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ADVISORY BOARD ON RADIATION AND WORKER HEALTH

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WORK GROUP ON LINDE CERAMICS

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MONDAY
DECEMBER 14, 2009

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The Work Group meeting convened in the Zurich Room of the Cincinnati Airport Marriott Hotel, 2395 Progress Drive, Hebron, Kentucky, at 9:30 a.m., Genevieve Roessler, Chair, presiding.

PRESENT:

GENEVIEVE S. ROESSLER, Chair
JOSIE BEACH*
MICHAEL H. GIBSON*
JAMES E. LOCKEY

IDENTIFIED PARTICIPANTS:

TED KATZ, Acting Designated Federal Official
ANTOINETTE BONSIGNORE, Petitioner
CHRISTOPHER CRAWFORD, NIOSH
MONICA HARRISON-MAPLES, ORAU
EMILY HOWELL, HHS
KAREN JESSEN, ORAU
LAURA KROLCZYK, Office of Senator Gillibrand*
JOHN MAURO, SC&A
JAMES NETON, NIOSH
STEVE OSTROW, SC&A
MUTTY SHARFI, ORAU*

*Present via telephone

T A B L E O F C O N T E N T S

P-R-O-C-E-E-D-I-N-G-S

(9:30 a.m.)

MR. KATZ: Okay. We're ready to get started. We'll begin roll call before we turn the on button on. So beginning within the room, Board members, and please speak to conflict, as well, everybody.

CHAIR ROESSLER: I'll start. I'm Gen Roessler, Advisory Board, Chair of the Linde Work Group. No conflict.

MEMBER LOCKEY: Jim Lockey, member of the Advisory Board. No conflict.

MR. KATZ: And on the line?

MEMBER GIBSON: Mike Gibson, Advisory Board. No conflict.

MEMBER BEACH: Josie Beach, Advisory Board. No conflict.

MR. KATZ: Hi, Josie.

MEMBER BEACH: Good morning.

MR. KATZ: Glad you -- sorry about your travel troubles.

MEMBER BEACH: Yes, that's okay.

MR. KATZ: But at least you're not waylaid here for a day in between meetings.

MEMBER BEACH: Exactly.

MR. KATZ: Okay. And now the NIOSH ORAU team in the room.

DR. NETON: Jim Neton, NIOSH, no conflict at Linde.

MR. CRAWFORD: Chris Crawford, no conflict at Linde, NIOSH.

MS. HARRISON-MAPLES: Monica Harrison-Maples, ORAU, no conflict.

MS. JESSEN: And Karen Jessen, ORAU team, no conflict.

MR. KATZ: And NIOSH ORAU team on the phone?

MR. SHARFI: Mutty Sharfi, ORAU team, no conflicts with Linde.

MR. KATZ: Okay. SC&A in the room?

DR. OSTROW: Steve Ostrow, no conflict.

DR. MAURO: John Mauro, SC&A, no

conflict.

MR. KATZ: SC&A on the line? Anybody?

DR. MAURO: No.

MR. KATZ: Okay. And HHS employees or other government employees or government contractors, beginning in the room.

MS. HOWELL: Emily Howell, HHS.

MR. KATZ: And on the line?

(No audible response.)

MR. KATZ: Any feds or contractors to the feds?

(No audible response.)

MR. KATZ: Okay. And then members -- members of the public or staff to congressional offices on the line?

MS. BONSIGNORE: Antoinette Bonsignore, Linde Ceramics Petitioner.

MR. KATZ: Welcome.

CHAIR ROESSLER: Hello, Antoinette.

MR. KATZ: Welcome, Antoinette.

MS. BONSIGNORE: Hello.

MR. KATZ: Okay, then. That's roll call.

Let me just remind everyone on the phone to please mute your phone except when you are addressing the group. *6 will work if you don't have a mute button. And then hit *6 again to take it off mute.

Please do not put the call on hold at any point, but hang up and dial back in if you need to leave. And that's it. It's all yours, Gen.

CHAIR ROESSLER: Thank you, Ted.

Our last Work Group meeting was September 2nd. And at that time, it was actually our first meeting to look at the SEC Petition Evaluation.

And at that meeting, Chris Crawford made a report, a Microsoft Word -- or Microsoft PowerPoint report. And if you have that, I have that on my computer, if we need to refer to it. But basically his bottom line was that NIOSH OCAS recommends that for the

period at Linde from January 1st, 1954 to July 31st, 2006, radiation dose estimates can be constructed for compensation purposes. So that's our bottom line, really, today, is to look at that.

I sent out an agenda which is online. It only had three items on it, but I would like to add one item to that and actually start with that item.

And that was the SC&A Report following through on our last meeting, sent out on time by Steve Ostrow. And because it was on time, it was -- I filed it and I forgot about it. He sent it out, I think, on September 21st. So if you have that with you, it's called Review of Linde Ceramics Plant Special Exposure Cohort Petition 00-107 and the NIOSH SEC Petition Evaluation Report. And it has addendum in a little box on it. So if you are looking for that, that's what it looks like.

And I've asked Steve to make a very

brief summary of his report to get us started.

DR. OSTROW: Okay. At the September 2nd Work Group meeting that Gen mentioned, a question came up whether SC&A addressed all the petitioner's concerns that were in the Petition 00-107.

We had put out a big report on June 18th where we evaluated -- we looked at what NIOSH had done and the question is, did we address all the petitioner issues.

We had originally in our June 18th, 2009 report -- there were 11 findings that we had, and we went ahead and identified from the petition, we found the petitioners had nine distinct issues. The reason I say distinct issues that we looked at that there were a lot of different issues. There was a lot of repetition, overlap. But we came up with nine petitioner issues.

So we had reported all of that. We had 11 findings, nine petitioner issues. So the question is was everything covered. And

this report that Gen had mentioned that we put out on September 21st, the addendum, basically didn't supply any new information. It just produced, basically, a table that correlates the -- our 11 findings to the nine petitioner issues, and we concluded that our big June 18th report addressed all the petitioner issues that we could identify.

And the table that is attached to our addendum basically just makes a correlation between the issues and the findings.

CHAIR ROESSLER: Okay. Ted, I should ask your advice. Since Antoinette's on the phone, we'll probably want to give her a chance to talk. At what point should we put that on the agenda?

MR. KATZ: I mean, I think it would be most advantageous for her -- I mean, Antoinette, you can speak up if you have a preference. But I would think she would like to hear all the presentations first before she

would address us.

Antoinette, do you have a different wish?

MS. BONSIGNORE: No, that's -- I would like to just sort of make a general statement before we get started if that would be all right.

MR. KATZ: Oh, that's quite all right.

MS. BONSIGNORE: Okay. I received a copy of Mr. Crawford's report via email last week. And I would -- after reviewing the report, a recurring issue keeps coming up for myself and for the workers that I represent. And that is, what specific steps will OCAS take at this point to provide the Linde petitioners with a clear and easily understood translation of these documents that they are providing, either from the Evaluation Report or in response to SC&A's review of the Evaluation Report?

That's an issue that is a serious

problem for not only myself, but for my ability to answer questions for the people that I represent. And they are very concerned that all of these documents that are going between OCAS and the Working Group and OCAS and SC&A are not provided in a manner that they can understand.

And I think that -- it is my belief that OCAS has a responsibility here to provide a translation of these documents for the petitioners so they can understand that because they feel that they are being marginalized in the technical aspect of the evaluation process. And it's really the technical review of this evaluation process that, in the end, will be dispositive of the outcome of this petition.

And I'd like to hear at some point during the meeting a response from OCAS and a response from the Board members on the Working Group as to what steps can be taken at this point to provide this kind of information to

the Linde petitioners.

CHAIR ROESSLER: I will make a comment on that, Antoinette.

Thank you. I understand what you're saying. I guess you have to understand the documents are prepared for the Board and for SC&A as far as to discuss this on a scientific level. So they are a little long and probably not intended for a typical petitioner.

But I will commit at the end of this meeting to work with SC&A and NIOSH to put something, a statement together to try and summarize it as I think you've asked.

MS. BONSIGNORE: I'm sorry. Who's speaking?

CHAIR ROESSLER: This is Gen.

MS. BONSIGNORE: Okay. The -- you know, and just one other point that I would like to make and I've made this point before in a number of Board meetings and to Mike in an email a few days ago, regarding ORAU's

contractual obligation to provide this type of technical assistance, and what that contractual obligation is and whether ORAU is fulfilling that obligation.

MR. KATZ: Can I just add -- and don't know, Jim, if you want to add anything from OCAS's perspective but --

DR. NETON: I really don't have much else to add. I mean we certainly would work with Gen if she wants to prepare a more laypersons-understandable version of what we're talking about although in relation to ORAU's contractual responsibility, I think there were some responsibilities in relation to specific communications with claimants and petitioners. But I guess this sort of technical exchange at the Working Group level kind of falls through the cracks, I guess.

I think you're right. It's not really been identified as something that they contractually need to do.

MS. BONSIGNORE: Just one more

point I'd like to make about that specific contractual obligation in ORAU's contract with NIOSH is that directly in the contract it says that ORAU is responsible to provide a narrative for their decisions about the feasibility of dose reconstruction in language that is understandable to persons with a high school education.

Now I understand that that specific part of the contract relates specifically to the dose reconstruction reports in individual claimant's evaluations.

DR. NETON: Right.

MS. BONSIGNORE: But since the evaluation process in the SEC petition involves decisions about the feasibility of being able to provide dose reconstruction for the class of petitioners, I think this is a serious problem, and I think it needs to be addressed.

MEMBER GIBSON: Ted, this is Mike.

MR. KATZ: Hi, Mike.

MEMBER GIBSON: I totally support what Antoinette is saying. I think this falls squarely in the bounds of the Worker Outreach Work Group. And I would like to just, you know, go on record that we need, as a Work Group, my Work Group, to take this up and look into that.

MR. KATZ: Okay. And I would say, Mike, that it is really covered, in a sense, under the objectives of the framework that the Work Group has put together so far.

MEMBER GIBSON: Right, right. I agree with that.

MR. KATZ: Yes.

MEMBER GIBSON: I just, you know, that is an item that will be on our agenda.

MR. KATZ: The only other thing that I would note, Antoinette, which has its limitations, to be sure, but there -- I mean OCAS does employ a group of public health advisors that are -- their jobs are to work with claimants and then an SEC advisor, Laurie

Breyer, to work with petitioners, to help with this translation.

And Denise Brock, who is employed independently of OCAS as the ombudsman, also does a lot of work to try to accomplish this kind of translation as well as to guide people through procedures. And she certainly, in both groups, whether it is the OCAS stable of public health advisors, or Denise Brock, I mean they have provided a lot of help to an awful lot of people under this program right along the lines that you are discussing.

And I'll be the first to admit that they are all limited. I mean they all have their limitations in terms of the technical information they can bring to bear. But, for example, the OCAS group, I mean when they need to, they bring a health physicist to the table to discuss matters when they are not understood.

How well that's done is an independent question. But there are some

resources that have been at work throughout this program to try to help with this translational issue that you're talking about.

MS. BONSIGNORE: I'm sorry. Who was just speaking?

MR. KATZ: I'm sorry. This is Ted speaking, Ted Katz.

MS. BONSIGNORE: Okay. Sorry, Ted. It's just difficult for me to discern who is talking.

MR. KATZ: No, I'm sorry. I didn't identify myself. I apologize.

MS. BONSIGNORE: That's okay. I understand that there are certain people who are assigned to deal with some of these issues. But, again, the help that I've been able to get in terms of, you know, this -- in particular this report that Mr. Crawford just provided, quite frankly, it might as well be written in a foreign language for the workers that I represent.

They don't understand it. They

don't understand what's in this document. It's difficult for me to help them understand what's in this document. And in the end, it's their rights here that are at issue.

And, you know, I understand that the work here that's going on is, you know, the work is between SC&A and OCAS, and the reports that go back and forth, but you need to keep in mind that your audience is also the petitioners. And they have a right to understand what's in this document.

MR. KATZ: I agree with that. And I just -- as Jim noted, I mean there are limitations in what you can do in these scientific reports to simplify them in a way that will both serve the scientific and technical staff that have to grapple with those issues and the public that would like to understand, you know, the issues at play. I mean there are some just basic limitations to that.

And that's why I just -- again, I

encourage you to make use of the health physicists on staff at OCAS, for example, who work with these public health advisors to get that sort of one-on-one sort of guidance as to what does this mean, what does that mean, because some of it, I think, probably cannot be done in written documents in a sort of fulfilling, thorough way. But, you know, someone could help guide you through some of those issues if you, you know, avail yourself of them.

CHAIR ROESSLER: Antoinette --

MS. BONSIGNORE: Well, I have availed myself of assistance from Denise Brock but she, quite frankly, has quite a bit of work to do. And, again, you know, I hate to sound like a broken record here, but I have to point to ORAU's contractual obligation here. And, you know, the language clearly states understandable to persons with a high school education.

Now that's in the contract. So,

you know, there has to be some resolution of what the contract says and what is being provided here, and the two do not meet.

CHAIR ROESSLER: Antoinette, this is Gen. In a minute here, we're going to have Chris's report. And as we are going through it, I will be thinking in terms of what you just brought up.

And what I typically do is once we finish a Work Group meeting is put together a very short report that I will be giving at the Board meeting in February. I think that will probably be at least a start to answering your question.

I will try to summarize, you know, very briefly, succinctly what Chris presented, whether we have any outstanding issues and so on. So let's try that as a first approach and see if that will help.

MS. BONSIGNORE: Okay. Thank you, Gen.

DR. MAURO: Antoinette and Mike,

this is John Mauro. Can you guys hear me okay?

MS. BONSIGNORE: Yes.

DR. MAURO: I'd just like to point out, coincidentally, we, SC&A, have been directed by Mike's Work Group on Outreach to review what's called PR-12. It is an outreach procedure that is currently being used. And we're looking at various aspects of it.

But I do not believe part of the scope was to look into matters such as the one you are describing right now. I believe, if we're so directed to at least say something about that, we could certainly raise it as an issue that could be brought before the Work Group as perhaps this is a subject area that should be included in Outreach.

I'm watching folks shaking their heads around the table.

MS. HOWELL: I don't know that it is SC&A's role to try and evaluate ORAU's contract and whether it is being legally

fulfilled.

