considers chronic affects, and generally we don't -- in the
25 Superfund program, we didn't consider air. Now, there ---

26 MR. BRAYON: Why not?

27 DR. SIMON: Because the sampling for air is so ephemeral and so short lived that the
28 chemicals in air would not affect people in a chronic fashion.

29 MR. BRAYON: How do you know it if you don't test it?

30 MR. BALLARD: I would like to address that. One respect is that the chemicals that would
31 occur in air pollution, or would occur, as a result of a contamination from a

- 1 site are not -- the source of those chemicals is not the air The source
 2 would be in the *environmental media* that we're referring to here So if
 3 they are present in the air related to the site, they would be present in the
 4 site *media* at much higher concentrations When we clean up those site
 5 *media*, the air takes care of itself We don't clean up the air We clean up
 6 the source of which might be putting chemicals in the air.
- 7 MR. BRAYON: Well then you know, I don't know what the sources are.
- 8 MR. BALLARD: Well, it would be contaminants in the soil, in sediment or, you know, water
 9 possibly. But mostly in the soil. If you have a situation where it doesn't
 10 occur here - where the site is a part of a factory or something - that's
 11 putting things out into the air.
- 12 MR. WILLIAMS: Question: Our genetics are made up different. So the level of contents that
 13 each person can take in might be a little different.
- 14 DR. SIMON: You're getting into the toxicity assessment
- 15 MR. WILLIAMS Oh
- 16 DR. SIMON: Which I'm going to get to in three or four more slides. Now, that's a very
 17 good question, Mr. Garrison. It is Mr. Garrison, right?
- 18 MR. WILLIAMS. Williams
- 19 DR. SIMON: Mr. Williams. Excuse me, Mr. Williams. I read the wrong tag. Okay, I will
 20 get into that, and yes we do -- EPA does consider that. But I want to talk
 21 about that in three or four more slides if that's okay.
- 22 MR. WILLIAMS: Okay but well let me ask this now: Will our environment cause us to have
 23 cancer, like soil and different things that's surrounding us? I was looking at
 24 a special on TV, and they were saying that sometimes the cancer that we
 25 think that are caused by other things is really caused by our environment
 26 and not a genetic makeup -- genetic makeup or anything like that or
 27 hereditary, coming from other parts of our, you know, family.
- 28 DR. SIMON: It's really hard for me to comment on that not having seen the TV program.
- 29 MR. WILLIAMS: Oh, thank you.
- 30 DR. SIMON: What I really wanted were certain questions on what I just covered.

1 MR. GRAY Very quickly, Carter Gray As we look at background levels, do we negate
2 out those background levels in this value?

3 MR. BALLARD We talked about background levels in our environment and tend to -- I
4 won't say blank those out, but we tend to use that as a baseline as opposed
5 to a zero baseline

6 DR. SIMON That's correct. That is correct.

7 MR. BALLARD: I know in air pollution we are often faced with trip levels where there is
8 sort of a general background level, and then the increase over that level
9 that then causes the problems. Do we run into that same concern as we
10 look at these background levels and tend to zero them out in our
11 assessment or do we look at the cumulative impact from both background
12 and added contaminants?

13 DR. SIMON We zero out the background. The first thing you said, and, for example, in
14 the western United States many of the heavy metals in the soil naturally
15 occur at very high levels, at levels that we would consider to have some
16 harmful affects Now, EPA feels that it's not its job -- it's not the job of the
17 agency to clean up these sites below naturally occurring levels. We don't
18 feel that that's a good use of your government's money If someone
19 chooses to live in one of these sites with naturally occurring levels of heavy
20 metals that may be harmful, that's -- really, that's their lookout. So when
21 we do COPC screening, we -- that's why we do the background screen

22
23 Okay, next one please. Okay, I want to get into exposure assessment.
24 This is the manner in which people contact chemicals in the *environmental*
25 *media* - in soil, sediment, surface water and groundwater. Our exposures
26 are based on the land use We consider risk assessment, we consider
27 current land use, and we consider future land use, and we consider the
28 activities that people engage in those land uses, might be taking on For
29 example, there may be residential land use, there may be industrial land use,
30 there may be recreational The Depot is zoned right now for industrial land
31 use and that will continue into the future. The exposure assessment uses

1 some assumptions about how many chemicals would enter the body, how
2 much we would contact about the length of time this contact would occur
3 and we get estimates of those risks
4

5 A couple of terms that I'm going to talk about and you will hear in Dr.
6 Mylavarapu's presentation as well - the exposure pathway This is the path
7 that a chemical takes from a contaminated *media*, soil, for example, and
8 comes into your body. For example, you may be a gardener. You go out
9 and you garden. You get soil on your hands. You come inside. It's a hot
10 day. You get a drink from the refrigerator Some of that soil gets on the
11 lip of the can, the Coke can. It accidentally gets in your mouth You
12 swallow it along with the Coke. That is a complete exposure pathway.
13

14 I'm also going to talk about exposure routes There are three exposure
15 routes. These are specific ways chemicals get into your body. It can be
16 incidental ingestion. In other words, you get it in your mouth and you
17 accidentally swallow it. It can be inhalation from soil. Again, you may get
18 some dust, and you may breathe the dust and it gets into your lungs
19 Dermal, you get some chemical on your skin and it's absorbed through your
20 skin. There are only three exposure routes, those three.
21

22 Now, an exposure unit, this is another term. This is the area in which a
23 person might contact an *environmental media*. Some examples: an
24 industrial worker might be working at a large 50-acre facility, might be
25 even larger than that for an industrial worker. If his job is to go here, go
26 there, and go to his workplace So over his 25-year working life, he may
27 contact that large facility -- all the parts of that large facility essentially at
28 random
29

30 A residential exposure might be a backyard the size of a third of an acre,
31 and we would consider that appropriate for a child We might -- again,

1 over the six years that EPA considers someone to be a child. When you
2 are zero to six might range and contact the *environmental media* in his
3 one-third acre backyard essentially at random. However, a 15-acre
4 exposure unit would not be appropriate for a child. It would be too large.
5 The recreational exposure unit might be a five-acre park, another concept.
6 Next one, please.

7
8 DR. SIMON: Exposure scenario, another term. This is a person's behavior pattern that
9 led to exposure to these *environmental media*. Okay, I think we can do
10 this best with some examples. We've got a residential adult and a
11 residential child. Now, EPA considers an adult to consume two liters of
12 water a day, and a liter is a little bit more than this cup here. This is
13 (inaudible), and probably about 90 percent of the people in the United
14 States drink less than two liters of water a day. The average water
15 consumption is about a liter and a half a day.

16
17 For a child, we consider one liter a day for water consumption, various
18 drinking water consumption; industrial worker, one liter a day; a
19 recreational teenager, a child who goes through, say, 7 to 16, when they go
20 to the park, one liter a day.

21
22 Soil contact: a residential adult contacts a hundred milligrams of soil a day.
23 This is about a tenth of a teaspoon. A child, two hundred milligrams a day,
24 about two-tenths of a teaspoon. It's a pretty small amount. This is the
25 amount of soil that you might accidentally get in your mouth and
26 accidentally swallow. An industrial worker, 50 milligrams a day;
27 recreational teenager, 50 milligrams a day, and you can see over in the last
28 column the body rates in kilograms. A kilogram is right at about -- a little
29 more than two pounds. So we're thinking an adult weighs about 150
30 pounds, a child weighs maybe 30 pounds; teenager weighs maybe 70
31 pounds.

1
2 DR SIMON. Okay, now I'm getting -- Mr Williams, I'm getting to your question. I'm
3 onto the toxicity assessment, and let me start out with this quote from the
4 first toxicologist, Mr Paracelsus He says, "All substances are poisons
5 There is no substance that is not a poison, at the right dose" -- that key
6 word, dose -- "distinguishes a poison from a remedy."

7
8 Now, unfortunately, I have a bad stomach from time to time. So
9 everybody, see these Roloids here? Now, I do these about twice a day. I
10 usually do one in the morning after breakfast and then sometimes driving
11 home from work I do another one. It settles my stomach down and
12 everything is good. Now, these have calcium in them. Calcium we
13 generally think of as good. Now, suppose instead of -- I went nuts one day
14 and instead of taking one of these in the morning and one at night, I ate a
15 couple of rolls in the morning and then three rolls at night. Now, that much
16 calcium would start to have some affects on my heart, and I would have --
17 I would get arrhythmia in my heart from that much calcium. But that
18 illustrates the concept of how a small amount of chemical might have no
19 harm or might, in fact, be good for us. A large amount of chemical -- and
20 you can even include water in this. If one drank sixty gallons of water, you
21 would probably -- you could consider water toxic A large amount of this
22 chemical may have harmful affects.

23
24 Now, what EPA has done is to compile a pretty extensive list and has done
25 this at great expense of the estimates of these chemical intakes for this
26 whole list of chemicals that are considered safe. So EPA has taken over
27 the toxicity assessment Okay, let me say a couple more things about the
28 toxicity assessment. It's not on my slide, but this is in response to Mr.
29 Williams' question. Are some people more susceptible? I think without
30 doubt that some people are more susceptible to chemicals than others.
31 How does EPA account for that? What we do is we go to the results of --

1 most of these toxicity numbers are based on animal experiments. I don't
2 have a slide for this segment So I'm just doing it from what I know

3
4 DR. SIMON They go to animal experiments They find the dose in an animal that is
5 without affect, and then they say, well, we are going to assume that
6 humans are more sensitive than animals. So we're going to divide that dose
7 by ten. We're going to assume as Mr. Williams correctly pointed out, that
8 some humans are more susceptible than other humans are. So we're going
9 to divide it by ten again. So now we're dividing that dose that was without
10 affect in animals by one hundred. Now, gee, we don't have information of
11 all the end points. Now, we're pretty concerned about the developmental
12 outcome. In other words, does this have affect on the development of
13 children? And because we don't have affects and we have essentially a poor
14 database of this chemical, let's just be real safe and divide it by ten again.

15
16 So now we're dividing by a thousand, and there still may be some things
17 that we're unsure of with this chemical. So rather than divide by ten, we're
18 going to divide by three. So we've divided that original dose now that was
19 without affect in animals by 3,000 to come up with what we consider --
20 what EPA considers a safe dose in humans.

21
22 So I guess my point in going through this long story is to answer Mr.
23 Williams' question. Yes, the toxicity factor does take into account not only
24 differences in susceptibility among humans, differences -- it also takes into
25 account differences of susceptibility between humans and animals, lack of
26 information and other possible factors that may be necessary to take into
27 account to make sure that this toxicity assessment is protective. Mr.
28 Williams, does that answer your question?

29 MR. WILLIAMS: Yes.

30 DR. SIMON: Okay, we combine -- I'm moving along now. We combine the results of
31 the exposure assessment and the toxicity assessment into the risk

1 characterization. Now, we started out with a list of chemicals of potential
2 concern for which we wanted to do a risk assessment. When we find these
3 chemicals of potential concern at the end of the risk assessment that bear
4 unacceptable risk, that pose an unacceptable risk that is greater than one
5 hundred in a million -- remember that number one hundred -- or with a
6 hazard index with a non-cancer, chemicals that cause health affects other
7 than cancer, a hazard index of greater than one, indicating above this
8 threshold, we consider these chemicals of concern.

9
10 So there's two terms -- there's really three lists of chemicals: There's the
11 Remedial Investigation results, the chemicals of potential concern, and then
12 after the risk assessment, the chemicals of concern (COCs), and this -- and
13 you're going to hear more of this and specific ones in Dr. Mylavarapu's
14 talk. In these risk assessments we also include those protective scenarios,
15 and we do that whether that's the land use or not for the site, the facility
16 We do that for comparison purposes so the decision-makers can see how
17 bad the site is or whether it's clean considering residential.

18
19 At the Depot, an industrial scenario is going to be used for cleanup
20 decisions. The way EPA does risk assessments, we have a high level of
21 confidence that the risk will not be understated. As I have said several
22 times, we use these results for decision making. At the end of a risk
23 assessment, we look at the chemicals of concern. We calculate cleanup
24 levels for these, and we bring these cleanup levels into the feasibility studies
25 so the decision-makers can decide what actions they need to take to deal
26 with these chemicals. I believe that's the last one.

27
28 Okay, I can probably -- anymore? Can we move along? Okay, I'm going
29 to turn the microphone over to Dr. Mylavarapu -- Vijaya Mylavarapu, and
30 she's going to give you the specific results of the risk assessment.

1 MS. PETERS: Since the land here at the Depot is zoned just to be industrial, if you work
2 here eight hours or twelve hours a day, there's not anything that you might
3 breathe in the air? Like today, the wind is real high, and if you had been
4 outdoors, you could have breathed in a lot more dirt than you would
5 ordinarily.

6 DR. SIMON: That is considered in the risk assessment.

7 MS. PETERS: It is considered in the risk?

8 DR. SIMON: It's considered in the risk assessment, and if the results of the risk
9 assessment indicated it was safe, we feel that we have taken that into
10 account.

11 MS. PETERS: Thank you.

12 DR. MYLAVARAPU: Thank you, Dr. Simon, for that introduction. You've probably heard my
13 name several times this evening. It's one of the tough names probably in
14 the room. I am Vijaya Mylavarapu. I'm a toxicologist and risk assessor
15 with CH2M Hill. I've been doing risk assessments for about 15 years now,
16 and I have done risk assessments at several Superfund sites.

17
18 I have been involved with the Depot here since 1994. So I have been
19 coming here, and I may have met some of you in the past. It's very nice to
20 see you this evening. I am going to go over the detailed application of the
21 procedures Dr. Simon presented, the general concepts Dr. Simon
22 presented, how they apply to the Depot.

23
24 The two points I would like to initially make a statement about is the risk
25 assessment applied here is in accordance with EPA guidelines as well as
26 TDEC (Tennessee Department of Environment and Conservation)
27 approval. With that, the first slide here presents the risk assessment
28 summary when we applied the risk assessment all the way across the Main
29 Installation here. The results of the risk assessment indicates that the Main
30 Installation is safe for workers, both under the current conditions as well as
31 in the future except for the lead in a couple of different areas.

1
2 If I can have this -- there are two areas where they found lead
3 concentrations. The risk assessment indicates that the concentrations are
4 somewhat elevated. Probably most of you are familiar with the paint shop
5 here. (Indicating) That area has elevated lead concentrations as well as this
6 building, P-949. Soils around that building also have a little elevated lead.
7 Except those two areas for lead, workers are safe everywhere else on the
8 Main Installation.

9
10 We evaluated the recreational scenarios to this area here, the Functional
11 Unit 2, which is the golf course, and all the recreational land use is safe. In
12 other words, the children playing in the playground in that area as well as
13 the baseball diamond is safe for children to use. The golf course is safe for
14 golfers.

15
16 I will be going over the details of each of these as I go on with my
17 presentation, but this an overview of what we found. Some areas of the
18 Main Installation have pesticides, arsenic and PAHs at levels that are not
19 acceptable for residential land use. In other words, you cannot build homes
20 on these properties because of those chemicals.

21
22 Moving on to the groundwater underneath the Main Installation, they have
23 found chemicals in some areas in the shallow groundwater, that is the top
24 aquifer, and because of that, the shallow groundwater is not safe for
25 drinking. It's okay for industrial use, but it's not fit for drinking, but there
26 are other issues that we will be talking about as to the shallow
27 groundwater. It's typically not used for drinking. It was never used, and it
28 is currently not being used.

29
30 DR. MYLAVARAPU: The deep groundwater underneath the Main Installation is not
31 contaminated. It's safe for drinking. The risks to the off-site residents are

1 acceptable We looked at -- I heard several people ask a question about
2 dust generation from the on-sight areas For each of these Functional Units
3 we are looking at I have evaluated the dust scenario, and I will be talking
4 about them as we go along

5
6 Those are the general conclusions of the risk assessment application across
7 the Main Installation. I am going to go over some of the important points
8 as they apply to the Main Installation, taking into account what Dr. Simon
9 had presented as general concepts of the risk assessment There are four
10 steps in the risk assessment process: the hazard identification Dr. Simon
11 talked about, and the toxicity assessment, exposure assessment and risk
12 characterization. Of the four steps, I am going to talk about the general
13 important points that I need to bring to your attention

14
15 The first point that we evaluated and we analyzed 40 percent of the
16 samples that we collected, which is 1280 samples that we collected for soil.
17 About 40 percent of them were analyzed for the full list of compounds,
18 what EPA calls TCL/TAL. EPA typically recommends 10 to 20 percent, at
19 the most, 20 percent. At this Depot we did analyze 40 percent of the
20 samples for TCL/TAL.

21
22 Once chemicals are detected in the *media* that we -- *media* meaning, like
23 Dr. Simon had defined it as - soils, sediments, surface water, and
24 groundwater. Once a chemical is detected in an *environmental media*, we
25 screen them against the background. Dr. Simon described what a
26 background concentration is. We also screen them against the screening
27 levels that EPA came up with to develop a list of chemicals of potential
28 concern. Even when a chemical is detected only in one sample out of 1200
29 samples it was included as a COPC as long as it exceeded the background -
30 or the screening level
31

1 DR MYLAVARAPU I also want to talk to you -- present to you a little bit about the exposure
2 assessment because it's a little involved process. I just wanted to talk to
3 you about the important points about the whole evaluation. You heard
4 about the Functional Units, exposure units. Each of the Functional Units
5 was evaluated as an exposure unit. An exposure unit is an area within
6 which a person could move around and come into contact with chemicals.
7 That's how an exposure unit is defined

8
9 Each and every Functional Unit we have here - the Functional Unit 1,
10 Functional Unit 2, 3, 4, 5 and 6 - each of them we evaluated for, at a
11 minimum, three exposure units. One is an exposure unit that spans over
12 the entire Functional Unit. Functional Unit 1 is -- this whole area as one
13 exposure area. The exposure scenario evaluated an industrial worker. We
14 evaluated for multiple workers scenarios.