DR. MAURO: Oh, no, I wasn't saying that. I was just simply saying we're looking at it from -- our mission under PR-12 as Outreach's, it really comes down to the effectiveness -- bringing to the table, to the Work Group meeting some observations regarding the effectiveness of NIOSH in communicating to and receiving information from the interested parties.

And now it seems to me that this might fall within the first category interpreted in its broadest sense. It's really -- but anyway, certainly I would say this is certainly a fair subject for the Outreach Work Group to entertain.

DR. NETON: Yes, this is Jim Neton. I totally agree with John on that. But I think we need to look at the context under which these Working Group discussions occur. They are very detailed, technical exchanges, evaluations of what was in our Evaluation

Report, which is really our communication vehicle to the petitioners.

And at the end of the day, what would happen after these discussions are done is we would revise, as appropriate, the Evaluation Report, at which point that would be, hopefully, in more understandable language to a layperson. And at that time, the Advisory Board would take up the Evaluation Report again in a full public discussion where the petitioners would be afforded their opportunities to comment.

So, you know, in some ways these technical discussions almost have to be that way to get to the end of the line on the technical issues. But I understand completely what you're saying.

MS. BONSIGNORE: Well, this is Antoinette again. The Evaluation Report is in the same vein as this current document that we're about to discuss. It, again, is not in a form that is easily understood by workers or

petitioners.

DR. NETON: Okay.

MS. BONSIGNORE: So, you know, I think, again, we're dealing with the very same problem. The Evaluation Report is not in a form that is easily understood. None of these documents are in a form that is easily understood, and that is a problem.

DR. NETON: Well, and I think that would be a big issue if the Evaluation Report is not understandable. We would certainly need to take efforts to make that a more reasonably understandable document because that essentially is a report that the petitioners would rely on for their source of information.

MS. BONSIGNORE: And I think it is important that that kind of information be provided in advance of a full presentation to the entire Board because, you know, it is all well and good for the Board -- for the full Board to discuss what is in an Evaluation

Report. But if the petitioners have not been provided with an -- effectively translation of that Evaluation Report, we cannot be full participants in that discussion. And we deserve to be full participants in that discussion.

CHAIR ROESSLER: Antoinette, this is Gen. I suggest that we delve into Chris's report at this point and then after -- and I'm sure that he's going to clarify things not only for you but for the Work Group. That's the whole purpose of the meeting today. So I suggest we get started with it. And we'll work this through as we go.

MS. BONSIGNORE: Okay. Thank you.

CHAIR ROESSLER: Thanks, Antoinette.

So at our last meeting, OCAS was given several assignments. The first one was to -- and I'm going to read this out of Chris's report actually -- provide a table consolidating the information currently found

in Tables 5-1 and 5-3 of the Linde Ceramics SEC Evaluation Report, and he has done this.

He provided all of us with a very nice color table. It is a matrix of dates on the x-axis versus buildings on the y-axis. And because it is in color and because it is very large, it took us a little effort for us all to get it through email. But for those of you who have that, you can be looking at that.

And then the other objective was to really break down the items that SC&A had brought up. Basically the bottom line is can a plausible upper bound be put on exposures during the Linde residual period. And Chris has grouped some of these into, I think, three different categories. And we'll turn it over to you to review it for us.

MR. CRAWFORD: Great. This is Chris Crawford from NIOSH. And I agree, to the layman, this would be a very confused report. But I think -- confusing, I should say, but I think you have to keep in mind,

again, this is experts talking to experts. It was never intended to be a document that was to be understood by the layperson. So forgive us for that. But the eventual result of all this should be a document that is, in fact, understandable by the layperson.

We looked at several issues that seemed to be the main issues for the Evaluation Report and for SEC-107, a residual period SEC. The first of those was the radon in the building, and for Antoinette and anyone else's benefit who may be listening, radon is a radioactive gas that is given off. It is a natural substance that is given off from the decay of uranium.

It is found in many buildings throughout the United States. It isn't -- in other words, it doesn't only come from atomic weapons production or people that handle uranium. It's found in the soils, it percolates into people's basements and that sort of thing. So that's the gas that we're

talking about when we say radon.

Our position, given the evidence that we have, is we only have a single radon measurement during the residual period. Well, we actually have -- sorry, we discarded one. We have some 1976 measurements which we discarded because they were low. In other words, it was claimant-favorable for us to discard these measurements.

And we had some 1981/82 measurements of several buildings on site. Those readings were much higher. And those are the readings that we are using to estimate the radon for the entire residual period.

The main question was how can we take a single reading -- it's a series of readings but a single time in 1982 and say that those readings are representative of the entire history of the building from 1954 through to 2006.

Well, the answer to that is we believe that -- and to review a little bit,

the building was decontaminated -- buildings were decontaminated in the early `50s. What that means is the process equipment that was used to handle the uranium ores and oxides was removed. The source -- what we call a source material, source term, in other words the uranium -- either the oxides, the ores, whatever, the residues, was all removed also at that time.

Then the building itself was thoroughly -- value term, we won't use that -- was decontaminated according to the standards of the time. That means it was physically chipped and sandblasted, the concrete of the building, the walls, and the floors. It was washed. It was vacuumed. It was -- I think it is called scarfed. It was flame-torched to further chip the concrete. All of the material that was removed, the chips of concrete and the dust and so forth was then taken away and buried.

So now we're left with a building

that was turned over for unrestricted use to -- - the owner at that time was Linde Ceramics -- and a question is was there something that would produce a public-health hazard left in the building as a result of the atomic weapons work that was done in the `40s.

We concede that there was some contamination left in the building. We can see that from the reports that were left to us from 1950 after the decontamination. There were definitely what we call areas of fixed contamination in the building where uranium of some sort had been physically embedded in the concrete of the walls or ceilings. There was also some dust in various places. You can't get all of that so there is some residual dust remaining, as well.

Then the question for the SEC Petition itself is okay, we have a contaminated building, less than when it was an operational building but still with some contamination. Can we put an upper bound on

how contaminated the building is and how much dose a worker in that building could possibly have received?

Our finding is yes in each case. We'll start with radon. The reason we think that the radon measurements in 82 should be bounding is that the building was not used after 1950 really for -- I'm talking about Building 30, which is considered the most contaminated building. There are other buildings present as well. We always tend to place workers in Building 30, again, as a claimant-favorable assumption. So I'll talk about Building 30.

Since there was no what we call source term, no new uranium entered the building to our knowledge, certainly it had nothing to do with any atomic weapons program, there is no reason to think that the radon concentration should have changed over time. We have some measurements during the process period. In the TBD, you'll see that those are

ten picocuries per liter as the accepted standard during the third step of the production period. That would be from late `47 through the end of `49.

That amounts to -- there's a lot of different -- sorry, Antoinette, again, for your benefit, there are a lot of different ways to speak about exposures, exposure levels. For radon we use something called a working level-month, which I won't go into in any great detail, but ten picocuries per liter of radon in the air corresponds to .48 working level-months per year for worker exposure, just to put that in some perspective.

The measurements that were taken in 1982 show less radon in the building at that time than that. In fact, the first part of the report that we sent out -- and the author is on the line luckily, Mutty Sharfi, shows that -- basically I did a little -- he showed we had .0168 working levels in the building based on those readings. I did a little

calculation and with a 2,000-hour year, it comes out to about .198 working level-months per year, which is a little less than half of the last production period.

To interpret that, let's look at it another way. You would expect the levels to be much higher during the production period. You had literally tons of uranium on the site. You had the contaminated machinery still on the site, and the building had not been decontaminated in any way. So it's not surprising that the 1982 levels would be less than say the 1949 levels.

DR. MAURO: Chris, just from when I listen to these numbers, any chance when you give us your working level-months or working level-months per year for my own benefit, could you also say what that would translate to equivalent to picocuries per liter? Do you have that one to one? Or if you don't --

MR. CRAWFORD: No, it's about 4.2 in this case.

DR. MAURO: So you are saying that 4.2 working level-months --

MR. CRAWFORD: No, no, no, picocuries per liter is what it translates to.

DR. MAURO: Okay, 4.2 picocuries per liter corresponds to what?

MR. CRAWFORD: To about .198 working level-months per year. Now these are my off-the-cuff calculations.

DR. MAURO: Yes.

MR. CRAWFORD: Mutty may want to check these. And I think they should be checked.

CHAIR ROESSLER: And that was during what period?

MR. CRAWFORD: Well, we're saying for the entire residual period based on the 1982 measurements.

DR. MAURO: But you also mentioned some numbers that were in the earlier years during operations.

MR. CRAWFORD: The ten picocuries

per liter?

DR. MAURO: Yes, good. Okay. So what we're saying is that you were seeing -- so it's clean for me -- you were seeing ten during operations. Later on -- which is great that way, I guess back in the `40s --

MR. CRAWFORD: In the late `40s.

DR. MAURO: -- the `40s and now in 1982, you were seeing half that value.

MR. CRAWFORD: Right.

DR. MAURO: Okay. Great.

MR. CRAWFORD: That's essentially right. I also should say again, I think for Antoinette's benefit at least, that the 1982 survey also looked at background levels of radon in the Tonawanda are and found that they were -- they approached the levels that were actually measured in Building 30 and 31. In other words, the added radon compared to what, say, any warehouse worker any place in the Buffalo area would get is small.

We're not taking that into account.

We're not subtracting the background level from the measured radon level in Buildings 30 and 31. So that's a claimant-favorable assumption also.

CHAIR ROESSLER: So you're saying that the background levels that would be experienced in buildings that were not associated with Linde would be on the order of a few picocuries per liter --

MR. CRAWFORD: Yes.

CHAIR ROESSLER: -- during that time period.

DR. MAURO: It might be helpful -- the EPA's recommended standard for natural levels of radon in anyone's home, your home, is four picocuries per liter. We like to stay below that. I know in my house right now, my basement, and I work there all the time, is two picocuries per liter. So just to get a feel, just so you have a, you know --

MS. BONSIGNORE: I just have a quick question, Chris. Didn't Building 31

have the highest radon levels, not Building 30?

MR. CRAWFORD: For radon, you may be correct.

MS. BONSIGNORE: I believe I am correct, yes.

MR. CRAWFORD: Yes. I believe that the author did take that into account. I'm speaking of Building 30 mainly because it is the most externally contaminated. But that's correct. The difference, however, was not great between the buildings. They were very similar.

And also, just informationally, as you'll see on page two of our latest report, the background levels were .01 working level. Whereas the calculated radon concentration was .0168. So it's not a whole lot more. Well, it's nearly twice -- 68 percent more, right?

DR. MAURO: Sorry, one more question. The ten picocurie per liter number

that was observed, is that a single value? Was that a long-term value that was collected? Multiple values taken at different locations because I know -- radon is -- gaseous radionuclides that could change substantially over place and time. So I'd like to get a feel for whether this tends to sort of captures the sense of the aerial and time variability of radon.

MR. CRAWFORD: Well, first of all, that was taken directly from the TBD.

DR. MAURO: Right.

MR. CRAWFORD: Now the source of that data I'm not too clear on. Mutty, have you looked into this at all, may I ask?

MR. SHARFI: Now I'm trying to remember where they're from. I didn't think that that -- I thought that was a bounding estimate. But let me look at it, and I'll get right back with you.

DR. NETON: Yes. I think it is in the site profile or TBD. In the latter period

of production when they weren't processing pitchblende ore, the Belgian Congo type ore where the lower source concentration of radium -- I think the ten picocuries per liter was bounding. And I think that was actually measured in areas outdoors or something like that.

Mutty will have to look into that. But that was a value that was in the site profile that has been reviewed. And we all agreed that those values were appropriate for dose reconstruction purposes. At least at that time they were.

MR. CRAWFORD: That would have been with respect to the SEC petition. I'm using that figure mainly as a contrast.

DR. NETON: For a reference like if it was ten picocuries per liter during production and we're saying it is about half that now after they cleaned extensively -- since they cleaned up the site -- it appears to us to be a fairly reasonable value.

DR. MAURO: And I recall having these discussions before. I'm just really refreshing my memory.

All I know is when I see ten picocuries per liter, that's a very low number. And, you know, I hear that is associated with some operations. Even if it is post-operations operations, it is still a pretty low number. And I just wanted to get a feel for where it comes from.

DR. NETON: Right. And I think -- did you mention that, Chris, about the comparison of the radiological survey data? I mean that's sort of one of the points of this write-up was that was the amount of contamination constant over that entire time period.

And Table 1 in the report attempts to demonstrate that. The radiological survey, at least the gamma surveys are very similar in 1981 and in 1954. So there is no indication of some influx of contamination that may have

altered the amount of radium available to be generating right out of the cask.

MR. CRAWFORD: Exactly. That was another reason that we suspected -- we have every reason to believe that the radon concentration is reasonably representative from 1982.

MS. BONSIGNORE: I would just like to know -- I have two questions about the radon issue. And I would just like to know when would be an appropriate time for me to ask them.

MR. CRAWFORD: I don't see why you shouldn't ask them now.

MS. BONSIGNORE: Okay. My first question is you are basing the radon data from direct gamma readings in Building 30. And so you have two different gamma readings beginning in 1978. Is that correct?

MR. CRAWFORD: Not really, Antoinette. What we're basing the radon on is specific readings taken in 1982 of radon, not

of the gamma in the building. The gamma -- external gamma that we're measuring in a building, we're just using that information to show that it didn't change much between 1950 and 1982 or later.

The reason that's important is it is an indirect measure of how much embedded uranium and uranium progeny were in the building. And that's what produces, in the end, the radon. It's just a check on the other hand, on our assumption that the radon levels were probably stable through the history of the building after 1954.

MS. BONSIGNORE: Well, I guess what is confusing me is that if you are basing this on the 1982 data, how do you account for the fact that you don't have any data between 1954 and -- you are not relying on any data from 1954 through 1982, particularly because you don't have any information about ventilation rates, mainly the number of room changes per hour due to ventilation fans and open doors

and the number of volume changes per hour and how those parameters would effect the radon equilibrium values.

MR. CRAWFORD: You are pointing out, which is true and it is what John was just saying also, taking radon measurements at different times of the day or the year or under different ventilation conditions can give you quite different results.