15
16 In addition to that, we evaluated a smaller area within that Functional Unit.
17 That is the area where we found the highest chemical concentration, and
18 we assumed that the worker moves around the area which is about half an
19 acre area in size and that is the exposure unit that is reported as a small
20 area here. (Indicating)

21
22 And the third one that we looked at within that small area, we focussed on
23 the highest samples, and we assumed that somebody lives there, and that
24 one sample concentration is distributed over a house yard, which is about
25 one-third of an acre. And we assumed a resident lives there and is being
26 exposed. So when I go over the summary of risk assessment by Functional
27 Units, these are the exposure units we evaluated to look at the risk.

28
29 DR MYLAVARAPU: The exposure scenarios for each of these Functional Units are based on
30 the planned future use in the Main Installation redevelopment -- the Depot
31 Redevelopment Plan. The city zoned this area as a light industrial area for

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29 DR. MYLAVARAPU: The exposure scenarios for each of these Functional Units are based on
30 the planned future use in the Main Installation redevelopment -- the Depot
31 Redevelopment Plan. The city zoned this area as a light industrial area for

1 future use. So we focused on looking at the -- can everybody hear me
2 okay -- looking at the industrial scenario for all Functional Units because
3 this is zoned as industrial land use. Residential scenario was evaluated at
4 each of the Functional Units for comparison purposes. EPA recommends
5 for us to look at the residential scenario for comparison just in case the site
6 can meet the residential standards if that's practical.

7
8 So for comparison purposes in the evaluations and their decision making,
9 they require us to take a look at it. So for that reason, we looked at the
10 residential scenario. I have explained to you how we looked at the
11 residential on the highest concentration areas. We looked at the
12 recreational scenario for the Functional Unit 2, which includes the golf
13 course, the baseball diamond and the playground area. When we evaluated
14 the exposure scenario for each of the Functional Units, we represented the
15 highest exposed individual with the other similar individuals who might be
16 exposed at lower levels. There is -- for example, if risks are acceptable for
17 maintenance worker who regularly contact affected soils, then the risk to
18 an officer workers who seldomly contacts the soils are acceptable. Does
19 that make sense?

20
21 DR MYLAVARAPU: If somebody is going out more often than somebody who is not -- if I am
22 protecting somebody who is going out more often, I'm presuming I'm
23 protecting the other person who is going out less often. And once we
24 estimated the dose that way, we added up the dose for that particular
25 individual by different exposure routes that Dr. Simon was talking about.
26 If somebody is exposed to soils by ingestion, dermal and inhalation, we
27 added up the risk from all routes to get the cumulative risk or the total risk.

28
29 Now, those are the general concepts that I just brought out, some of the
30 important points that I wanted to bring to your attention. Now I am going
31 to go into by Functional Unit risks, the risk assessment, the chemicals that

1 we identified and the RI chemicals that we identified for the risk assessment
2 and the risk assessment results and the conclusions.

3
4 Functional Unit 1, that is the 20 typical warehouses, which is, you know all
5 those warehouse areas with the railroad tracks running right in the middle
6 For that particular area the Remedial Investigation identified metals, PAHs
7 and pesticides in the surface soils, and the subsurface soil sample here did
8 not have any chemicals selected as COPCs. For the risk assessment,
9 COPCs that we selected again are metals, PAHs, PCBs, pesticides and
10 dioxins.

11
12 Now, this is a table summarizing the risks that were assessed by the risk
13 assessment. Those are the exposure scenarios over the Depot, and there are
14 three different workers. Sorry I don't have a pointer. There is a
15 maintenance worker, utility worker, industrial worker and a resident.

16
17 The second column there summarizes the cancer risks that I estimated for
18 all the chemicals that I was talking about, the COPCs. And the hazard
19 index is the one -- that's the non-cancer end points that Dr. Simon was
20 talking about that effects the target organs. That is the hazard index
21 estimated.

22
23 DR. MYLAVARAPU: And the last column talks about whether that risk is acceptable or not
24 based on the acceptable risk criteria to workers that Dr. Simon presented
25 to you. So that column represents the summary based on comparison again
26 as acceptable risks.

27
28 This slide is telling us that at Functional Unit 1 maintenance workers are
29 safe. He does not have unacceptable cancer risk or hazard index. Utility
30 worker and future industrial worker are safe. Whereas, a future resident,
31 the risks are higher than a hundred in a million. That is a one to one

1 hundred in a million risk is considered acceptable. The non-cancer hazard is
2 okay for residents. So at Functional Unit 1 workers are safe to work here,
3 but you cannot build a house where we have the warehouses now
4

5 So, in conclusion -- again, I'm going to reiterate what I just summarized.
6 The risks to future industrial workers are within acceptable levels.
7 Therefore, in Dr. Simon's presentation he talked about COPCs. Those are
8 chemicals of potential concern. And from there, then you have
9 unacceptable risks. You carry a limited list of chemicals that are presented
10 as unacceptable. Those are called COCs, chemicals of concern. We do not
11 have any chemicals of concern for industrial workers. Risks to residents are
12 unacceptable due to PAHs along the railroad tracks. In Dr. Simon's
13 presentation he talked about PAHs appearing along the railroad tracks
14 because of the creosote application and other chemical oils in the railroad
15 operations. Because of those chemicals, this area is unfit for living on at
16 this time under current conditions
17

18 DR. MYLAVARAPU: Functional Unit 2: As I pointed out, is the southeast golf course and
19 recreational area. That is the area that has the baseball diamond as well as
20 a playground. We looked at the recreational scenario for that Functional
21 Unit. The Remedial Investigation detected metals, PAHs and pesticides in
22 the surface soil, and there were no chemicals above screening criteria in the
23 subsurface soils within this Functional Unit. The chemicals of potential
24 concern by *media* for the risk assessment were -- for soils, it's metals,
25 PAHs and pesticides; for sediment, it's metals, PAHs and pesticides; for
26 surface water, it's metals and pesticides. Just for your information,
27 pesticides are not very soluble in the water. We suspect that was an
28 anomaly, and it might be from sediments suspended in water.
29

30 Again, the risk results for Functional Unit 2: We looked at -- if you will
31 look at the exposure scenarios, we have a lot more here. There are golfers,

1 children in the playground, maintenance workers, utility workers, future
2 industrial workers and future -- somebody living on that area.

3
4 The cancer risk for golfers and non-cancer hazard are within acceptable
5 limits, indicating golfers are safe to golf here. Children on the playground
6 are also safe because risks are within acceptable limits. Maintenance
7 workers are safe because they are within acceptable limits, so, also utility
8 workers. Future industrial workers are also safe here. Future residents, it is
9 slightly above one hundred. It's at two hundred in a million, which means
10 under as-is conditions; you cannot live on the golf course. You cannot
11 build a house on the golf course

12
13 Again, to reiterate what I have just said, risk assessment conclusions: risks
14 to recreational users are within acceptable levels. So also recreational use is
15 safe here. Risks to current and future industrial workers are within
16 acceptable limits. So workers are safe to work around the golf course
17 Functional Unit. Risks to hypothetical future residents, "hypothetical"
18 means, you know, in the future suppose somebody builds a house here
19 Risks due to arsenic and dieldrin are not acceptable.

20
21 Functional Unit 3 is the southwest open area, and this is the area that
22 includes the paint shop and several of the warehouses. The Remedial
23 Investigation detected metals, PAHs, pesticides in surface soil, and
24 subsurface soil has some solvents. Dr. Simon has described to you what
25 solvents are. Solvents are the ingredients that you have in the spray can.
26 The solvents are found in a couple of locations in the subsurface soils that
27 are not above the screening levels. Chemicals of potential concern for this
28 Functional Unit, again, are metals, PAHs, pesticides and solvents.

1 The risk assessment conclusion indicated that this Functional Unit was
2 evaluated for maintenance worker, utility worker, future industrial worker
3 and a future resident living in this area

4 Maintenance worker risks are well within the acceptable limits. It's at a
5 one-in-a-million level. The hazard index is well below a value of one. So
6 also for a utility worker it's at six in a million, and for future industrial
7 workers it's nine in a million. They are all within -- well within the
8 acceptable limits. Whereas, risk to the future residents are six thousand in a
9 million. That's not acceptable. So the risk conclusions are: Risks to the
10 current and future industrial workers are within acceptable limits. While
11 the risk numbers did not include the lead because EPA assesses lead in a
12 slightly different fashion. But the lead concentration, based on the lead
13 model, was not within the acceptable levels around the paint shop area.

14
15 The chemicals are carried through as a COC and the chemicals that present
16 unacceptable risks. So lead is the only one that presents unacceptable
17 conditions within Functional Unit 3. Risks to future residents are
18 unacceptable due to PAHs along these railroad tracks that we have all
19 around the Functional Unit 3, as well as everywhere else in the Main
20 Installation.