MS. BONSIGNORE: Right. Well, that's my point. I mean if you were taking -- if you were relying on -- you have radon measurements during the processing period. Now I would assume that during the processing period there would have been some significant level of ventilation going on in the facility at the time, whereas the data that you are relying on from 1982 or any data from after 1954 when there wasn't actually any processing going on, the ventilation rate would have been much -- would have been not as significant because there would have been no -- presumably

there would have been no reason to have significant ventilation in that building.

MR. CRAWFORD: You're making --

MS. BONSIGNORE: How do you account for that?

MR. CRAWFORD: -- you're making a lot of assumptions there. This building was an active building. It was a warehouse and it was owned by a chemical company basically. That's what Linde Air, Linde Ceramics is and was.

Well, we can't obviously know what the ventilation conditions were on a day-by-day or even year-by-year basis. There is no reason to think they changed either.

DR. NETON: But I think this 1981 measure, was it not taken when the building was fairly inactive? I mean it was -- they certainly weren't producing uranium or anything like that where they would have had a need to have a high ventilation rate.

MS. BONSIGNORE: Right. That is my

point. There may have been chemical processing of some sort going on. But with respect to the issue of radon, the significance would be uranium processing. And that was not going on.

DR. NETON: Right. But I mean -- I don't know what was actually transpiring in this building in 1981. I mean that's sort of the question, I guess. I don't really know that.

MR. SHARFI: This is Mutty Sharfi. The lower ventilation rate would actually just result in higher radon levels.

DR. NETON: Right.

MR. SHARFI: The air turnover rate reduces your radon levels, not increases it. So the fact that the building would have been less -- the ventilation would have been reduced would have only increased your radon levels. That would only make these numbers more maximizing than less conservative.

In addition, they do have multiple

-- during these various years, they do have multiple readings during multiple times in multiple areas. And we did take the highest of all those readings. We didn't really do a statistical average of the area. We took the upper bound of those numbers. So we're taking the upper bound of a non-turning-over, really, room.

MS. BONSIGNORE: I understand that. But my point is that from 1954 through 1981, and you're relying on this 1981 data, that between those two periods, you don't have information on radon. You don't have any information on the ventilation rate in that building or in Building 31. So this to me seems problematic.

MEMBER LOCKEY: Chris, this is Dr. Lockey, Chris, in `76, you threw that level out, right, because it was low?

MR. CRAWFORD: By almost a order of magnitude as I recall.

MEMBER LOCKEY: So in `76, we do

have data. It was a low value so perhaps the ventilation was higher in `76 which would account for the lower value.

MR. CRAWFORD: In terms of readings in the summer, for instance, the building was probably open. If you took them in February in Buffalo, I can assure you that all the windows and doors would be closed.

MEMBER LOCKEY: Okay.

MR. CRAWFORD: So that could account for it right there. We're not sure. But we decided to throw out the low values because they weren't claimant-favorable basically.

MEMBER LOCKEY: Okay, so --

DR. MAURO: Typically, I've been looking at radon levels for a long time in lots of buildings. Typically between the summer and winter, there is an approximately three-fold difference. Is that the kind of differences you are seeing?

MR. CRAWFORD: Yes.

MEMBER LOCKEY: That's what I was thinking, that the `76 values were low. It probably was -- the building was more ventilated at that point. And the `82 values were higher, and the building was probably less ventilated at that point. That's what the data source shows.

MS. BONSIGNORE: Well, it just seems like we're making a lot of assumptions here about the ventilation rates when you have absolutely no data about that.

MEMBER LOCKEY: Well, the assumption was made but, I think, based on what the data they do have, the assumption was to make it most claimant-favorable by taking the highest values when assumingly the building was less ventilated. So at least of the values that were available, they took the value that was the highest with the assumption that that might have been the lowest ventilation rate at that time.

MS. BONSIGNORE: I understand why

you're not using the 1976 data. But, again, my point is is that particularly in Building 30 during the 1960s, and this is a point that I'll expand on a little bit further when Chris gets to this section of the report, but during the 1960s, there was a lot of renovation work that was going on in Building 30 that I don't believe has been accounted for here that I provided workers' statements regarding what was actually going on on the floor, particularly in Building 30, but also in Building 14, that I don't believe has been accounted for here, including such things as a jackhammering of concrete floors when they were moving heavy pieces of equipment.

And I have a lot of documentation from workers' statements that speak to that. And that hasn't been taken into account either. So my point being that during the 1960s, the levels of radon could have been much higher as a result of that kind of renovation work. And the fact that you don't

have any data from that time period and you don't have any data about the ventilation rate during that time period, I think is a serious problem here.

MR. CRAWFORD: It's not at all clear to me, Antoinette, that the renovations would have increased the radon level. For airborne contaminants like particles of uranium and other radioactive particles that would be true. And we have allowed for that.

For the radon, I don't see any mechanism to increase the radon concentration just because you're doing a building renovation.

MS. BONSIGNORE: Well, but you're -- this report is clearly not considering the fact that -- you are only considering, I believe it said, vacuum cleaning as the parameter for the renovation work. That wasn't the only thing that was going on during that time period.

And I provided a lot of statements

from workers. And I have actually a lot of additional statements from workers testifying to that fact.

MR. CRAWFORD: The reason we chose vacuuming is that -- well, we have to look at the difference between the decontamination effort and a remodeling effort. The decontamination effort deliberately set out to disturb the existing contamination. They went to where the contamination was greatest and they chipped it, burned it, sandblasted it, and vacuumed it. Okay?

In a renovation, most of that building wasn't heavily contaminated as you can see from the 1950 survey. It was concentrated in areas. And that's where the decontamination efforts were concentrated.

Contrast that with, say, renovations that happened in the `60s where in some sort of chance basis, they would dig a hole in the concrete to put in a post or something. The only document we actually

have, by the way, from the `60s, and I don't mean to say there weren't other renovations, was a Building 30 addition that was added to the side of the building.

So they weren't trying to loosen up every bit of contamination in the building. We can expect that their efforts resulted in less, much less contamination than the original decontamination efforts.

MS. BONSIGNORE: Well, with all due respect to whatever document you are referring to about Building 30, I have workers' statements, people who were working in that building during the time that that renovation work was going on during the 1960s, testifying to a great deal of work that was being done that created huge amounts of dust and huge amounts of contamination, people talking about dust falling from the rafters, about huge pieces of equipment that were moved around that building that required jackhammering of the floors, continual jackhammering of the

floors for years at a time while this renovation work was going on.

And that has not been accounted for. And I've provided workers' statements here testifying to that fact. And I have additional statements that I have received ever since -- because when I read the report and I saw that you were only considering the vacuum cleaning as a parameter there for the renovation work, I felt the need to get some additional documentation from workers who were actually there.

CHAIR ROESSLER: Well, I think what we're doing here is this is all interrelated. But we have certainly gone into a later part of Chris's report when we talk about the remodeling. That comes a little bit later on.

I wonder if maybe we could hold that part and finish the radon. And, again, I agree they are interrelated. But I think maybe we should finish the radon part of it.

MS. BONSIGNORE: Okay.

MR. CRAWFORD: And essentially I think we have finished the radon part as far as we can go at this point.

CHAIR ROESSLER: Why don't you just summarize then. What -- give us -- I guess from my point of view in terms of the numbers, the upper bounds you are using. And then comparing that to some of these other numbers.

MR. CRAWFORD: Right. We are using -- well, as you will see in the report, we're using a calculated radon concentration of .0168 working levels.

CHAIR ROESSLER: And as John said, can you put that into the picocuries per liter?

MR. CRAWFORD: My calculation -- and I want to stress mine -- is 4.2 picocuries per liter.

CHAIR ROESSLER: So you are using that for the upper bound?

MR. CRAWFORD: Right.

CHAIR ROESSLER: Okay.

DR. MAURO: I would like to add one thing. The areas that is important, I always think in terms of OTIB-0070, which is one of my favorites. This is the OTIB that says you've got a big time span when a facility was operating. And it stopped operations. And this happens over and over again.

And all of a sudden you have -- we have lots of measurements are taken during operations, maybe during D&D, at the end of operations are confirmed that you cleaned everything up pretty good. And this usually takes place, let's say, back in the `50s.

And then very often, this happens over and over again, the next time you revisit the site is when the FUSRAP program kicks in in the `70s and the `80s. And you very often have a 30-year period between these two time periods.

Now the thing that I always like to look at is okay, what were the, in this case, radon concentrations in the air at the earlier

days, let's say. And what I'm hearing is the radon levels that were observed at some time in the earlier days under the certain context -- I'm not quite sure what -- about ten picocuries per liter.

Let's, for the sake of discussion, assume that that is a pretty good number representing the state of affairs of radon levels in the late 1940s --

CHAIR ROESSLER: During operations.

DR. MAURO: Well, let's say either during or immediately after operations. Perhaps even after some D&D. Sort of like at the beginning of when all this -- at around that time. I find ten picocuries per liter to be a low number to be associated with operations, certainly if they were handling ore. But let's -- so let's assume -- but that represents a good starting point.

And so when I hear that number, I'm very assured, and I will explain. If the next step is 30 years later, you take a bunch of

measurements, you take the high-end measurements and they are around 40, which means that the facility was relatively clean in the early days and it got a little bit cleaner later.

So we're going from ten down to four over a 50-year period. So my -- I guess from everything I heard, you know, and I've been talking to Steve about this, you know the four number certainly looks like a really good number for the back end of the process, when you get to the 1980s, if not conservative, especially since you left background in, which could easily account for all of it, you know, could actually account for all of it or half of it.

But the front end, the ten is the place where I guess I heard a little softness. I'm not quite sure what that ten is. And if I heard a little bit more about what the ten is and a sense of assurance that no, that's a pretty good representation of what was in the

air, you know, just, you know, at the end of operations, back in the late `40s, early `50s, then my sense is that this does represent -- the numbers you selected certainly are reasonably bounding. I mean I guess that's -- so the ten is the only place right now where I'm a little like this about, you know, what that number is.

DR. NETON: My impression is the ten was taken during production prior to any decontamination in the building.

MEMBER GIBSON: The ten is after `47, which -- pre-`47 when the African ore was processed, the numbers were higher than ten. But the `47 to `54 time period, the back end of the African ore processing, the bottom end was ten. So they assumed that the -- after the production stopped, that the ten maintained through the clean up part.

DR. MAURO: That was inside buildings or outside buildings?

MEMBER GIBSON: It was -- I believe

the measurements were originally from inside but they assumed that that maintained on the outside, too.

DR. NETON: That's right. That's what it was.

CHAIR ROESSLER: So, John, just to summarize then, do you agree that the ten is a good number to rely on?

DR. MAURO: Yes. What I just heard is what I was looking for. That ten -- there were a number of measurements made. I didn't look at all the data, but a number of measurements were made at the back end of the operations period, not when there was lots of ore present when you would expect relatively high radon concentrations, but at a time when you had relatively little ore. The potential for radon was certainly reduced, so it represented what you would consider to be the beginning of the decontamination process perhaps. A time period that represents a good start point at when the levels should have

been relatively high as compared to the back end of the process, you know, when they measured it in the 1980s.

So what we're really talking about are radon concentrations that go from a reasonably upper bound in the early days, not including ore, at about ten, to a reasonable upper bound of 4.8 at the back end of the process.

Now that all rings very true to me as being a line, you know, that goes from ten to four. Now a good question could be well, maybe you should use OTIB-0070, which says no, let's start at ten and go to four over that time period of people working, or just go with the four.

Now to me, you could go flat four. And the argument for going flat four is your gamma levels stayed the same the whole time. So I mean there is a lot of weight of evidence here.

And there are alternative

strategies. You could go to OTIB-0070 where you got to go slow. You can argue that no, no, no, that would be too conservative because there is good reason to believe you didn't have ten. You did all those things you described. You cleaned the place up. You would expect it to come down.

So my sense, we're at a point in the process where I think that you've got a tractable problem. And there are a number of strategies you could adopt that could be considered to be reasonable and to varying degrees of inherent conservatism. You could start at ten and bring it down to four, and then build your dose reconstruction around that. And I wouldn't argue that it would be unreasonable. No, no, no, we're going to go with four across the board, especially when we know it is inherent in the four. The four was picked specifically because it was a bad guy. And not only that, it didn't subtract background.

So you collect all this and you look at it. And it seems to me that the radon problem, in my opinion, is well in hand. There might be some fine structured disagreement that reasonable people could have. But it is well in hand.

CHAIR ROESSLER: So I think what you are saying, based on all these numbers and all the supporting documentation and rationale, that OCAS can reconstruct radon doses for that time period, that they are properly using an upper bound.

DR. MAURO: I would say yes, it is within -- what they've decided to pick certainly would be within a realm of reasonable and perhaps even upper bound. There are others that you could drive a little more conservative if you really wanted to, push it to ten in the beginning. That may be a little over conservative given the reasons we've heard.

So I mean this is the level of

resolution I can operate at. I mean I really can't get better than that. But what I'm getting at is it sounds to me like a tractable situation.

CHAIR ROESSLER: I think Mike --

MEMBER GIBSON: Gen, this is Mike. Could I ask a question?

CHAIR ROESSLER: Sure.

MEMBER GIBSON: These surveys that were taken in the `80s, they were done, if I'm understanding this right, for like an EPA or a FUSRAP-kind of like free-release survey, correct?

MR. CRAWFORD: Yes, they -- my understanding is they were FUSRAP in origin.

MEMBER GIBSON: So these readings were not related to personnel exposures. It was not worker monitoring. It was just --

MR. CRAWFORD: Definitely not.

MEMBER GIBSON: -- an environmental free-release criteria. Right?

MR. CRAWFORD: They were trying to

evaluate whether the buildings, in fact, needed further decontamination. They decided Building 30 did. And Building 31 did not, by the way, just parenthetically. That doesn't exactly impact our Evaluation Report. But that was the purpose of the measurements.

CHAIR ROESSLER: I'm trying to figure out, Mike, what your question is. If you have the measurements in terms of the units that we're using the 4.2 picocuries per liter, that is the measurement that is typically used to evaluate exposures to people to radon -- to people. I can't think of something else that might have been done instead.

MEMBER GIBSON: Well, I guess my point is, you know, to me there is a difference between surveys in building monitoring for free-release criteria as opposed to personal employee monitoring for radiation exposure.

DR. NETON: Yes, Mike, this is Jim.

I think I know where you are going with this, but remember, in this particular situation, the source term, that is the contamination of the building, was fairly spread. It was a fixed contamination.

It wasn't like there was a pile of something that a worker could have had some unique operation to where the concentration could be elevated. So in that respect, I think the measurements taken in the main parts of the building are fairly representative of what anyone would be exposed to in that building.

MS. BONSIGNORE: I have a question. How is air concentration data representative of what people are inhaling and ingesting?

DR. NETON: Well, because people breathe the air. And what is in the air is what ultimately they receive for exposure.

MS. BONSIGNORE: And so air concentration data would also be representative of what people were ingesting?

DR. NETON: Well, for radon, really, it is a noble gas. I mean you don't ingest radon gas per se. But if it were a particulate, which I think we're going to talk about later, you know, airborne particulate, then yes, air concentration would be used to decide what they were inhaling. And the ingestion part we'd have to look at from another perspective.

MS. BONSIGNORE: Well, I was under the impression that we would need bioassay data and air concentration data to get an accurate picture of what people would inhale and/or ingest.

DR. NETON: Well, not for radon. There are no bioassay techniques available for determining a radon exposure in a person. That just doesn't exist.

CHAIR ROESSLER: In fact, the air concentration is really what you do want, which does give you the level of exposure.

DR. NETON: Right.

MEMBER LOCKEY: And that's what the EPA uses for their guidelines, the air concentration.

DR. NETON: Radon is somewhat unique in that respect.

MS. BONSIGNORE: Okay. Thank you.

MEMBER LOCKEY: Can I ask you a question about -- are you certain that ten picocuries was what the levels were at the last part of production? And then the building was -- however they decontaminated it, is there any type of situation, post-contamination, that that could be higher through disruption or building destruction, renovation, additional renovation?

DR. MAURO: If there is any radionuclide that probably wouldn't be affected by that it would be radon. Radon is going to be ubiquitous -- it's being -- if there were pockets, for some reason, wherever it might be, along pipe chases or --

MEMBER LOCKEY: Beams or something

--

DR. MAURO: -- yes, beams, it's being emitted all the time. And it is diffusing. It's a noble gas.

MEMBER LOCKEY: Right.

DR. MAURO: It's not one of the radionuclides that yes, for example, if you were renovating a building and you thought you cleaned up really well 20 years ago and now you are going to come in and you are going to rip it up, rip up the floors, rip buildings down, and the building contained uranium, thorium, radium, okay, and all of a sudden -- and you thought you did a good job cleaning it up back in 1950, and now you are going to come in and you are going to rip it up again, I would be the first to say that I would want a comprehensive air sampling program, perhaps even a bioassay program, for the workers involved because there are always surprises when you are ripping up a building that formerly you thought was decontaminated.

And I would be worried about uranium, radium, and thorium. I wouldn't be worried about radon because I think radon would have revealed itself well before because of its noble gas nature, it is going to come up. It's going to emit. It's going to emerge from wherever it is and show itself.

So my answer is I understand the concern about the renovation but I never -- quite frankly, I never felt that radon was one of the radionuclides that are all of a sudden going to create these big surprises for you when you start to rip a building down.

You would have seen it all along. The radon -- for example, the radon that is in the dirt outside, you know, it is going to find its way in this building. You know there is just no stopping it. It's a noble gas.

And so my answer is, you know, there's never an absolute answer to all of these things, but as a health physicist, I've been looking at radon for a long time. That's

not one of the radionuclides I'd be especially concerned about during the renovation process.

MEMBER LOCKEY: Thank you.

CHAIR ROESSLER: Steve, do you have any comments to add or questions on --

DR. OSTROW: No. John and I discussed this before the meeting. This is our --

DR. MAURO: I'm sorry -- I'm sorry.

DR. OSTROW: No, John --

DR. MAURO: I've got a t-shirt my daughter gave me. It says he started talking and we can't stop him.

(Laughter.)

CHAIR ROESSLER: Your daughter knows you well.

I wonder if we -- it seems to me we have reached the end of this part of the presentation. And my understanding is that SC&A agrees with the approach and does feel that an upper bound on radon exposures is reasonable.

DR. OSTROW: Yes. Our conclusion is that NIOSH can reasonably reconstruct the radon exposure during the residual period. And they make a good case for it in the -- in Chris's report. That's our conclusion.

CHAIR ROESSLER: All right. I think that's what we need. So we can move to the next part.

MR. KATZ: I mean does the Work Group want to take action on that? This point-by-point resolution? Or are you going to wait and do that at the end?

CHAIR ROESSLER: I think we could take action on this.

MR. KATZ: I mean it's up to you how you want to do it.

CHAIR ROESSLER: Well, we have the whole Work Group either on the phone or here. So on this one point --

DR. OSTROW: Let me just say this covers our -- we had, I think, 11 findings. And this covers findings one through three, I

think, right?

CHAIR ROESSLER: Right.

DR. OSTROW: Yes, one, two, and three. So this would resolve our comments one through three.

CHAIR ROESSLER: Does anyone on the Work Group want to make a motion on this?

MEMBER BEACH: Gen, I just want to make sure I'm completely -- this is Josie -- we are talking about Building 30, 31, 38, 14, and 37. Is that correct? On these three findings?

CHAIR ROESSLER: Right.

MEMBER BEACH: For radon?

CHAIR ROESSLER: Right. All buildings.

MEMBER BEACH: All the buildings, okay. I just wanted to make sure I was clear there.

CHAIR ROESSLER: We'll put that on here for all buildings. I'll make a motion. I move that the Work Group accept the

recommendation that NIOSH can reasonably reconstruct radon exposures during the residual period for all buildings.

MEMBER LOCKEY: I'll second.

CHAIR ROESSLER: Josie, or Mike, or Jim, is there any discussion on this point?

MEMBER GIBSON: No discussion but -- this is Mike -- I disagree with NIOSH and SC&A.

MEMBER LOCKEY: Maybe we should have a discussion on why.

CHAIR ROESSLER: Yes. What is your main point of disagreement?

MEMBER GIBSON: Well, again, you know, these were basically environmental-type surveys taken in the `80s. And they are just assuming things couldn't have been different during the working days. And I just disagree with that premise.

MEMBER BEACH: I am going to have to say -- this is Josie -- I agree with Mike that I do disagree with SC&A and NIOSH on this

one also.

CHAIR ROESSLER: Do either of you feel there is any additional work or any additional work that OCAS or SC&A should do to resolve your concerns?

MEMBER GIBSON: This is Mike. You know, I just feel that there is a lack of data. And NIOSH and SC&A are making assumptions. And I just don't agree with them. And I feel that the weight of the evidence should go toward the claimants.

DR. NETON: Mike, this is Jim Neton. Could I ask a question? Would you agree that the concentration of radon in the buildings after 1954 could not be plausibly higher than during the production period in 1954 of ten picocuries per liter? This is while the source term is still there. They have not decontaminated anything. They are still actively producing uranium.

So do you believe that ten picocuries per liter in itself would not be a

bounding value?

MEMBER GIBSON: Well, Jim, you know, my background is maintenance and represent workers. I don't have the technical background. I'm just going on what I believe is the intent of the Act. And I think there is a lack of data.

CHAIR ROESSLER: I suppose we could vote on the motion although I think it is quite clear that --

DR. OSTROW: This is Steve. I just wanted to comment that I think this echoes what John was talking about before. I don't -- I'm trying to think -- I can't think of a physical mechanism that would increase the radon concentration during the residual period higher than it was during the end of the operations period.

MEMBER LOCKEY: This is Jim Lockey. I think that's the point. There's no -- it is not feasible for the level to be greater than ten picocuries. It's just not feasible.

That's not in the biological possibility. It's not a physical possibility to be higher. So that can't happen.

CHAIR ROESSLER: My interpretation is that the concern is not with the science. It seems that at least those of us around the table all agree that this scientifically, which is what we're supposed to be following on this evaluation, that this has to be an upper bound. And we're probably at an impasse.

MEMBER LOCKEY: I think we're supposed to make decisions, be worker-favorable but also based on what the science presents us. I think that's our mandate. Always be favorable to the worker. But it has to be science based. It can't be based on something else.

And in this case, the science indicates it really can't be higher than that value. We could say that all right accept ten and extrapolating it down to four, which is

even more worker-favorable. And that's something we can talk about.

But I think we have to look at our mandate. Our mandate is to be worker-favorable as much as possible as we can, I think, which we have in this case. But the science is the science. You can't go above that value.

MEMBER GIBSON: Well, Jim, can I make a comment? Dr. Lockey, I agree at some point with you. But, you know, I think we also have to look at the intent of the Act and the intent of how the President made up this Board. And it was for scientists, doctors, and labor representatives, those of us that have been in the field.

So it can't all be based on science. There are some things that happen in the field that maybe the scientists just don't understand and the science can't account for.

MEMBER LOCKEY: I agree with you, Mike. And I think that labor brings an awful

lot to the Board. I think everybody on the Board, at least from my perspective, is always asking the right questions to try to make sure that we take into consideration all the possibilities that could affect the worker in these environments.

But, Mike, if we follow your rationale, with things that science just does not yet understand, that is applicable to everything we're doing. And then that would go back to whether we can ever, ever reach a threshold that would satisfy everybody.

And so we have to have some type of guideline that we're following. Be cognizant of the worker, be as worker-favorable as possible.

But when the science is clear, I think that has to be a threshold at which we have to accept. Otherwise, we're then dealing in non-science issues. And then all the time and effort that we're spending on these types of reviews are really for naught.

So, Mike, I'm very appreciative of what you're bringing to the table when you are concerned and your compassion. And I'm right there with you because I've seen a lot of workers who have been injured for a lot of different things.

But I'm also a scientist. And there has to be a threshold at which we set something.

CHAIR ROESSLER: I think I would add to that, Mike, I think your concerns are very broad. They perhaps apply to a lot of different situations. And in my view, on this particular issue, I think we've made a scientifically sound conclusion, at least I think my motion was a scientifically sound one. And it has been agreed upon by SC&A. I really can't see that we can go any farther on this.

DR. MAURO: This is John, Mike. I, you know, I do a lot of soul searching on these things. And think about -- and say to

myself, you know, if we were talking about radium, thorium, uranium, I would agree with you. But we're talking about radon.

And I would have two problems with these other radionuclides. One, you want breathing zone samples when you are dealing with particulates that could be generated in a localized area. A general air sample, as typically is collected for radon, I would be troubled by that, relating general air measurements to what a person might have inhaled when we're dealing with particulates.

Second, when there is renovation going on, I would be concerned that yes, some things could have been broken free, generating localized areas of elevated particulates. And the only reason why I'm coming down where I'm coming down is we're dealing with radon. And in general, ambient measurement -- if taking sufficient number of ambient measurements are taken, radon being a noble gas is going to permeate and diffuse throughout an area.

And also if there was residue of radium, let's say, somewhere on the rafters, the radon that would be generated from that residue, let's say it was residual, post-D&D, it would have made its way into the air.

So because we're talking radon -- now the conversation may change a little later when we move on to other radionuclides, but right now -- again, there is always a weight of evidence. And you reach a point with yourself and you say well, it is good enough for me.

I would be the first to admit, though, everyone sees the world the way they see it. And how much evidence is necessary. For me, I have to say -- and SC&A -- and I think the weight of the evidence is coming out in favor of NIOSH's position on this matter, if that helps any.

CHAIR ROESSLER: Well, what our Work Group assignment is is to conduct this meeting, come up with our conclusions as a

Work Group, and report it to the Board. It is the Board who votes. And I'll try to do my best to represent what we've done at this meeting. And we'll certainly get all Work Group input on it.

But I think we ought to take an official vote since I made the motion. So all in favor of my motion, say aye.

(Chorus of ayes.)

CHAIR ROESSLER: And against?

MEMBER GIBSON: Nay.

MEMBER BEACH: Nay.

CHAIR ROESSLER: Okay. And we will report that. So I think we should then go on to the next item.

MR. CRAWFORD: The next item is particulates in the air during the residual period. We have a similar situation in one sense in that we have a measurement done --

CHAIR ROESSLER: Oh, somebody says it is probably time for a break.

MR. KATZ: A ten-minute break for

you folks on the phone, too, who also might need it. So it will be 11 o'clock about we'll start up again.

CHAIR ROESSLER: Sure. Ten minutes.

MR. KATZ: Is that good?

CHAIR ROESSLER: Sounds good.

MR. KATZ: Thank you everyone on the phone. I'm just going to put the phone on mute while we're on break.

(Whereupon, the foregoing matter went off the record at 10:47 a.m. and resumed at 10:55 a.m.)

MR. KATZ: Okay. We are back and even a couple of minutes early, which is rare form for a Work Group. Let me just make certain we have everyone back on the telephone. Work Group members, are you with us?

MEMBER BEACH: This is Josie. I'm here.

MR. KATZ: Mike? Mike, do we have

you back yet?

(No response.)

MR. KATZ: Okay. Well, we told them 11:00, and it is a couple of minutes early here.

CHAIR ROESSLER: We'll wait.

MR. KATZ: So let's wait for Mike.

(Whereupon, the foregoing matter went off the record at 10:56 a.m. and resumed at 11:00 a.m.)

MR. KATZ: This is Ted. I'm just checking in again for Mike. Have you rejoined us?

MEMBER GIBSON: Yes, I'm here, Ted.

MR. KATZ: Oh, great.

And, Josie, you are still with us?

MEMBER BEACH: Yes, I'm still here.

MR. KATZ: And, Antoinette, are you still with us?

(No response.)

MR. KATZ: Maybe you are on mute? Antoinette, are you -- have you rejoined the

meeting?

(No response.)

MR. KATZ: Okay. Well, it is time to get going.

CHAIR ROESSLER: I think we should continue.

MR. KATZ: We're under the gun. Let me just note that Dr. Lockey has to leave at 1:30 so we really have to press through the technical discussion, you know, being the first priority so that at least Dr. Lockey can participate in the technical dialogue.

When Antoinette rejoins us, if she has, you know, further discussion she wants to give, she can ask for clarification. But if she wants further discussion, we'll take care of that after so that we can be sure to get through the technical matters.

MS. KROLCZYK: This is Laura Krolczyk from Senator Gillibrand's office. Ben Rosenbaum had to drop off so I'm taking his place.

MR. KATZ: All right. I'm sorry. I couldn't hear. Who is this?