21
22 Functional Unit 4, is the larger area of the Main Installation. The Remedial
23 Investigation detected metals, PAHs, pesticides in surface soils and
24 solvents in subsurface soils at this particular location in one sample. The
25 solvent levels are above screening levels, which means that they are not
26 within the acceptable concentrations

27 DR. MYLAVARAPU: Chemicals of potential concern included for risk assessment here for soils
28 are metals, pesticides, PAHs and solvents. The chemicals of potential
29 concern for stormwater and sediments are metals, PAHs and pesticides.
30 Again, this is the risk summary slide for Functional Unit 4. Maintenance

workers risks are seven in a million, and the hazard index is point zero one
They are all well within acceptable limits.

Utility worker risks are lower than one in a million. They are actually point seven, which means -- less than point one in a million. I'm sorry. They are point seven in a million. The hazard index is well below a value of one.

Future industrial worker -- again, the risks are well within acceptable limits.

Future residential scenario, this is one area where future residential risks are within acceptable limits.

MR. CLAY: Excuse me, Dr. Mylavarapu, we have a point of order. Mr. Williams, you are recognized

MR. WILLIAMS: Yes, I was just wondering -- we were looking at the time. I know you have two more parcels to go, and I was just wondering if it would be all right if we could go to the comment period and then come back to you, if it was all right. But it would have to be all right with the rest of the members at the table

MR. CLAY: Let me ask one question. Doctor, how much longer is your presentation going to be?

DR. MYLAVARAPU: Probably about ten more minutes.

MR. CLAY: Okay, I think, if you don't mind, can we all just agree that we need to let her finish? Thank you. Sorry for the interruption

MR. PHILLIPS: Mr. Tyler, if you could keep your point to the end of her presentation. I've got a feeling I know what you're going to ask, and we're probably going to have to do that. Dr. Mylavarapu?

DR. MYLAVARAPU: Thank you. Functional Unit 4: The risk assessment conclusions -- do we need to go back? Does anybody need to see the slide before? The conclusions are: The current and future industrial worker risks are well within acceptable limits, which means workers are safe to work here, except for the lead contamination around the paint shop and maintenance areas.

1 Functional Unit 5 is this newer warehouse area. Again, the process is very
2 similar. So it sounds like it's a lot of -- you know, it's a quick summary of
3 each of these. The Remedial Investigation detected metals, PAHs and
4 pesticides, mostly in surface soil. They did find solvents in one sample
5 higher than the screening values.

6 DR. MYLAVARAPU: Chemicals of potential concern for the risk assessment are metals, PAHs,
7 pesticides and solvents for Functional Unit 5. Again, the risk summary for
8 Functional Unit 5 is maintenance worker, utility worker and future
9 industrial worker. Risks are within acceptable limits, meaning workers can
10 work here safely. Future residential risks are at four hundred in a million.
11 They are slightly above the -- they are above the EPA acceptable limits.
12 To reiterate the conclusions for Functional Unit 5, risks to current and
13 future industrial workers are within acceptable limits. Therefore, there are
14 no COCs carried forward. Risks to hypothetical residents, meaning
15 somebody living on this Functional Unit, the risks to such people are not
16 acceptable due to PAHs that are occurring around the railroad tracks and
17 roadways.

18
19 Functional Unit 6 is the Administrative Area and this Housing Area. The
20 housing unit area has been remediated a little while ago before I conducted
21 the risk assessment. The Remedial Investigation found metals, PAHs and
22 pesticides in surface soils, and they are not found to be moving through
23 into the subsurface soil. Solvents are found in subsurface soils at one
24 location above the screening values, and the TCE (Trichloroethylene)
25 concentration -- TCE is one of the solvents. It was found at 18 to 20 feet
26 depth in the subsurface, and it's not found in the groundwater underneath,
27 indicating it's not moving into the groundwater.

28
29 Chemicals of potential concern for soils are metals, pesticides, PAHs, PCBs
30 (Polychlorinated Biphenyls) and solvents.
31

1 To summarize the risk for Functional Unit 6: Maintenance worker risks are
 2 well with the acceptable limits, meaning maintenance workers are safe
 3 Future industrial workers have a risk at thirty in a million, and the hazard
 4 index is well below a level of one. Again, future industrial workers are safe
 5 to work here. Future residential risks are at one hundred in a million. The
 6 Housing Area has been remediated; therefore, the risks are acceptable in
 7 the housing. It's not acceptable within the parking lots. Of course, parking
 8 lots, as Dr. Simon was indicating, has asphalt that contains PAHs.

9 DR. MYLAVARAPU: For industrial workers: Again, to summarize the risk conclusions, for
 10 industrial workers there are no COCs because risks are within acceptable
 11 limits. Pesticides at the Housing Area and PCBs around this building here
 12 have been removed. Risks to future hypothetical residents are
 13 unacceptable due to PAHs along in the parking lots and railroad tracks and
 14 vehicle maintenance areas.

15
 16 Functional Unit 7 is not a physical unit here. It is the groundwater
 17 underneath the Main Installation. There are three areas within the --
 18 underneath the Main Installation that were found to have solvents in the
 19 groundwater. There is one area in the southwest corner and there is one
 20 area in the southeast corner, there is one area in the middle that is found to
 21 have solvents like PCE and TCE.

22
 23 The shallow groundwater within this -- there are a lot of technical
 24 discussions that are ongoing, and the general understanding is that the
 25 groundwater underneath this Main Installation flows towards the center of
 26 the Depot. Based on these flow patterns, they suspect that they may have
 27 TCEs coming from off site sources, like dry cleaning shops, in these
 28 corners, were operational in the past. The risk assessment was conducted
 29 for these three plumes. So we did risk assessment for the three plumes, the
 30 three areas of solvent contamination under the Main Installation. The
 31 chemicals of potential concern collected for the three plumes are PCEs,

1 TCEs and tetrachloroethane (1,1,2,2 – PCA) I know it's kind of a lot --
 2 but chemists in the audience may know these chemical (inaudible), but
 3 tetrachloroethane is abbreviated as 1,1,2,2-PCA

4 DR MYLAVARAPU When we estimated risks for each of these three contamination areas, we
 5 have -- anybody who wants to look at the technical details of this, we have
 6 a four volume Remedial Investigation report that gives you all the details of
 7 what I'm talking about. The three plume risk assessments range for future
 8 industrial worker between 20 and 40 in a million. So there are three
 9 numbers that I summarized here, the low end to the high end. There is 20
 10 in a million to 40 in a million, and the hazard index is less than one. So for
 11 future industrial workers -- bearing in mind, shallow groundwater is not
 12 permitted for any use, and often it does not have enough yields to use it for
 13 portable or industrial use. But we assumed that it's being used, and if
 14 somebody were to use it, the risks under such a scenario are within
 15 acceptable limits for industrial workers

16
 17 For future residents, one of the plumes is about one hundred in a million,
 18 which it is not fit for drinking, however, shallow groundwater is not
 19 acceptable for drinking. Also it cannot be for other reasons as well.
 20 So overall, conclusions for groundwater are shallow groundwater is
 21 currently not being used for drinking, and it's not expected in the future to
 22 be used for drinking. Because risks to industrial workers are within
 23 acceptable limits, there are no COCs for the shallow groundwater. The
 24 deep groundwater underneath the Main Installation is not contaminated
 25 and is safe for drinking. The shallow groundwater occurs within 30 to 40
 26 feet beneath the Main Installation. I'm not a hydrogeologist, let me qualify
 27 that. It occurs at about 80 feet below ground surface. Whereas, deep
 28 groundwater is hundreds of feet deep, about 400 -- 300 to 400 feet deep at
 29 least. So that is the kind of separation we have between shallow and the
 30 deep groundwater, and the contamination is found only exclusively in the
 31 shallow groundwater.

1
2 Risks to a future resident If somebody were to drink the shallow
3 groundwater -- risks are not acceptable That's because of the PCE and
4 TCE in the shallow groundwater, and that's pretty much a summary of the
5 risk assessment.

6 DR. MYLAVARAPU: To reiterate what I started with at the beginning of this presentation, the
7 Main Installation is safe for workers to work here under current conditions
8 as well as future conditions. It's also safe for recreational use in the
9 Functional Unit 2 area for children as well as golfers. Some areas within
10 the Main Installation are not fit to live under as-is conditions. That is the
11 residential scenario we evaluated for comparison purposes, and this is
12 mainly because of the pesticides, arsenic and PAHs along the railroad
13 tracks and roadways.

14
15 Shallow groundwater under the Depot should not be used as a drinking
16 water source, and it's not being used. Deep groundwater is not
17 contaminated, and it is safe for drinking. Risks to off-site residents are
18 acceptable.