MS. KROLCZYK: I'm Laura Krolczyk from Senator Gillibrand's office.

MR. KATZ: Laura Krolczyk?

MS. KROLCZYK: Yes.

MR. KATZ: Okay. Can you spell your last name?

MS. KROLCZYK: K-R-O-L-C-Z-Y-K.

MR. KATZ: Oh, I'm sorry, I'm sorry to make you do this. But can you repeat that again?

MS. KROLCZYK: I'm on a cell phone. You're probably not going to be able to hear me.

MR. KATZ: But give it another whirl.

MS. KROLCZYK: K-R-O-L-C as in cat-Z as in zebra-Y-K.

MR. KATZ: Y-K, great. And that's from Senator --

MS. KROLCZYK: Gillibrand.

MR. KATZ: Gillibrand. Okay. Thank you very much. Sorry about the tortuous repeat. Okay.

CHAIR ROESSLER: So the next part then, Chris, will be your resolving Findings 4 and 6, I think, or is it 4 through 6 on the SC&A.

MR. CRAWFORD: It's supposed to be 4 and --

CHAIR ROESSLER: It says 4 and -- okay.

MR. CRAWFORD: We're now dealing with the particulates suspended in the air during the residual period. We have a somewhat similar situation in that we have a 1976, `78, whatever it is, I've seen both, measurement of the particulates suspended in the air at that time. But we don't have anything in between that and the decontamination period in the early `50s.

The way we approached it was to take the existing measurement and apply GSD --

I believe -- was it -- I thought it was 2.73, but I see a 95th percentile of 2.9 -- assume that we'd gotten the 95th percentile level.

The other way we came at it is we did some calculations. Knowing approximately how much uranium and progeny were embedded in the walls and floors, we applied a resuspension factor and did a calculation as to what we might have seen as of 1978. And we find out that that under-predicted, that is the calculated quantity was actually less than the measured quantity at that time.

The question then is how to apply the knowledge we have. Now the TBD, which I -- we have to distinguish whether we are working with the evaluation report for the SEC -- petition, which is primarily a reasonable bounding problem. We also had the TBD to consider.

Well, the TBD uses a GSD of five on the projected air concentrations, that is for inhalation and for ingestion. That

corresponds to a factor of 14 times the given concentration. So we have a very wide range in values that we are already taking into account because of the uncertainty in the data that we have. We feel that is very claimant-favorable because these are actually -- this wide range is taken into account by the IREP program through its thousands of repetitions.

We also -- I'm not going to get into it exactly yet, but we also have to consider the effect of remodeling or restructuring inside the various buildings during the `60s, which Antoinette has already referred to. But right now I'd like to just look at the general case without remodeling.

So we are saying basically that we can limit the exposure to airborne radionuclides and providing a method to do it. And with a high degree of uncertainty, which is generally a claimant-favorable assumption.

Let me go on with the problem with the remodeling. We don't have any data

whatsoever for any remodeling done at any time, particularly witness statements that suggested there was a lot of remodeling done in the various buildings, not just one of them, during the `60s. The way we handled that was to take the decontamination levels from the vacuuming operation and say that they were reasonably representative of what a random reconstruction effort might stir up, random in the sense that they weren't seeking out radioactive material embedded in the walls. They were working to some plan which had nothing to do with the residual radioactivity.

We applied that to all people in all buildings at all times during the `60s. Now the only exception to that -- Jim, correct me if I'm wrong -- but I believe is if we know that there was a laboratory worker who was confined to Building 14, they will not get this particular dose. But for anyone else, we really can't tell you which buildings they

worked in. But that's not unusual. That's pretty standard.

So we just apply it to everyone for the whole ten-year period. We feel that is claimant-favorable for several reasons, one of which it applies to everyone. And, of course, probably not everyone was always in a construction zone the whole ten years; two, it is very unlikely, in fact, that there was continuous construction for the ten-year period. It is almost bound to be intermittent. Just from our real-life experience, we can see that.

We could do another data recovery effort. I mean nobody ever thought to do it because it was totally irrelevant to any radionuclides present. But we could go look for building permits if we had to try to put some further bounds on this. But what we're proposing right now is we just do it for the entire period of the `60s.

DR. NETON: Chris, could you

clarify for me, at least, the vacuuming, the biweekly vacuuming, is a good surrogate or -- I don't want to use that word -- a good measure of the exposure?

MR. CRAWFORD: I think basically it had to do with the difference in the operation. One operation is the physical removal of the decontaminants working only in the parts of the building where the decontaminants are -- or the contaminants, I'm sorry, are most concentrated and using pretty heavy duty methods.

Another way to look at this is if you have a contaminated area floor, you are going to chip or hammer that entire area of the decontamination. And for Antoinette's benefit if she's with us --

MS. BONSIGNORE: I am.

MR. CRAWFORD: Great. The contaminants are contained in a very thin layer on top of the concrete of the floor or the wall, an eighth to a quarter inch thick at

most. So it wouldn't matter if you drilled a hole entirely through the floor or through the wall, it doesn't really add much. It is that top layer that is going to be resuspending the contaminants.

We think that any -- how can I say it -- any chipping or jackhammering, it would be a matter of chance whether it was in a heavily contaminated area. It could be. But it would be a matter of chance.

And, therefore, it would be unlikely to achieve the levels of contaminants in the air during the decontamination period when they were only working on such contaminated areas.

So, Jim, that's basically a way to depict it. Now vacuuming is not an innocuous resuspension factor either. But it is a fairly healthy dose.

MS. BONSIGNORE: I'd just like to briefly -- and I know I've been asked to limit my comments for Dr. Lockey's schedule -- but I

just have to, again, renew my objection here to -- and I'm reading directly from Mr. Crawford's report -- that breathing zones and sandblasting, pneumatic hammering, and flame cleaning was eliminated from consideration. I fail to understand how you can do that with all the documentation that I provided, workers' statements. I have additional documentation that I plan to submit to the Work Group, including testimony from a Workers' Compensation Board hearing in 1996 that detailed what was going on in these facilities -- in these buildings, particularly Building 30.

I fail to understand how you can eliminate those activities from consideration and still consider this a claimant-favorable evaluation of what was going on in the building.

MR. CRAWFORD: Well, some of the activities probably didn't happen. Sandblasting, for instance, I don't know if

you have evidence of that.

MS. BONSIGNORE: I do.

MR. CRAWFORD: Secondly, breathing-zone samples would not be very appropriate for ordinary occupants in the building. In other words, it is one thing if you are the guy doing the jackhammering or the guy doing the sandblasting. Quite another if you are a worker, a warehouse worker in the building while such work is going on. You are not exposed at the same level. Your breathing zone isn't the breathing zone of the operator of the equipment.

MS. BONSIGNORE: But, again, I have to again state you have absolutely no data to account for anything that was going on during that time period. You have no air data. You have no bioassay data for anything that people could have been inhaling or ingesting in terms of radionuclide particulates. And, again, I want to stress this particularly to the Board members, I don't believe this is a claimant-

favorable analysis.

MR. CRAWFORD: This, of course, is the general case for residual periods, especially for AWE sites. This one is a little complicated because it was declared a DOE site for some reason. And it still has a residual period.

But at any rate, the point being once these sites are released back to the private corporation or building owner, there was no reason to have any measurement. So this is common to all such sites. It is not a Linde problem that there were no measurements done with personal dosimetry or urinalyses, and that sort of thing.

MS. BONSIGNORE: I understand that. But still the fact remains you don't have the data. So to say that this is a claimant-favorable analysis and you have an accurate depiction of what people were exposed to during that time period, particularly in Building 30, again, you know, someone help me

out here because I don't understand how this is possibly in any realm of possibility claimant-favorable.

DR. NETON: Let me ask a couple of questions then maybe -- I think -- this is Jim Neton. We have a fair amount of monitoring data that occurred during the D&D era. Is that not right, Chris?

MR. CRAWFORD: Yes.

DR. NETON: It's fairly good data when the facilities were fairly heavily contaminated. So I think at an upper bound, it would be hard to argue against the fact that the exposures in the residual period were any higher than that because people are actively -- like Chris said -- actively focused on eliminating the contamination that occurred primarily in the top quarter inch or so or less of the contaminated surfaces.

So these people were definitely in a much higher potential for exposure than after it had been cleaned up. So with that as

a starting point then, I think there is a starting point for an upper bound, to some degree.

And then the debate then turns into how close the people were in the residual period to that upper bound. If it should be equal to that or if it should be some fraction of that. And I think that's sort of the issue under consideration right now.

So I think there is -- in some way, there's very little debate, in my opinion, that the upper bound is represented by the D&D operation. And then whether it is vacuum cleaning or something else, I think is probably open for discussion.

MS. BONSIGNORE: I just want to make sure that the statements that have been provided by workers are actually being considered here. And not -- because they feel that the statements that they have made -- they were the people that were in these buildings, they were the eyewitnesses to what

was happening. They don't want -- they want to know that they are not being ignored and that their recollection of what happened during that time period is not being dismissed.

CHAIR ROESSLER: Perhaps the way to go on this particular issue, and it seems that maybe -- have you combined two --

MR. CRAWFORD: Yes.

CHAIR ROESSLER: -- different parts? You were talking -- we started talking about Findings 4 and 6. And then went into Findings 7 and 8. Maybe if we resolve or discuss 7 and 8, we will have resolved 4 and 6, also.

But I think we should do, at this point, since we're discussing the validity of this report and since SC&A is looking after -- not only to make sure that we have considered all the petitioners' comments but looking at the science here -- is this an appropriate time for SC&A to comment on Chris's report?

Are you prepared to do that?

MEMBER GIBSON: Gen, this is Mike.

CHAIR ROESSLER: Yes, Mike.

MEMBER GIBSON: You know I just have to say that, you know, again, you know, I have to side with Antoinette. This is just -- there seems to be a lack of data. And we're relying on what I heard, you know, some people say assumptions in their scientific data. And I just -- I'm just -- I'm having a hard time with that. I just wanted to make that comment.

CHAIR ROESSLER: Yes, I think -- I understand, Mike, your concern. I think at this point what we need to do is make sure that those of us who are looking at the scientific evaluation have our concerns addressed. And from that point of view personally anyway, I would like to have SC&A's response to the way that OCAS has decided that they can handle this.

DR. OSTROW: Well, I'd like, if we

may, Chris, to go a little bit further before we comment on -- you were sort of interrupted -- how did you actually determine the levels that you used for the residual period? You sort of set the background here that you looked at the D&D period.

Then you looked later when you were talking about the residual period, you assumed vacuum cleaning operations. So maybe if you go a little bit further, you know, what did you do with the actual numbers?

MR. CRAWFORD: Okay. This is difficult. We're also, in essence, talking about two different things here. One is the evaluation report. But we originally started this process also talking about the TBD, which is why I keep referring to the two things. And there are different numbers in both of those documents.

That's okay because in the Evaluation Report, we're trying to say, yes, we can bound the dose. And in the TBD, we're

trying to provide a method for reconstructing the dose. Two quite different objectives.

Given that, I'm basically not prepared to tell you how the numbers came about in the TBD itself. We can see what they are, Table 6-2, Steve.

DR. OSTROW: Yes.

MR. CRAWFORD: And we can see that they have a very high GSD, indicating a large degree of uncertainty. And they were undoubtedly based on measurements during the decontamination period, which is what we had to go on. There are no measurements after that time.

MEMBER GIBSON: No. Keep going. I'm just watching.

MR. CRAWFORD: Then in the Evaluation Report, we tried to show that the reading that we have from the `76/`78 period is reasonably related to a calculation based on the embedded radionuclides present in the building after the cleanup. That is, we tried

to, using the resuspension factor, we calculate what we might have expected to see in the air. And we see that the measured amount is actually somewhat higher than that.

What happened in between, now this is where TIB-0070 may have to come into play at some point, but I would say that that is a question that is more dose reconstruction-related for us rather than Evaluation Report for SEC-107-related.

MEMBER GIBSON: I don't want to interrupt you. To me, when I look at these questions, we like the fundamental approach that TIB-0070 has adopted. It is a strategy for coming at a class of problems. The strategy is very simple. I mean, you have six steps in there, but one of the steps we especially like. The other steps we're not so happy with, but one of the steps we like, the step being this.

I'll say it again. You have an operations period. You finish operations.

You may be doing some D&D, and you're taking plenty of air samples. There's always lots of data -- usually, not always, usually lots of data where you are pulling air samples. You may have dpm per cubic meter, gross alpha, you may have some alpha-specific information. But you've got air sampling data. You may even have some breathing zone data.

So you've got what I call the beginning of the residual period. In other words, whatever was going on at the end of operations, you could say well, let's assume that's the beginning of the residual period. Not bad. In other words, I would say that is certainly a philosophy that would peg -- place an upper bound on what you might expect to see at the beginning of a residual period.

I realize this site is a little more complicated than that. All right. So pegging -- now you have a distribution of numbers. You pick a number that you believe to be reasonable. In my mind, picking the

geometric mean and standard deviation, not the 95th percentile, in the beginning is a reasonable place to start.

I'm not saying you should be picking a 95th percentile at the beginning of the period. Again, these are commonsense arguments because what we're really asking is well, we're not interested in what the concentration was during operations. We are interested in what it is during the residual period.

So by picking the geometric mean and standard deviation of the airborne dust loading at the end of operations and assigning that as if it were the conditions at the beginning of residual sounds pretty good to me. Common sense argument. You're really putting it up there.

Then the residual period begins. And assuming there is nothing new being added, that's going to start to come down. Now, we do have a problem with your slope. You have a

generic one-percent-per-day slope as one of the strategies you could use. Okay. How does it drop? We don't like that.

But you have another approach. I said, well, listen, if I know the upper numbers here -- and we know 30 years passes, okay -- and then you make some more airborne measurements when the FUSRAP program starts, maybe before you actually start to rip anything up. In other words, these are fairly quiescent. And you have no data.

But you do have data at the back end of the process before you started your FUSRAP program. It's usually the characterization stage. Before you go into a FUSRAP program, you first go into a characterization phase to find out what do we have here before we go in and rip things up and start to clean up.

So you've pegged the front end, we've pegged the back end. And one could say that well, this certainly represents the upper

end of what the beginning of the residual period would look like. And this certainly represents some reasonable representation of what it was like at the back end of the residual period, assuming nothing crazy happened in between.

So the way your approach or philosophy is, well, we'll draw a line. And that gives us the concentration in the air. Let's say dpm per liter, gross alpha. It starts here, goes here. We're going to place our people in there and say that's what they are breathing, okay? And that basic approach makes sense in my mind.

Now, so if you started -- and I believe thatis what you did -- you know, I believe you did, and correct me if I'm wrong, you started on the front end in the place where we have consistently said that's a good place to start, your residual period. Now, but there are two problems with the rest of the story in my mind.

Problem number one is on the back end, you said, well, what's at the back end? And you used a resuspension factor approach at the back end, which used -- in other words, it's not going to add air samples. Let's say you had lots and lots of air samples. What I'm understanding you did is that you had some estimate of what the activity was on surfaces, and then you applied a resuspension factor of ten to the minus six per meter to what is on the surfaces.

Now, we are on the record. We do not like ten to the minus six resuspension factor. It is too low. We think ten to the minus five, preferably even ten to the minus four is a better resuspension factor.

If you are going to start with activity on surfaces as how we are going to predict what is in the air, and a resuspension factor is just an empirical number. It simply says if someone went out there and measured, they measured how much radioactivity is on the

surface and how much radioactivity is in the air. It is basically picocuries per liter or picocuries per meter squared.

So the units -- well, picocurie per cubic meter or picocurie per meter squared, it is per meter. And the empirical data show ten to the minus six, as a measure of what becomes airborne, is a good number if the site has been thoroughly cleaned up and, you know, you don't really have very much -- the NRC published widely on this. We have just lots and lots of literature.

There are times when ten to the minus six is a good number. But you have to be very careful. The data shows that when you have an area that is dusty, contaminated, and maybe some residual radioactivity on surfaces, people might be walking around, ten to the minus five and even ten to the minus four is probably a better resuspension factor.

So what I'm getting at is if you have lots of good air sampling data --

DR. OSTROW: John, John?

DR. MAURO: Yes.

DR. OSTROW: Could I just break in?

DR. MAURO: Sure, yes.

DR. OSTROW: Hold the fort.

DR. MAURO: Okay.

DR. OSTROW: Just on this resuspension factor, just a little bit of inconsistency. NIOSH put out a report, a short one, on September 2nd that was supporting our -- just before we had our last Work Group meeting in Cincinnati. You had like a really short report, just a couple of pages, you know, answering our findings.

And in that, unless you had a typo, you had a resuspension factor of ten to the minus six in that, responding to the same question. So I don't know, did you change your mind by a factor of ten? Or did you have a typo?

MR. CRAWFORD: Not that I am aware of. I thought we had used e to the minus six

all the way through.

DR. OSTROW: No, you had --

MR. CRAWFORD: It's pretty much a textbook --

DR. OSTROW: No, no, I know. But --

DR. NETON: But the fact is that we didn't use that value in our calculations anyway.

MR. CRAWFORD: That's the other point.

DR. NETON: I mean so it's sort of -- not irrelevant, but it --

MR. CRAWFORD: We did the calculation to see whether it would give us a surprise one way or the other.

DR. NETON: And it didn't.

MR. CRAWFORD: We didn't use it as --

DR. OSTROW: I understand. I was just a little bit confused whether you deliberately changed it or whether it just,

you know, sort of came out that way.

CHAIR ROESSLER: Can you explain why you didn't use it? You're using it just to --

DR. MAURO: Check.

CHAIR ROESSLER: -- check, yes.

DR. NETON: Some sanity check on the value.

MR. CRAWFORD: In the same way that by showing that the fixed gamma was about the same in 1950 as it was in the `80s, which is why we said probably the radon is related to that and is probably fairly stable. We're saying well, we know what the fixed gamma was in 1950. If we used a resuspension factor and calculated what we thought the air concentration would be, would we be surprised or not compared to the measured value?

Well, it came in below the measured value. So --

CHAIR ROESSLER: So is it just --

MR. CRAWFORD: -- to me, it was not

conclusive. But we didn't use it. We used the measured value.

DR. MAURO: The resuspension factor approach came in below the measured value.

DR. NETON: Well, I don't disagree with you. I mean what if it came out higher? Then we would probably use that.

MR. CRAWFORD: Well, that's why we checked.

DR. MAURO: Me, I would -- if I have real airborne measurement data, a good set of data of gross dpm per cubic meter, I use it. I forget about these. In fact, that's what the rules say. You don't use a model when you have data.

DR. NETON: I don't disagree with you. It's more of a sanity check.

DR. MAURO: And that's fine. And, by the way, those kinds of things are useful for the debate regarding resuspension factors. I would argue that you just made a case why the resuspension factor may not be very good

because there are other places where you do use it. All right? But that's an aside.

CHAIR ROESSLER: So am I clear on this? At the beginning of this period you are talking about there is real data?

MR. CRAWFORD: Yes.

CHAIR ROESSLER: And then John talks about a slope or some way of estimating what the values would be in between. And at the end it appears you have measured data.

MR. CRAWFORD: Yes.

CHAIR ROESSLER: What we're really talking about is the extrapolation between dates. What is the reasonable value in between? Okay.

MEMBER LOCKEY: We have -- the real data in `78 was your document resuspension.

MR. CRAWFORD: The `78 data was measured data at the site by the FUSRAP people. That was airborne measured --

DR. MAURO: Before they started to rip up anything --

MR. CRAWFORD: -- general area.

DR. MAURO: -- before they started the FUSRAP operations.

MR. CRAWFORD: That's correct.

DR. MAURO: Okay. That's a good time to take it. You wouldn't want to take it during because during you are going to be stirring up radioactivity.

MR. CRAWFORD: And, in fact, the initial data that we have was basically -- my understanding it was during decon. I think we'd want to use the, for instance, the general air samples as being representative even during decon. But general air rather --

DR. MAURO: Yes, the breathing zone -- I mean we've been hung up on breathing zone for a long time. And there is a very good reason for it. When you are in operational mode, there is lots of evidence that shows that if you are working at a glove box or working at a unit where you are grinding metal or drilling something, an operation, and

that's what generating the aerosol, that particular thing you are doing, well, what your nose is breathing has no relationship to the air sampler that is sitting over there.

And we all know that. ICRP 75 talks about that. You can be off by a factor of ten- to 20-fold.

But in a D&D operation, it's not the same. You know everything is being -- it's a dusty place. So I'm not that concerned when it comes to -- when we're dealing with a setting where the airborne activity is sort of ubiquitous. If you have general air samples that capture what is in the air in that room while these operations are going on, I'm not as concerned about breathing -- breathing zones always vary. You know just like bioassay data always vary.

But I'm more concerned when I hear there is an operation that was going on and you don't have breathing zone. So, again, you got front-end data, collection of data, in my

opinion, using the geometric mean and the standard deviation of a good set of dpm per cubic meter alpha activity on the front end, and you have a good set of dpm per cubic meter gross alpha at the back end before -- or during is even better.

And I'd like to know how different they are, by the way. Did they drop by orders of magnitude between the front end and the back end?

MR. CRAWFORD: Oh, yes.

DR. MAURO: They dropped by orders of magnitude.

DR. NETON: Yes, because these were actual samples taken during D&D operations.

DR. MAURO: Okay, so you really pegged it up high on the front end.

DR. NETON: Very high.

DR. MAURO: Okay. And on the back end, you've got some other numbers that are lower. See, now in my mind, during that -- as long as there wasn't anything unusual going on

in between, you know, then this is a good way to come at this problem.

But there was something going on in between. And this is a little troubling to me. There was this operation where they went in and they apparently renovated, which is a perturbation. And all of a sudden, that perturbates this slope.

CHAIR ROESSLER: Should we then take these two separately? Let's --

DR. MAURO: Let's take them separately. I think we should take them separately.

CHAIR ROESSLER: Yes, the first subject right now are Findings 4 and 6, SC&A's Findings 4 and 6, which would be during this period under the -- what you call operation, where there were no --

DR. MAURO: Nothing special.

CHAIR ROESSLER: -- nothing special. So let's try and deal with that one and then go on to the remodeling period.

MEMBER BEACH: And then I have a question, too, if I could ask one.

CHAIR ROESSLER: Sure --

MEMBER BEACH: This is Josie.

CHAIR ROESSLER: -- Josie.

MEMBER BEACH: I just -- you're talking about data, the front-end data. I believe you mentioned the year `78 and then back-end data. Can you just describe briefly what data you actually have? What samples?

MR. CRAWFORD: What data we have?

MEMBER BEACH: Yes. You said front-end data, samples in `78.

MR. CRAWFORD: Right. In the decontamination period, roughly 1950 --

MEMBER BEACH: Okay.

MR. CRAWFORD: -- that work was done. By the way, Building 30 was decontaminated in about two weeks during 1950. So we're not talking about years and years of this kind of work.

MEMBER BEACH: Right.

MR. CRAWFORD: But that's parenthetical. We have breathing zone samples from breathing zones of the workers who were doing the decontamination. That is the sandblasters, chippers, torch people, and so forth.

We also have general air samples from -- just general air in the building, not right next to the workers who were doing that kind of work.

MEMBER BEACH: So do you have several samples or --

MR. CRAWFORD: We have many samples --

MEMBER BEACH: Many samples.

MR. CRAWFORD: -- during that period. And we also have many surface samples, in fact, thousands of them for external contamination embedded in the concrete. We have before and after readings in thousands of locations.

MEMBER BEACH: Okay. That's --

MR. CRAWFORD: Just to give you an idea, there's a lot of data at that time, during that decontamination. After that though we don't have any data until 1978 when we have an air sample which -- a sample -- I think all three of the prime contaminants, as I recall, uranium, radium, and thorium, and those are the two endpoints we're talking about right now.

MEMBER BEACH: Okay. So --

MR. CRAWFORD: 1951 and 1978.

MEMBER BEACH: -- you have one sample for that time.

MR. CRAWFORD: That's right. It was a general air sample.

MEMBER BEACH: Okay. I wanted to make sure I was clear. That's what I have in front of me also. Thank you.

MS. BONSIGNORE: And if I could just ask just a brief question -- so if I'm correct in what I'm hearing, there is absolutely no bioassay data at the front end

or the back end for this in terms of worker exposure and then in between the two time periods, there is no air data or bioassay data. Am I correct?

MR. CRAWFORD: Basically correct. There was bioassay data, but I believe the last of it was in 1949 during the last Step 3 production step. I do not believe urinalyses were done -- or at least we don't have the data from the decon workers in 1950. There is --

MS. BONSIGNORE: Okay. And am I correct in the idea that in order to have an accurate depiction of what people are inhaling and/or ingesting during any time period that we're talking about, to have a sufficiently accurate depiction of that, you need to have both air data and bioassay data?

MR. CRAWFORD: It would be preferable. But I would say no because even on an active site, there are people who do not get bioassay data taken from them.

MS. BONSIGNORE: You mean during the operational period? During the `40s and `50s at active sites, sometimes bioassays were not conducted?

MR. CRAWFORD: Even today at active sites. If you are a secretary, in other words working in the office in, say, Savannah River while there are active operations going on, you may not be on the bioassay program.

I would say that that -- I picked secretary, it could be any job title, engineer, draftsman. If you're not working in the production area, you won't be bioassayed typically. And that is the case with these workers.

MS. BONSIGNORE: I understand that. But what you are telling me here is you have absolutely no bioassay data as a reference point for any of this analysis.

MR. CRAWFORD: During this period, that's true. During the residual period, absolutely true.

MS. BONSIGNORE: Okay. And you think that you can perform a claimant-favorable evaluation of this entire time period without any bioassay data? Based solely on some breathing zone data and air sampling data from the `50s and from general air sampling from the `80s?

MR. CRAWFORD: Yes. In fact, if we threw out the `78 data and just used the decontamination period data, for instance, it couldn't possibly be worse than that. That's what we're saying. It can't be worse. And most people would have gotten much less.

MS. BONSIGNORE: I don't understand that.

MR. CRAWFORD: What?

MS. BONSIGNORE: I don't understand how you can say that when you don't have bioassay data.

MR. CRAWFORD: We can predict the bioassay data. I mean, there are two ways to work the data. If we know the air sample

data, we can predict the bioassay data. Those two things can check each other. It essentially can run the other way, too. If you have bioassay, you can pretty much tell what people were breathing. And that's what we're basing this on. That's where the scientific basis of this is.

MS. BONSIGNORE: Okay. Well, you know, I'd like to, again, renew my objection here to the fact that there is no bioassay data. And I certainly hope that John and Steve will take a serious look at this issue.

CHAIR ROESSLER: I think what they're doing is looking, Antoinette, in this case of looking at what could the highest possible exposures be, given the data that they have. Again, it is an upper bound. It can't be higher than a certain number.

MS. BONSIGNORE: Yes. I understand that, Gen. But I think -- I find it troubling that all of this analysis is going on with very little -- with no bioassay data. I mean

I think that was one of the major objections that SC&A identified as a deficiency in the 2006 site profile, if I'm correct.

CHAIR ROESSLER: Well, let's let SC&A respond to that. And I think John already had a start on that.

MS. BONSIGNORE: Okay. Thank you.

DR. MAURO: Yes, the preference always is to have bioassay data. When you don't have bioassay data and you have to resort to air sampling data, you have to use it cautiously. And make sure that you are using it in a way that you feel confident.

And, again, this is a judgment call made by people with, you know -- and everyone may see it a little differently -- but the very fact that they would pick air sampling data collected during a D&D operation where the potential for dust loadings are fairly high. And then they are going to assign those numbers to a time period during residual radioactivity where the dust loadings are

expected to be much lower.

You have sort of accounted for the fact, listen, yes, we'd like to have bioassay data, but this is a good way to deal with the fact that you don't have bioassay data and still have a degree of confidence that you are being claimant-favorable.

I look at these things. If the regulation said you can't do dose reconstruction unless you have bioassay data, I would agree with you. But I think the regulations have taken a position where if you don't have bioassay data, you can still get at the problem other ways. And certainly air sampling data is one of the Tier 2 approaches.

But you have to be a little bit more cautious that your air sampling data represents the upper bound. And by taking the approach that they've taken, by using the air data that they have, which would be a time period which would be an upper bound, now SC&A comes down saying that's not bad.