19
20 These are the major summary conclusions for risk assessment, what is
21 ahead in the future, subsequent to this RI and risk assessment -- RI is
22 abbreviated, but I'm assuming you all know it's Remedial Investigation.
23 The next step to this is to identify the cleanup levels for those areas that -- I
24 talked about the lead in the paint shop area as well as next to the building
25 949. Then to prepare a Feasibility Study, looking at the different
26 alternatives to address these *media*. Also, look at the preferred alternatives
27 for soil and groundwater. And once those steps are done, you will also be
28 provided with the cleanup alternatives, preferred alternatives, and we'll
29 prepare a Proposed Plan for public review and conduct a public comment
30 period for the Proposed Plan. There will be a public meeting on the
31 Proposed Plan That's pretty much the end of my talk

1 MR. CLAY: Thank you, Doctor. I'm very interested in the presentation. If you would, I
2 think we've got a couple of housekeeping things before we're going to start
3 some questions. Mr. Tyler, you had a point that you wanted to bring up. I
4 assume you wanted to extend the comment period.

5 MR. TYLER: I would like to thank the two presenters for an excellent presentation.
6 However, unfortunately, I'm going to have to make this evil choice. We're
7 going to have to extend this meeting. I don't mean to be rude, but for
8 those of you that have to leave, I would urge you to leave now because I'm
9 going to ask for the same amount of time that the presenters had to extend
10 the meeting, which is for 45 minutes. Thank you.

11 MR. CLAY: We have a motion to extend the meeting for 45 minutes.

12 MS. PETERS: May I ask a question before we do that? When are you going to have the
13 public comment? I think the public comment period ought to be now so
14 the people who came to have some input ought to have that input before
15 you go into a 45 minute deal. I think it's unfair to the public who came that
16 they'll have to sit through 45 minutes of something before they can be
17 heard.

18 MR. BALLARD: Second the motion.

19 MS. PETERS: So that's not fair.

20 MR. BALLARD: Second the motion.

21 MR. CLAY: We have a second to transverse, I guess, the public comment period with
22 the RAB question period. It's a motion?

23 MS. PETERS: No second was made because he only made a motion. I asked for a point
24 of order because the public that came, they'll never get to express
25 themselves because if we make them sit here another 45 minutes, they're
26 going to be tired and go on home.

27 MR. BALLARD: So moved.

28 MR. CLAY: Ms. Peters, I think we agreed to now -- Alma, correct me if I'm wrong, but
29 I think we can proceed with the point that's been moved and seconded.
30 (Brief pause).

1 MR. PHILLIPS I hear the discussion that's being held over here in terms of the point of
2 order I need to ask Mr. Ballard a question What did you second?
3 MR. BALLARD I seconded or I moved or whatever to have the -- move the public
4 comment period to now
5 MR. PHILLIPS: Okay
6 MR. BALLARD: That's the order on the agenda, to have the RAB comment period come
7 after.
8 MR. PHILLIPS: That's the motion, and the second ---
9 MR. WILLIAMS: Second the motion.
10 MR. PHILLIPS: All those in favor of doing the reverse order of the comment period? Those
11 in favor?
12 THE BOARD. Aye.
13 MR. PHILLIPS: Those opposed? (Brief pause.)
14 MR. PHILLIPS: Okay now we've established that. We're going to address the public
15 comment first There is still the first motion on the floor about extension of
16 the meeting.
17 MR. TYLER: I'll withdraw it.
18 MR. PHILLIPS: We have to have that because it's 7:30 p.m. now.
19 MR. WILLIAMS: Okay, I make a motion that we do it as on the agenda. If we need more ---
20 MR. PHILLIPS: Mr. Williams, do you mean 15 minutes for public comment now?
21 MR. WILLIAMS: Yes.
22 MR. PHILLIPS: And then RAB comment at the end? I understand Do we have a second
23 for that?
24 MR. BRAYON: Second.
25 MR. PHILLIPS: Okay, the motion on the floor is 15 minutes for public comment right now?
26 MS. PETERS: Right now.
27 MR. PHILLIPS: Followed by some RAB comment, and that motion has been seconded by
28 Mr. Brayon All those in favor?
29 THE BOARD: Aye.
30 MR. PHILLIPS: All those opposed? (Brief pause.)

1 MR. PHILLIPS: Okay, we would like to begin our Public Comment Period. Let me make
 2 an announcement before we begin that's very pertinent to the public and the
 3 members of the RAB. In our last EnviroNews letter plus in our invitations
 4 to the RAB we sent out we announced a public meeting on August 17th --
 5 yes, August 17th. That's the date of the next regularly scheduled RAB
 6 meeting. We were going to have a public comment meeting at that time. I
 7 need another week to get my Proposed Plan out to the repositories. I need
 8 to hold the public comment meeting on August 24th instead of August
 9 17th. That's one week later. This is when I need to hold my public
 10 comment meeting. I don't know necessarily that -- if there are any
 11 comments on that. I would be more than welcome to entertain them, but
 12 we need that time to get the Proposed Plan out into the libraries prior to
 13 the public meeting. Mr. Gray?

14 MR. GRAY: Is that a proposal to have the RAB meeting at that time as well, or to have
 15 a RAB meeting and then a week later have the public comment meeting?

16 MR. PHILLIPS: I do not plan on having any presentations at a RAB meeting. My staff and
 17 my contractors are working hard for the public comment meeting. If the
 18 RAB would like to meet, they can meet. I don't have anything to give the
 19 RAB that week.

20 MR. WILLIAMS: So that will be the meeting?

21 MR. CLAY: Kevin Clay. The question I have is if we're going to attend the public
 22 session meeting, it's probably a good idea that the RAB members get
 23 together to have someone discuss the questions that Mr. Brayon, Ms.
 24 Bradshaw and Mr. Tyler are going to submit. That seems like a reasonable
 25 ---

26 MR. PHILLIPS: I would be more than willing to provide a meeting space if the RAB would
 27 like to meet like that. I just can't give you an agenda with presenters or a
 28 topic for the RAB meeting. I would be more than welcome to provide
 29 office space to meet.

30 MR. CLAY: Would the RAB agree to meet August 17th? (No Response)

31

1 **PUBLIC COMMENT PERIOD**

2
3 **MR. CLAY** Well, I guess we should move on now and open up the public comments
4 Any public comment speakers please step to the mike, identify yourself,
5 and we'll move forward

6 **MS. BLACK:** Good evening. Inga Black. I have about -- actually, I have four questions -
7 - one comment and three questions for our presenters. I just want to say
8 that as a member of the community, I'm kind of slightly offended by the
9 word "slightly" when the levels are six times what they are supposed to be.
10 I don't know if that's a good way to -- I think that to us, it's a trivialization
11 of what we've been living in for, some of us, 40 or 50 years. So I just want
12 to say that as a point

13
14 I would like to know from our first presenter, how long could the body's
15 natural defenses detoxify chemicals that are below the hazard index and
16 that are at the borderline? I know you were saying that our body detoxifies
17 those things over a period of time, but how long can they detoxify those
18 things if we have been living in them for lifetimes of raising children and
19 having grandchildren on those properties, or in that area? How long can
20 you detoxify that?

21 **MR. PHILLIPS:** Dr. Simon?

22 **DR. SIMON:** As I pointed out to Mr. Williams in response to his question, the levels that
23 EPA has calculated we consider to be safe levels for these chemicals. The
24 hazard index that we calculated was based on usually animal experiments
25 to which we add these factors of ten. You remember my discussion of
26 factors of ten? And because there are usually three, four or five factors of
27 ten that are applied to these. So we're anywhere from, say, a thousand to
28 ten thousand times lower than a dose that is without harm in animals, and
29 we feel that that is a sufficient safety factor to take into account.

30 **MS. BLACK:** With respect to the exposure scenarios in your hours and days or per year
31 or whatever for your industrial workers -- I know that even though I don't

1 have anything to work towards yet, some people spend more hours at work
 2 than they do at home. So was that considered for those industrial workers,
 3 for people who have worked over the past and worked 14 hours or double
 4 shifts? Some people spend more time at work than they do in their actual
 5 homes.

6 DR. SIMON: That's a very good point. What we consider in risk assessments are
 7 essentially hypothetical individuals. Our hypothetical worker spends 250
 8 days a year, that's five days a week with a two-week vacation, eight hours
 9 a day at work. Now granted, there certainly are people in the past that
 10 have worked more than that and have spent time at the Depot. The risk
 11 assessment very clearly is not designed to investigate or address the health
 12 affects of those specific individuals. The risk assessment deals with
 13 hypothetical individuals. It is a decision tool to arrive at cleanup decisions
 14 and cleanup levels.

15 MS. BLACK: All right, but you understand our concern for those workers?

16 DR. SIMON: I do. There is another federal agency other than EPA, and we have a
 17 representative from that agency here tonight. That's the Agency for Toxic
 18 Substances and Disease Registry, and they are the ones to address health
 19 effects and whether or not people have been exposed. I don't know -- Mr.
 20 Ben Moore is the representative of that agency. Would you like to say
 21 something, Mr. Moore? (Brief pause.)