You know you're doing the thing that would reasonably place an upper bound. It's not perfect. You sure would like to have bioassay data. If someone were to ask me what do you think, if they actually had some bioassay data during the residual period, do you think that the bioassay data would confirm that the approach taken is conservative, I would say yes. That's what my expectation would be.

Now I could be wrong. But my health physics judgment is that that approach would place an upper bound. Now, the issue -- so, I mean so I'm comfortable with the strategy by taking that air sampling data during that time period as pegging your upper end.

Now, you know, you want to go with 95th percentile, you want to go with full distribution, you want to go with geometric mean, I would say those were all -- the 95th percentile would be extremely conservative.

But I would not have a great problem with even going with the geometric mean given where and when you collected that data.

Now, if it turns out because of concerns about what happened in between -- now I know we want to stay with this, but --

CHAIR ROESSLER: Yes.

DR. MAURO: -- if you, I mean in theory you could assume it is flat. It's not going down. We're going to stay up at that level. Now one could argue, well, wait a minute, that's not plausible.

And we're going to get into lots of discussions on plausibility in the future. So this is almost like it foretells some of the places where we're -- there are ways of coming at problems such as this one where we go, listen, you know what we'll do, we'll just assign that upper bound for the whole time period, right up until FUSRAP even though we know by the time FUSRAP shows up, it is always a magnitude lower.

But, you know, if push comes to shove because of certain uncertainties and what may have taken place in the in between, just peg it right up there right across the board.

Now someone would say this is not plausible. And that's a whole other conversation. But I think we, the Work Group and the Board as a whole, there are many SECs before us right now where strategies are being adopted to place an upper bound in a way that one could argue it's really not plausible.

And I think there is a lot of discussion that has to be held here. If that's the approach we end up going with -- because it sounds like you really haven't nailed down the exact approach that you are planning on using -- you have a tractable problem.

If everyone agrees that using that upper bound and just make it flat is something that could be done and done within the realm

of what one would consider to be plausible because that would be an upper bound. There's no doubt about it. So that's where we come out.

Now, on the other extreme, the approach of using the data that you have pre-FUSRAP without taking into consideration this perturbation that occurred in between where they were ripping things up -- now I guess we'll get to that -- if there was no perturbation, if there was no special activity going on in between, SC&A's position is that approach works. They are going to be pegging it, upper end value, pegging the lower end value, drawing the line.

We've taken that position on OTIB-0070. And that would be the classic application of OTIB-0070. The fly in the ointment here is what was going on in between that could upset that.

CHAIR ROESSLER: Let's deal with that next.

DR. MAURO: Yes.

CHAIR ROESSLER: But let's hear from Steve then also on this situation where we have nothing special going on in between and the approach of using the high levels, measured data -- using measured data at the beginning and at the end and coming up with an extrapolation in between.

DR. OSTROW: I echo John's opinion here that it is a reasonable approach to take. You have data at the beginning. You have data at the end. Nothing happens in between. The data at the beginning is very conservative data so you can put a reasonable upper bound on the exposures.

DR. MAURO: And this is entirely consistent with our position on OTIB-0070. OTIB-0070 is a very important document. It is one way to come at -- it's the OTIB that is going to be used universally for all residual periods.

And if used properly, taking into

consideration some of the concerns we have, but in this case, it is being used just in the way we said it should be used. So, you know, our position in this matter is very consistent with our position on OTIB-0070.

CHAIR ROESSLER: I think we've gotten to a point where we have thoroughly discussed another section here, this second part. And I actually think we should stop here and perhaps do again what we did before and make a motion, take a vote. And then go into the next part which is evaluating Findings 7 and 8. What do you think, Jim?

MEMBER LOCKEY: I agree.

I have a question, Steve, if taking the highest value we had during D&D, right --

MR. KATZ: Can you hold just one sec? There is a -- I don't know if these people on the phone can hear it --

MEMBER BEACH: I can hear it.

MS. BONSIGNORE: Yes, I can hear it, too.

MR. KATZ: Okay. It went away. Okay. So carry on.

MEMBER LOCKEY: So we take that highest value for, say, 1950, the same question I asked about radon. Is there any demolition -- additional demolition work done on an area-by-area basis up to 1978? Putting in the machine? Tearing out some flooring? Tearing out a wall? Could it exceed?

DR. MAURO: Yes. That could upset the apple cart. Yes, that's what the next step is. This is why my -- in other words -- oh, could it exceed the upper end value?

MEMBER LOCKEY: Right, upper end?

DR. MAURO: I tell you, I find that hard -- I mean, you know --

DR. NETON: Let me interject.

DR. MAURO: Okay.

DR. NETON: The upper end value in the D&D was while the contamination was still there, being remediated. And so after that point, you have, like, 4,600 contact surface

measurements to demonstrate what the contamination levels were brought down to.

And so in my opinion, there is no conceivable way that once you have taken away all the contamination and documented that it is available for free release under the requirements of that time that you could generate a higher aerosol than someone, for instance, sandblasting an extremely highly contaminated surface is my feeling.

CHAIR ROESSLER: Well, I think, to answer your question, even with the remodeling, which we are going to discuss, it appears that the numbers could not be higher than --

DR. MAURO: Yes, I think the question you were really asking is is it possible that okay, the front ends, 1950, you got some measurements during D&D -- okay, is it possible that 20 years later, or whatever, 30 years later, they start to fool around, they're digging things up, is it possible it

could actually get higher than it was then, and it is very unlikely.

MEMBER LOCKEY: That was the question I was asking.

DR. MAURO: That was the question, okay.

MEMBER LOCKEY: So the 1950 value is sort of a -- take the conservative approach, picked the highest value, did the standard mean, standard deviation or geometric mean, standard deviation. Okay. That was the question I was asking. All right.

CHAIR ROESSLER: Mike and Josie, do you have any questions on this part? Mike and Josie?

MEMBER BEACH: This is Josie. I don't, but I have to say I disagree with the discussion. And the same basis is lack of data.

CHAIR ROESSLER: Mike?

MEMBER GIBSON: And this is Mike. I agree with Josie.

CHAIR ROESSLER: Well, then I'll go ahead and make -- to move things along -- make a motion that on this part, the Work Group's conclusion is based primarily on SC&A's evaluation of this is that the strategy of using air sampling data can put an upper bound on this in the way of using OTIB-0070.

And so that's my motion, that the doses can be reconstructed.

MEMBER LOCKEY: I second.

CHAIR ROESSLER: And then is there any further discussion within the Work Group?

I think Josie and Mike maybe have already -- but go ahead, Mike.

MEMBER GIBSON: Yes, this is Mike. You know I'd just like to say that SC&A is our contractor to give us evaluations. I just want to go on the record to say I disagree with them on this issue.

CHAIR ROESSLER: Okay. Well, then let's take a vote. All in favor of the motion, say aye.

(Chorus of ayes.)

CHAIR ROESSLER: All opposed?

MEMBER BEACH: Aye, as opposed.

CHAIR ROESSLER: Okay.

MEMBER GIBSON: Nay.

MEMBER BEACH: Nay.

CHAIR ROESSLER: All right. Then I think we have that on the record, and we'll go on to the next step.

MR. CRAWFORD: The next step, I believe, is the remodeling --

CHAIR ROESSLER: Yes.

MR. CRAWFORD: -- period.

CHAIR ROESSLER: Yes.

MR. CRAWFORD: I believe that the original proposal was that we use a reduction factor of eight. That is, we took the supposed embedded contamination levels that were measured pre-decon, reduced it by a factor of eight, and then used that as a basis to say how much might have been resuspended.

In -- Joe Guido is the author of

this section -- in his latest evaluation, he proposes using a reduction factor of only two, which is a sizable difference, and apply that to what happened during any remodeling effort, which we are defining so far as being the 1960s.

So this results in a heightened dose compared to the rest of the residual period, but not quite as high as the initial decontamination period, which we think is a reasonable result.

DR. OSTROW: Chris, go over it again maybe, it wasn't quite clear to me, but I've read it a lot of times, what is the reduction factor? What are you reducing? You know you had eight -- a factor of eight, originally. Now you went down to a factor of two. What are you reducing to what?

(Laughter.)

MR. CRAWFORD: It's the embedded uranium progeny, basically.

DR. NETON: The dose rate.

MR. CRAWFORD: Reduced, that's right. And then from that, we assume that it has a like effect on the likely air concentration. So it's quite a bit heightened over the endpoint, the `78 endpoint. But it is not as high as the 1950 decon rate. About half as high in other words.

DR. MAURO: We did have a problem with that factor of eight in our original report.

MR. CRAWFORD: Yes.

DR. NETON: You see, a factor of two seems to be fairly conservative or claimant-favorable because if you -- first of all, when you -- as Chris mentioned earlier -- when you are doing active D&D, you are concentrating on the source term itself. You are right -- you are identifying the hottest areas and trying to remove them. And you are going to generate airborne based on that.

When you are doing remodeling operations, you are not. You are -- you may

inadvertently run across these pockets and such, but like Chris's example, I liken it to if you are drilling a hole in a floor or concrete, you are not scabbling the entire 100-meter square floor. You are drilling a half-inch diameter hole through it.

So, therefore, the ability to release contamination is minimal compared to the active D&D. Basically, the relative contact dose rates, it seems to be a reasonable approximation of how much contamination was available to be resuspended, yet assuming that they were doing those sort of aggressive operations such as scabbling or other types of things that they did.

DR. OSTROW: Now SC&A originally had a problem with the factor of eight. We looked at the same data that you guys were looking at and thought a factor of eight was too large. We couldn't really see that.

We saw there was some difference, but it didn't look like eight. Now if you

went down to a factor of two, that seems to be more reasonable.

MEMBER LOCKEY: Weighted average?

MR. KATZ: No. I'm sorry -- I shouldn't really interject, except just sitting here, I'm just missing something. Can you explain what the basis is for going from eight to two? I mean how did you get to two?

MR. CRAWFORD: It's a tricky calculation in the sense that of the 4,600 measurements, the vast majority of those measurements, in the beginning, were below the level of concern. You might say they were zero. They weren't zero, but they were below the measurement level they were looking at, okay?

The contamination level, which is highly concentrated in certain areas of the building, under a certain machine, or, you know, at the loading dock, wherever, so it depends on how you look at the zero values -- what you are going to say the average is. Jim

is referring to the weighted average.

Joe's first pass at it, he said it looked like they got about seven-eighths of the total mass, you might say, of the contaminants they were looking for. He went back and looked at it again. And he probably left out the zero values and said, well, it would be more claimant-favorable, we'll say they only got half of the contaminants out instead of seven-eighths.

So basically we were responding to SC&A's objection that, well, a factor of eight is too high. So we're saying, well, okay, let's go for a factor of two.

DR. MAURO: I seem to remember, and, Steve, remind me if I'm right, that the eight -- there were some measurements made before D&D at one location where you were getting positive hits and then some other measurements made at some other location after D&D, and there was a factor of eight there.

So there were two different

locations that there was no reason to believe that the ratio between what was observed before over here and after over there is any good measure of what the overall effectiveness of D&D was. So we found that strategy as being unconvincing.

And I'm not sure whether we -- you know, so now, Steve, I have to apologize. I didn't look at this part of the analysis on how the factor of two, you know, is now being adopted and how you came to the factor of two.

I think I remember how you came to the factor of eight. We had a real problem with that.

MR. CRAWFORD: Right. We do have a comparison on -- Steve, this is the -- I believe it is the Heatherton document, 1950.

DR. OSTROW: Yes.

MR. CRAWFORD: I can get the SRDB. On page six of that document, Table 1 --

CHAIR ROESSLER: What -- where are you? Are you on your document?

MR. CRAWFORD: No, this is offline from that discussion a little bit ago.

CHAIR ROESSLER: Oh, okay.

MR. CRAWFORD: I want to give Steve and John an idea of where we're taking our data from.

These are comparable areas. There is one place here, for instance, the comp room, whatever that is, for some reason they don't have certain readings. But you can see most of the time they have readings in the same area pre- and post.

DR. MAURO: Before you worked in the more area, if I remember, you went and looked at the more area in one place and then someplace else in another area. And that's where you got the eight. I remember that work.

MR. CRAWFORD: Right.

DR. MAURO: Now you're saying --

MR. SHARFI: John?

DR. MAURO: Yes?

MR. SHARFI: This is Mutty. The factor of eight originally occurred from when they took the highest value pre-decon compared to the highest value post-decon, which were from different areas.

DR. MAURO: Okay.

MR. SHARFI: The change in the highest value was a factor of eight.

DR. MAURO: Oh, okay. I see. So that was a way to try to get a handle on it. I know we were uncomfortable with that because --

MR. SHARFI: You know, I think that was done by the original contractor when they did the work. They claimed there a reduction rate of a factor of eight, which is what we just used based on what their original analysis was.

Now when Joe did an analysis of all the data, he calculated a weighted average of contamination pre- and post-decon. And then came up -- based on a weighted average, it was

a factor of two.

MR. KATZ: Okay. Thank you.

DR. MAURO: That's a great answer. I appreciate it. And that strategy, coming up with a weighted average where you have many locations, where you look at each location and compare location by location, before and after, that's what we were looking for.

I can't say that we can say that is the right number. But that approach is the right one.

Steve, did we have anyone, you know, go through those numbers and run them?

DR. OSTROW: We did, by eye. We didn't actually do the calculations.

DR. MAURO: We didn't go back to the original data and go check and say yes, it look like it's --

DR. OSTROW: Well, we did look at the original data.

DR. MAURO: Oh, you did?

DR. OSTROW: Yes, but we didn't

actually run through a whole calculation like they did. It just looked, you know, a factor of two looked sort of reasonable. I mean it's -- how much less are you going to make it?

DR. NETON: And when you think about this, you are applying this factor of two to the geometric mean, right, of all the values, which were presumably driven by these higher -- more highly contaminated areas, which were apparently reduced by up to a factor of eight.

DR. OSTROW: Right.

DR. NETON: I mean, your efficacy of contamination reduction goes down as you get closer and closer to background. And so there is some real conservatism built into that calculation.

DR. MAURO: I mean, you know, because I didn't study all the numbers, but there is a gratuitous sense you have. Okay, they went through -- what you are really saying is they went through a decon operation

and you are saying, in effect, it was only minimally effective in getting activity down. You know, you got a factor of two out of it.