22 MR. BEN MOORE: No.

23 MS. BLACK: Okay, I would like to -- this is my final question. Has EPA identified the
 24 off-site risks as acceptable? Exactly how did you identify that? Because my
 25 grandparents live two blocks from that paint shop. How did you identify
 26 those off-site risks?

27 DR. SIMON: There has been some sampling off site in a number of locations. Also, our
 28 major concern for the off-site individual is when dust is generated from the
 29 area of the Depot, which is then transported by the wind off site. We
 30 examined that scenario, and under that scenario, the risks to the off-site
 31 residents were acceptable.

1 MS BLACK Were they acceptable within borderline or were they way more than
2 acceptable?

3 MR. SIMON They were within the middle of the range?

4 MS BLACK Thank you

5 MR. PHILLIPS Thank you, Ms. Inga. Inga, thank you Sir?

6 MR. SNYDER: Van Snyder, S-n-y. Okay, I understood that -- I want to know what
7 statistical process did you use in choosing what samples you analyzed? I
8 guess what I'm really trying to ask you, how did you go about making sure
9 that the samples that you analyzed did not predominantly come from areas
10 that were already safe? If you chose randomly, that would not ensure that.
11 You know, you say you did 40 percent and you were only required to do
12 20, but out of the 40, how did you know where it came from?

13 MR. PHILLIPS Dr. Mylavarapu?

14 DR. MYLAVARAPU: I have (inaudible) all of the samples here. So I will try and address that
15 concern. We did the sampling in several cases for at least (inaudible).
16 When we first set out to put our samples at the site, we looked at the area
17 that would be more lightly to have received any spills or any kind of past
18 releases. That's where we placed our samples, and we analyzed those
19 samples for the whole list of chemicals. When we found that the
20 contamination is spreading, we start putting samples outside.
21

22 Greg Underberg, the last time he did the presentation, he talked about --
23 something about nature and extent determination. That's where we place
24 samples in an area, and you look for every possible thing that can occur.
25 From there, you narrow the list, and you focus on the list of chemicals that
26 you detected, and you start placing them outside.
27

28 So that's how nature and extent is defined. So those 40 percent of the
29 samples are the ones that we would have put only on -- in any area that we
30 think may have received any contamination based on the historical records,
31 any physical evidence, anything that we come across that shows even slight

1 suspicion that there could be something there That way we get the full
2 analysis

3 MR. SNYDER So you didn't test in outer areas or everywhere in your sampling? That's
4 what I'm understanding your question -- your answer, it seems to me Is
5 that true?

6 DR. MYLAVARAPU. There is a -- I can show you exactly where all we have sampled. I'm sorry
7 I have this upside down. (Indicating) That is the kind of sampling we did.
8 Like I mentioned, just for the soil itself, we have 1200 samples -- 1208
9 samples to be exact, that were sampled across the Main Installation just for
10 the soils alone. That does not include the groundwater samples That does
11 not include the sediments and surface water samples. So we did cover the
12 entire base in investigating. Does that answer your question?

13 MR. PHILLIPS: Okay, Mr. Snyder, I would like to provide some of your answer. The
14 initial starting point before these toxicology folks got involved, it dealt --
15 Vijaya touched on this. It dealt with where did we believe our problems
16 were. There were where our paint shops were, our vehicle maintenance
17 areas, things like that. Those were obviously the places to start That
18 happens early in the process. It happens with Environmental Protection
19 Agency and Tennessee Department of Environment and Conservation
20 oversight I believe they concurred that we sampled the appropriate areas
21 That's what's known as a typical EPA Superfund type-site

22
23 Something was done in addition at this facility that is not typical. That is,
24 when this facility was announced for the base closure back in 1995 -- when
25 it was announced -- they looked at several of the parcels around the
26 property that didn't have suspect areas in them and said, "Hey, we don't
27 have any environmental data from that parcel " So there was some random
28 sampling done on top of that focus sampling where we saw our problems
29 were just to make sure those parcels were acceptable, That was done in
30 addition here. I imagine without that approach we probably wouldn't have
31 had 1200 samples Dr. Simon, can you add anything?

- 1 DR. SIMON Yes, I can. I'm going to talk without the microphone. I think it will be all
 2 right because I can project. I've looked at a lot of bases in the southeast
 3 So I have oversight on every military base. That includes every closing
 4 base and every active base. This is not the most thoroughly sampled base
 5 in the southeast. It is the second most thoroughly sampled base in the
 6 southeast. Do we feel confident that we have caught every bit of
 7 contamination? Yes, we do. I've looked at the sample plan for here. I read
 8 it and approved it. I was very, very pleased with this sampling plan. I am
 9 very confident that they caught every bit of contamination.
- 10 MR. SNYDER: The second thing: What exactly do you mean by "cleanup"? Are you
 11 taking away everything that's contaminated or are you adding chemicals
 12 that were -- you know more chemicals? I'm not sure exactly what you
 13 mean by "cleanup."
- 14 DR. SIMON: This is not a risk assessment question. I want to address this to one of the
 15 risk managers. He's in a better position to answer your question than I am
 16 about the technology for cleanup.
- 17 MR. BALLARD: Will you repeat your question again? ..
- 18 MR. SNYDER: I'm not sure -- exactly sure -- what you mean by "cleanup." Are you taking
 19 away everything that is contaminated to another place, or are you adding
 20 more chemicals to clean up what you have here? What exactly do you
 21 mean by "cleanup"?
- 22 MR. BALLARD: It can be a variety of things. Cleanup is sort of a generic term to me. Risk
 23 -- managing the risk, cleanup can be treatment of chemicals in place. That's
 24 one of the options we're looking at for groundwater. It can be excavation
 25 and removal of the chemicals off site and disposal in an approved landfill. It
 26 can be excavation of soil treatment on site until it's safe and then
 27 replacement. Those all factor into cleanup. Cleanup can also mean
 28 restricting certain uses of the land to prevent an unacceptable risk from
 29 occurring, and you saw examples of that up here when we said that the
 30 land is not suitable, or portions of the Depot are not suitable for living on.
 31 One alternative is to restrict that use, prevent that use from occurring at the

1 Depot There are currently ordinances and restrictions in place now to
 2 prevent that sort of thing from happening Now, on top of which, when
 3 the property is transferred, we can add an additional layer in the form of
 4 deed restrictions, which would prevent that from happening

5 MR. SNYDER Am I understanding you to say the Main -- that all of the Depot may not be
 6 able to be cleaned up?

7 MR. BALLARD: Well, clean -- yes I mean, cleaned up to what level?

8 MR. SNYDER: Well and you say that, but are we saying that it's acceptable for 99 people
 9 to die from cancer and not 100? I'm not understanding what you mean by
 10 "acceptable levels." You say 100 is the cutoff, but if 99 die, is that
 11 acceptable?

12 MR. PHILLIPS: Dr. Simon?

13 DR. SIMON: I need the microphone for this one. The numbers that you saw up there,
 14 okay, 130 -- you saw 30 in a million, 100 in a million, these are
 15 probabilities or risks They don't -- it does not mean that 30 people --
 16 we're not talking about 30 people. We're talking about chances here, and
 17 we feel that the chance, the very negligible chance, of one in a million is
 18 sufficiently low that we will not be concerned about that

19
 20 In order to provide flexibility for cleanups, we also assume that an
 21 acceptable range is 100 chances in a million. This is the same number as
 22 one chance in ten thousand. By comparison, the risk of cancer from living
 23 in the United States is one in four. That is the same number as -- instead of
 24 100 hundred in a million, it would be 250 thousand in a million. So we're
 25 25 thousand times lower than the general risk of cancer from being an
 26 United States citizen and living in this country.

27 MR. BALLARD: One thing to add to that is that -- to respond to it's okay for, you know that
 28 other hundredth person to die. When we're talking about these risks, we're
 29 not talking about risk of someone dying of cancer These are risks of an
 30 incidence, of someone contracting cancer of which is treated. You know,
 31 I'm just saying to say that we're -- that one in a million or 100 hundred in a

1 million in risk assessment is the chance -- additional chance of getting
 2 cancer from exposure to chemicals on the property Just of getting it, as
 3 opposed to, as Dr Simon said the chances of getting cancer from being an
 4 U S citizen today

5 MR. SNYDER: Did you finish answering whether or not the Depot could be completely
 6 cleaned up? I didn't hear the --

7 MR. PHILLIPS: For the industrial use of the property?

8 MR. SNYDER: No. I'm talking about in terms of complete cleanup, where all the levels
 9 involved here are below the one-hundredth-person risk level. Can the
 10 Depot be cleaned up totally in areas, yes or no?

11 MR. PHILLIPS: Yes, it can

12 MR. BALLARD: How much money do you have?

13 MR. PHILLIPS: For an industrial use we could get that That was the boundaries that were
 14 being presented tonight, and we're confident we can reach that level.

15 MR. SNYDER: No. That's not what I asked. I'm talking about a complete Depot -- is
 16 everything going to be cleaned up after you finish this process, yes or no?

17 MR. PHILLIPS: To what we're proposing to use it for, yes. That's my answer to that
 18 question

19 MR. SNYDER: What I'm asking is the complete area up here that was considered the
 20 Depot, after you clean it up, will that be acceptable?

21 MR. PHILLIPS: Yes.

22 MR. SNYDER: Everywhere?

23 MR. PHILLIPS: Yes.

24 MR. SNYDER: The entire site?

25 MR. PHILLIPS: Yes, sir.

26 MR. SNYDER: Thank you

27 MR. PHILLIPS: Are there more public comments? Are there more public comments?

28
 29 **RAB COMMENT PERIOD**

1 MR. PHILLIPS Okay, we'll move to the RAB. We have Ms. Brooks, and then, Mr
2 Williams. Ms. Brooks has been up for several minutes. Thank you, Ms
3 Brooks.

4 MS. BROOKS Thank you. Very briefly, on this page that referred toward -- titled
5 conclusion of the risk assessment. At the very last bullet -- risks to off-site
6 residents are acceptable. Okay, now of course, that means at present. But
7 can we add if there will be any ongoing future testing probably into future
8 decades and then once that information is found, would it be -- would the
9 residents be advised concerning that? Okay, you know what I'm saying?

10 MR. PHILLIPS: Not really, ma'am.

11 MS. BROOKS: Not really? Okay, so we're just going on what is as-is.

12 MR. PHILLIPS: Dr. Simon, I believe he understood your question. Dr. Simon, if you ---

13 DR. SIMON: You want to know about safeguards in the future to ensure that there is not
14 the possibility of adverse affects from chemicals affecting you in the future?

15 MS. BROOKS Right.

16 DR. SIMON: Now, when EPA makes the decision and the risk -- Mr. Ballard may have
17 to help me with this because he's the risk manager and understands the
18 process a little better than I do. So help me if I get this wrong.

19 MR. BALLARD All right.

20 DR. SIMON Once we make a decision, a decision document is produced. That's called a
21 Record of Decision (ROD). Now five years later -- five years after that
22 Record of Decision occurs, we have a five-year review. In which case, we
23 go back and we go to the site and make sure that the decision we made is a
24 sound one and that the level -- the cleanup levels that we decided on are
25 still protective, that the land use has not changed and that everything is
26 hunky-dory. And every five years after that we have another review, and
27 up to -- out to, is it 30 years?

28 MR. BALLARD There is no limit on it. Basically, as long as the area is at least -- as the law
29 is written now, there is no limit on those five-year reviews -- as long as the
30 land is not available for unrestricted use. Now, that's a legal thing, which
31 could change, with an act of Congress.

1 DR. SIMON: Let me say this. When EPA makes a decision, we like to stick with that
 2 decision. We like to feel like we made a good decision. So if we come to -
 3 - we get egg on our face if we come to a five-year review and then have to
 4 open up a decision again. But we will do that if we feel that there is a
 5 significant risk to public health.

6 MR. BALLARD: Really the only circumstance which would cause you to reopen that
 7 decision is -- as he said, is in cases where the land use has changed. Such
 8 as, the interim or if new information is developed about the chemicals of
 9 concern which would lead us -- which would say lower the thresholds that
 10 we have been dealing with and cause us to re-evaluate the risk assessment.
 11 But other than that, you know, we don't have an ongoing soil-sampling
 12 program because absent adding more chemicals to them, you know what
 13 you see is as high as it's going to get. It would only get lower over time.

14 MS. BROOKS: Well, essentially -- basically, that was the answer that I was looking for in
 15 increments of five years. Okay, and then very briefly, due to the PAHs at
 16 the railroad tracks, there was considerable information given about that.
 17 What can or should be done concerning the dilapidated railroad track at
 18 Dunn Road near Perry Road? I believe they -- aren't they going to be --
 19 those of you who ride in that area, those tracks are horrid, and they're in
 20 constant use during going to work hours, peak hours during the day. If
 21 there are contamination PAHs around the railroad track that was done in
 22 the presentation, how would that affect us getting that area -- those
 23 railroad tracks corrected or repaired or removed? Because I don't even
 24 know if that's -- even if the railroad tracks are in use. I mean, by actual
 25 railroad trains.

26 MR. PHILLIPS: Ms. Brooks, let me respond due to concerns from Ms. Brooks and from
 27 yourself last year, we looked at that project. I know we have a project to
 28 remove those tracks. I will get a status for the RAB of where that is. I
 29 haven't heard where that is for quite a while myself. Thank you for
 30 bringing that back to my attention. Mr. Williams?

1 MR. WILLIAMS: My question will be very simple and easy. Okay, before any risk
 2 assessment was done, before we hit the Superfund list, were the employees
 3 here at risk at that point, before any remediation? We said a lot of
 4 remediation has been going on, a lot of things have been done to correct
 5 things. My question is: Were the employees here ever at risk at any point?
 6 Anybody can answer that.

7 MR. PHILLIPS: Mr. Truitt, would you like to answer this?

8 MR. WILLIAMS: I don't have a problem with you answering it, but I ---

9 MR. TRUITT: I historically can answer your question. I can only attempt to answer it
 10 having spent 37 years here, and the fact of the matter is, the first Remedial
 11 Investigation Feasibility Study was conducted in the early '80s. It was
 12 initiated by the Installation because of the fact that EPA kept making new
 13 laws applying to the processes that we were handling here. As a result,
 14 during those Remedial Investigation Feasibility Studies, nothing was ever
 15 pointed out to us as being a hazard to the employees except the area where
 16 the PCBs were found in the underground leak, and that area was put off
 17 limits.

18
 19 There was also a 12-inch cap of limestone applied on it once the removal
 20 process was complete, and only then were the employees allowed to go in
 21 there. But other than that, historically, until I left here in '92, there was no
 22 -- you know, nothing of threat to the employees.

23 MR. PHILLIPS: Mondell, let me also say, as a current Depot employee, I can't speak to
 24 what happened in the '60s because I wasn't here. So I can't respond to
 25 your question. I can't answer your question.

26 MR. WILLIAMS: One other question and then I'll be through with this. Okay, the comment
 27 behind yours just recently they said the agency removed what, three, four,
 28 five inches of soil over at the housing complex. So it was across 12 inches
 29 of soil over at the housing complex. So my question to that is: Why was
 30 that removed if it was not a risk?

- 1 MR. TRUITT: I think -- and, Turpin, you'll have to help me with this I believe that the
2 reason that soil was removed was because they conducted tests As I
3 informed them, all of the housing occupants have gardens all around that
4 place, and they used to apply pesticides, a lot of them I would, you know,
5 follow on with it if they did the same kind of testing in a lot of backyards in
6 this community. They would be digging up a hell of a lot of soil.
- 7 MR. PHILLIPS: Thank you, Mr. Williams. Mr. Brayon has been patient. After this
8 comment, I would like to point out that we're half an hour after. We'll
9 need another motion if we need to go longer.
- 10 MR. BRAYON: There's just one point that I want to make, and I just ask for clarification.
11 When you're dealing with the residential, when you bring it up to the
12 industrial toxicity rate, it jumps tremendously when you get into the
13 residential rate. Is this because of the exposure factor or what factors
14 cause this to jump so? Mr. Snyder, I think, is asking for residential
15 toxicity rates. We're bringing it into industrial rates So if you're jumping
16 from 700 million, you know, versus a hundred million, then this means that
17 there is some toxicity over and above the toxicity rate that you're
18 advocating that it's safe. Is that clear?
- 19 MR. PHILLIPS: Vijaya, would you like to respond?
- 20 DR. MYLAVARAPU: I wanted to clarify one thing In the risk numbers I presented, it's not a
21 hundred million It's a hundred in a million, let me clarify that one
- 22 MR. BRAYON: I understand that perfectly.
- 23 DR. MYLAVARAPU: Okay, I'm sorry.
- 24 MR. BRAYON: That's okay.
- 25 DR. MYLAVARAPU: It goes back to the exposure unit concept that I was talking about. We
26 looked at three different exposure units. We have the entire Functional
27 Unit as one site. We looked at the highest concentration area, and in that
28 we looked at the single sample point that is the highest. Now, residents are
29 being -- assumed to be exposed to that one -- the highest concentration.
30 That's one of the reasons why it is higher, plus the exposure factors that

1 Dr. Simon was talking about, the residential exposure factors are always
2 higher than industrial workers.

3 MR. BRAYON Why?

4 DR. MYLAVARAPU Because of the behavior patterns used for the receptor that Dr. Simon was
5 talking about. He presented -- I don't know if I need to go -- we looked at
6 a residential adult drinking two liters of water compared to an industrial
7 worker, one liter. The industrial worker contacting 50 milligrams of dirt
8 compared to a residential adult at 100 milligrams, and a child at 200
9 milligrams, and the industrial worker is presumed to work 233 days,
10 compared to a resident for 350 days. So the different factors that go into
11 estimating the risk numbers, they are higher for the resident, plus the
12 exposure concentration because of the exposure unit concept. These all
13 are the reasons why.

14 MR. BRAYON: Well, Doctor, if these areas were cleaned up to residential specifications,
15 then those exposure factors would not be a factor, right, ma'am? You
16 better get Dr. Simon.

17 MR. PHILLIPS: Dr. Simon?

18 DR. MYLAVARAPU: Thanks for the trust.

19 DR. SIMON: The way we would determine whether or not these areas were safe for
20 residential land use would be to use those exposure factors. So it's
21 somewhat of a miscommunication to say that we would throw them out
22 when we're considering residential. We would use exposure factors, which
23 indicated more contact, a higher degree of contact with the *environmental*
24 *media*. So there would be larger doses of chemicals for the residential
25 scenario.

26 MR. BRAYON: But, Doctor, we're being exposed, we're being exposed every day in my
27 front yard. You know, but over here you're saying that we cannot be
28 exposed like I am exposed in my front yard. Maybe I'm -- does that ---

29 DR. SIMON: By saying "exposure in your front yard," are you a gardener or is that the
30 kind of activity you're talking about?

1 MR. BRAYON I think you know what I'm talking about If I am being exposed to areas --
2 my living area, and you are saying that when I am over here in one of these
3 areas, F1, 2, 3, 4, 5 or 6, that as a resident, I would be at risk more so than
4 I would be in my front yard or in the area that I am being exposed to there,
5 if I live.

6 MR. CLAY: Excuse me. Point of order. Could we please all respect the people and
7 talk in lower voices.

8 DR. SIMON: Okay, what is the added risk of being at the base? Okay, let's assume that
9 we're going to one of the Functional Units that showed unacceptable risk in
10 a residential scenario and we plop a house down and someone was going to
11 live there and they would be contacting the soil 350 days a year, which is
12 our assumption for the residential scenario. They would be drinking two
13 liters of water a day, is our assumption for the residential scenario. That
14 would lead to a higher dose and consequently higher risk than an industrial
15 scenario in which our person would come to work at the place over 250
16 days a year rather than staying here 350 as a resident, and would consume
17 one liter of water a day as a worker, and would only contact or would
18 contact only 50 milligrams of soil a day rather than 100 milligrams of soil a
19 day So we assume that for the industrial scenario the contact with the
20 *environmental media* that leads to the dose of chemical is less intensive
21 than it is in the residential scenario. Does this answer your question?

22 MR. BRAYON: Yes. It also means that the toxicity level is high, which means that you
23 haven't cleaned it up. I don't think it's the sufficient amount that we would
24 want it cleaned up. You've got it cleaned it up to the industrial level but
25 not the residential level.

26 MR. BALLARD. Well, I think the issues here is not one, you know, of risk assessment The
27 issue is with management, and that's a subject to -- we can deal with. It's a
28 subject and a question. Your question is a valid question, and it should be
29 asked in the context of the Proposed Plan and the Public Comment Period
30 for a response.

1 MR. CLAY: Gentlemen, at this point we are just about out of time. Mr. Tyler, I do
 2 have time to recognize you

3 MR. TYLER: Don't worry, I'm not going to ask for any time and get jumped on. It's a
 4 question I have to ask, and it's in Functional Unit 2. Children at the
 5 playground. You said there are chances of nine million to one and then a
 6 future resident is unacceptable at 200 to one in a million. If that's turned
 7 over to the city, it's conceivably possible you could put a community center
 8 there for senior citizens and children to play in. So you're telling me that
 9 there is no plan for cleaning up that for a possible senior citizens center,
 10 children's center? Because down here in the south children have seven
 11 months to play in the park. Daylight Saving's time starts April 1st to
 12 October 31st. We all know people like to send their children to the park
 13 and just get rid of them. And we've got about five or six apartment
 14 complexes around that potential park. I want to know how did you arrive
 15 at these figures? I would just want to be assured that what you said is safe
 16 for these children and it is possible to build a community center there that
 17 will be staffed?

18 MR. PHILLIPS: Dr. Simon, would you like to respond?

19 DR. SIMON: I would

20 MR. PHILLIPS: Thank you, Mr. Tyler

21 DR. SIMON: We thought carefully about this issue, and we were concerned about it. I
 22 mean, we really don't want it around that the EPA doesn't care about
 23 children. So we asked the question the children -- our assumption when
 24 we did the risk assessment was that the children play in the park 64 days a
 25 year. We thought about that, and then we said, "you know, perhaps that
 26 number is a little low." Do they play 100 days a year? Do they play five
 27 days a week, 52 days? Do they play every day of the year? So what we
 28 did was the risk calculation -- can everybody see this? We figured how
 29 many days a year they play in the playground, 64 days as in the risk
 30 assessment, 250 a year, five days a week and 365 a year, and this is sort of
 31 really the upper boundary. Of course, they can't play more than 365 days a

1 year I guess they can on leap years. Okay, so we calculated our cancer
2 risks based on this number of days a year that they play at the park, and it's
3 six in a million for 64 days and goes up to 30 in a million
4

5 Now, the point here is that this 30 in a million is still less than one hundred.
6 So we would consider that it's safe for children to play in the park every
7 day of the year. If you look at the hazard indices, the index of health
8 affects other than cancer, none of those are greater than one.

9 So again, we would consider this even in extreme conditions where the
10 children played in the park for 365 days a year. We would think this is
11 safe. Does this get with your question, Mr. Tyler?

12 MR. TYLER: It could be used to put one of those community centers there?

13 DR. SIMON: Exposure assumptions as a community center would be identical for those
14 for a recreational scenario that we considered here.

15 MR. TYLER: It is safe, right?

16 DR. SIMON: Correct

17 MR. TYLER: What about the dieldrin levels, dieldrin levels?

18 DR. SIMON: Well, I think they would be -- they would have, number one, less exposure
19 from children. The children would tend to play outside on the swings and
20 the items in the playground.

21 MR. PHILLIPS: Hold it just for a point. Mr. Tyler, did you say the "dieldrin" or the
22 "elderly"?

23 MR. TYLER: Dieldrin.

24 DR. SIMON: Excuse me. The dieldrin levels are figured into this risk assessment, this
25 risk calculation.

26 MR. WILLIAMS: Point of order. We have run out of time here, and I know no one wants to
27 ask for an extended time. So I would like to move -- excuse me, sir, for
28 being rude, but I would like to move -- I make a motion to adjourn the
29 meeting.

30 MR. TRUITT: Second.

31 MR. CLAY: It's been moved and seconded that we adjourn the meeting. All in favor?

1 THE BOARD Aye.
2 MR CLAY All opposed?
3 MR TYLER No
4 MR CLAY It appears that we have to essentially adjourn the meeting If you would,
5 as you leave, put your chairs back under the table
6
7

8 **(Whereupon, at approximately 8:15 p.m. the meeting was adjourned).**

9 **NEXT MEETING: THURSDAY, September 21, 2000**
10 **6:00P.M.**

11 **MEMPHIS DEPOT BUSINESS PARK**
12 **(Formerly known as the Memphis Depot)**
13 **"J" Street Café**
14 **2163 Airways Boulevard**
15 **Memphis, Tennessee 38114**
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Attendance List
Restoration Advisory Board Members

Mr. Mondell Williams	Community Co-Chair
Mr. Shawn Phillips	Facility Co-Chair
Mr. Kevin Clay	Citizen Representative
Mr. Turpin Ballard	Environmental Protection Agency
Mr. Dave Bond	Citizen Representative
Mr. Jim Morrison	Tennessee Department of Environment and Conservation
Mr. Reginald Eskridge	Citizen Representative
Mr. James Webb	Civic Representative/Memphis Light, Gas and Water Division
Mr. Ulysses Truitt	Citizen Representative
Mr. Carter Gray	Memphis/Shelby County Health Department
Ms. Johnnie Mae Peters	Citizen Representative
Mr. Eugene Brayon	Citizen Representative
Mr. Stanley Tyler	Citizen Representative
Mr. Jim Covington	Depot Redevelopment Corporation (DRC)

Others in Attendance

Mr. Trevor Diggins	Frontline Communications
Ms. Alma Black Moore	Frontline Communications
Ms. Tondalaya Washington	Frontline Communications
Mr. Benjamin Moore	ATSDR
Dr. Ted Simon	EPA
Mr. Steve Offner	CH2M Hill
Mr. Scott Bradley	Corp of Engineers -- Huntsville

Mr. Steve Dunn	Corp of Engineers -- Huntsville
Mr Virgil Jansen	Sverdrup Civil Engineering
Mr Kurt Braun	Corp of Engineers -- Mobile
Ms Inga Black	Citizen
Dr. Andrea Simpson	Citizen & Professor at University of Washington
Mr. Alan Rogers	Citizen
Ms. Deborah Rogers	Citizen
Ms. Margaret Curry	Citizen
Mr. Van Snyder	Citizen
Mr. Russell Ray Anderson	Citizen

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