In any decon operation, you would expect a lot better than that. But they are only taking credit for a factor of two. I mean that's the extent to which I could comment on this at this time.

DR. OSTROW: Well, I think the point is, and NIOSH brought it up, the contamination wasn't uniformly spread out over everything. You had certain areas, you know, under a particular machine, in this particular piece of the floor where somebody had spilled something, those were high. And they probably did a good job of decontaminating those particular areas, you know.

But if you average over the whole thing, because a lot of it wasn't particularly contaminated, if it is not particularly contaminated, you can't reduce the contamination. So taking the geometric mean

over all these thousands of measurements over the whole place, there, a factor of two is reasonable.

DR. MAURO: I mean it sounds like I'm really leaning towards NIOSH, but the common sense argument is that, you know, you go into a decon operation, you are going to go find a place that are the screamers, the hot areas, we're going to get rid of that.

And yes, you might miss a lot of the low areas that may be a borderline of even detectable. So then you say okay, if I had x curies sitting in this building before decon, how many -- in fact, you can probably go into the literature and there is tons of literature on this -- how many curies do you have in the building after decon?

Well, I can tell you one thing for sure, there is no doubt the number of curies at every decon operation did better than a factor of two. I'll tell you that right now, but you're only taking credit for a factor of

two.

So I mean, you know, on first blush, looking at this and what I'm hearing, it certainly sounds reasonable. That's all I can say.

And, Steve, you looked at it?

DR. OSTROW: Yes. It sounds reasonable. And the argument is plausible. And the question is whether you can calculate the exact number. And the answer is no, you can't. But can you make a reasonable bounding calculation, then yes.

DR. MAURO: And, again, what I'm hearing is -- if you wanted to really drive it, you don't take any credit for any, as if decon didn't do anything. Then you're really putting an upper bound. Now that would be unplausible.

So we're stuck between a rock and a hard place, you know, so --

CHAIR ROESSLER: So would you explain now when you talk about taking -- you

know, using this factor of two, how that applies so that it covers this remodeling period or these special things that were going on during the period. I think that's what we're focusing on.

I think you understand what you are talking about. But for everybody else who is listening, I think we need to know -- to focus on how this suggested calculation takes care of any questions with regard to the remodeling that took place. Isn't that what we're dealing with?

DR. MAURO: I think it is. And I will tell you how I understand it, and you tell me if I understand it right, you could have just gone flat from the 1950s right across. But you decided not to.

During the remodeling period, rather than going flat, you went down by a factor of two. In other words, so it is almost like this, there was no modeling during that period, it went from here to here, a

straight line. And you're okay with that.

However, right in here you've got a remodeling period. What are you going to do there? Because with one straight line, you know, you are going to be low over here. But no, no, no, we realize that something happened over here. And what they did is they raised it. But they didn't raise it all the way up. They raised it only half way up.

CHAIR ROESSLER: So during that period of time, they raised it half the way up.

DR. MAURO: Right.

CHAIR ROESSLER: And you feel like that is a reasonable upper bound for that period of time?

DR. MAURO: Yes.

CHAIR ROESSLER: Okay.

MR. KATZ: So that was Antoinette's question. What do I say to the person who was jackhammering somewhere in that middle period? And John's answering, that person

jackhammering would get half the level of a person who was actually doing the D&D when all the contamination was --

DR. MAURO: Was still there.

MR. KATZ: -- there and jackhammering.

DR. MAURO: Bingo. I mean there is your common sense argument.

MR. CRAWFORD: Not only that but if you weren't jackhammering, you also got it.

MR. KATZ: No, no, jackhammering is just one example that Antoinette threw out of many activities that were underway.

DR. MAURO: You know I'm the first one, you know, to me I look at these things pretty simply in the end. I try to get it down to the common sense argument. Does it make sense? And this makes sense to me.

Now if there are aspects to it -- for example, the fact that we don't have bioassay data, the fact that we don't have a lot of air sampling data, you know, yes, I'd

like to have that. But in the end, is what's being done a reasonable way to come at the problem when you lack the data, and really this goes to the heart of the philosophy of the statute and the regulation.

There are so many times when you don't have adequate data. The question is, are you using the available data in a way that there is a level of confidence that you could reconstruct the doses with sufficient accuracy and plausible and et cetera, et cetera, and that's, unfortunately, very much a judgment call.

In the end, in the end, you know, all the number crunching in the world, you know, and if your test, if your personal test is no, listen, I'm not happy unless I see lots of bioassay data, lots of breathing zone data, well, then, this doesn't pass that test.

DR. NETON: There wouldn't be much of the dose reconstruction either. But it wouldn't be required. If you had all the data

--

DR. MAURO: If you had the data, you wouldn't need --

DR. NETON: -- you wouldn't call it a dose reconstruction.

DR. MAURO: Yes. Then you could do the dose reconstruction.

MS. BONSIGNORE: I'd just like to add a question here. The reduction factor of two for the remodeling period that is being proposed here from NIOSH, that is only bearing in mind vacuum cleaning data? Am I correct?

MR. CRAWFORD: I believe that is correct.

MS. BONSIGNORE: Okay. So I'm going to have to object to that. And I understand that SC&A thinks that this is reasonable and that NIOSH thinks this is reasonable.

But I'll tell you straight out the workers who are looking at this kind of information feel that their testimony, their

affidavits, their statements from people who were there, who actually saw what was going on, is being ignored.

DR. NETON: We can revisit this document.

DR. MAURO: Could you tell us a little more about it? Because, you know, I guess --

DR. NETON: That's why I asked that question earlier. I think after hearing some of these other discussions, I think that possibly we need to rethink the use of the vacuuming data as the middle value for distribution of exposures during the renovation period.

MS. BONSIGNORE: And to that point, I do have a number of other documents that I would like to submit to the Working Group, testimony that is -- consistently shows what I have been discussing about what was actually happening in these buildings during the remodeling period.

And, I mean, you know, this is a housekeeping detail. But just to let me know if I should just send that to everybody in the Working Group or how I should handle that situation.

DR. NETON: I think you should send it at least to the Working Group and NIOSH in particular. We'd certainly like to be able to see --

MR. KATZ: If you send -- if you don't want to -- you have this electronically, or you have this in hard copy?

MS. BONSIGNORE: I have it electronically so it is not a problem to just send it to everybody.

MR. KATZ: Yes. So you are welcome to send it to the Work Group as well as to OCAS -- to the -- but anyway, wherever you send it, it will get distributed to everybody involved, including SC&A and OCAS.

DR. NETON: This doesn't necessarily include Privacy Act information,

does it? Protected information?

MS. BONSIGNORE: There's nothing in there that -- it's the workers' names, that's pretty much it. But that's the same information that would have been -- that I have already provided in prior affidavits.

MR. KATZ: It's okay, Antoinette. I mean you can even just send it to me if you don't want to bother with everyone, and I will distribute it to all parties. Or you could send it to the Work Group and me. Everyone just should note in the Work Group that this includes Privacy Act information. So they all know to take proper precautions with people's names and so on with that Privacy Act protected information, Antoinette.

But go ahead, send it to the Work Group. You can send it to me, too. We'll make certain that everybody, including the contractors, get this information.

MS. BONSIGNORE: Ted, is that you speaking?

MR. KATZ: Yes, that's me. I'm sorry. It's Ted. It's me, again.

MS. BONSIGNORE: Okay. Thank you.

DR. NETON: I will say that, you know, hearing some of these -- this other information about possible sandblasting and jackhammering, that sort of activity during the remodeling period does give me some pause.

Notwithstanding that, though, I think that the approach that we just discussed, which is applying half the value that was experienced during the D&D operation, is still a valid approach. We just need to maybe fine-tune or reevaluate, you know, what we consider to be representative exposure that we would apply from the D&D era.

MS. BONSIGNORE: I'd just like to note that I have provided this kind of documentation prior to this date. And NIOSH has had access to it.

MR. KATZ: So just so I'm clear because maybe Antoinette's not clear and she

is a layperson like I am. So what you are saying is right now the D&D period used vacuuming data and you would use potentially other activity during the D&D period as that top end?

DR. NETON: We would reevaluate that.

MR. KATZ: Possibly, right, reevaluate that. Okay. Thank you.

CHAIR ROESSLER: So it appears we can't resolve this right now, that we're going to wait until we get the data from Antoinette. It goes through NIOSH. They take another look at it. How do you think --

MR. KATZ: Well, the data that Jim is going to rely on is the data from the D&D period. The data that Antoinette is providing is just testifying to the types of activities that occurred during the residual period. So what is critical is what data OCAS has on the D&D period.

MS. HARRISON-MAPLES: I believe we

do have the testimonies that Antoinette is responding to.

DR. NETON: Yes. I have not been as close to this as possibly I should be. But, again, it is not clear to me how we ended up with the vacuuming being representative.

MS. BONSIGNORE: I'd actually like an answer to that question because, as I stated previously, I have submitted affidavits from workers prior to this point attesting to the fact that this kind of work was going on. And I'm just wondering if that material was considered.

MR. CRAWFORD: Of course it was considered. And we don't deny that other kinds of activity -- we're not even saying that vacuuming was the only activity or the primary activity.

What we are trying to do is, however, model the situation as realistically as possible and in a claimant-favorable way. Now if you can tell me that jackhammering was

done eight hours a day for ten years, I will reconsider this. But instead, we did ten years worth of vacuuming as a more reasonable estimate.

MS. BONSIGNORE: You know, I'm sorry, I have to object to the expectation that I would be able to provide you with detailed information that jackhammering was going on for eight hours a day for a ten -- I mean, I'm sorry.

MR. KATZ: Antoinette, I think Chris was being rhetorical there.

MR. CRAWFORD: Yes.

MR. KATZ: He was not asking for such --

MS. BONSIGNORE: Well, I understand that he was being rhetorical. But we're talking about people's lives here. And I would appreciate it if there would be some regard for that at times here.

MR. KATZ: Right.

MS. BONSIGNORE: I don't appreciate

it. And I know the workers don't appreciate it.

DR. NETON: I understand. This is Jim Neton. And we're going to go back and take a look at this in that light from what I'm hearing here and see where we end up.

We certainly would end up using the distribution or some type of a distribution from the D&D era. But I would just like to get a little closer to it and look and see exactly how we analyzed it and help move this forward.

CHAIR ROESSLER: So timing-wise, what can we expect on this?

DR. NETON: It shouldn't be a very lengthy review I wouldn't think.

CHAIR ROESSLER: And how do we want to handle it then? Would we have something where we could have perhaps -- I don't know, a phone call or something?

MR. KATZ: We need a -- it seems like so much of the discussion that has

occurred, you know, he's following up on the data question, it seems like we could deal with it in a teleconference without it being a face-to-face meeting.

CHAIR ROESSLER: Before the Board meeting.

MR. KATZ: Absolutely --

CHAIR ROESSLER: Because we have plenty of time.

MR. KATZ: -- before the Board meeting.

MEMBER LOCKEY: Jim, could you tell me what you are going to do with the D&D data? What are you going to go back and look at?

DR. NETON: Well, actually I'd like to sit down with our folks and look at some of the more -- some of the documentation that was provided in support of the different types of activities that occurred during the remodeling activities and help to make a determination if the vacuuming is really truly representative of the potential exposures, you know, in that

era.

MEMBER LOCKEY: You would compare that to the D&D period then? Is that --

DR. NETON: Well, it is a matter of picking what is the most representative work activity from the D&D era to apply to the remodeling era. Right now it seems to be a little bit fuzzy in my mind as to whether we picked the appropriate model. I'm not saying it isn't.

At the end of the day -- and I haven't been as close to it as I should -- but I'll look through our analysis and maybe come to the same conclusion. But I don't have a comfort level in what I'm hearing right now that we have completely justified that.

MEMBER LOCKEY: If you look at the activities during D&D and see if some of those spilled over into the future --

DR. NETON: Well, what types of activities that were occurring during the remodeling era, how close they related to what

might have occurred during the D&D era. Sort of get a feel, a flavor. And then that factor of two would be applied that we talked about.

MEMBER LOCKEY: Understand.

CHAIR ROESSLER: Okay. So I think we have come to the end of what we can do on this particular item unless people have other questions or concerns.

Then I think we have one left, Finding 10, on page 9 in your report.

MR. CRAWFORD: And for the purposes of SEC-107, beyond the embedded residual contamination, there were no raffinates present. The raffinates were actually removed during the ore-processing period prior to the Step 3 production period.

In other words, the SEC covers -- the existing SECs, granted, cover the period when raffinates were present on site. After that time, they had been removed to Lake Ontario Ordnance Works and/or Ashland Oil. They were stored there for a while, too.

But they are not a factor at Linde during the residual period. They are accounted for in the suspended particulates. That is what was embedded in the walls is, indeed, accounted for there.

MS. BONSIGNORE: I have a question about this issue. Do you have any data with respect to the level of contamination in the tunnels beneath Building 30 and Building 14 and the possible spill-over of the effluents in those areas?

MR. CRAWFORD: The FUSRAP study did look at boreholes. They looked at tunnels under the site. They looked at the creek contamination. Yes, there is data for that. We are, however, unaware that anybody worked in those locations for any --

MS. BONSIGNORE: They did.

MR. CRAWFORD: -- demonstrable period of time.

MS. BONSIGNORE: They certainly did. And I can provide you with testimony of

that as well.

MR. CRAWFORD: One thing is to have inspected or worked in the tunnel. Another was to have been stationed in the tunnel.

MS. BONSIGNORE: Well, people weren't stationed in tunnels. But people certainly did work in tunnels on a continuing basis. And I can -- I know of two people -- two workers that I have spoken to in the past few years who have talked about working in the tunnels.

MR. CRAWFORD: Perhaps we could get that information as to what their exposures were in the sense of how many hours did they spend in the tunnel per year or month. That would be useful. And what they did there.

MS. BONSIGNORE: Okay. I can arrange that. All this documentation is probably going to take me a few days to gather.

CHAIR ROESSLER: Is there any other question on this section? Steve? Or John, do

you have any comments on it? Other than getting the information to Chris about the tunnels, have we explored everything here?

DR. MAURO: The only question -- and, you know, I have been following this, but it was my understanding that -- so what I'm hearing is there were locations on site after operations, after D&D, where there still was a substantial amount of raffinates, such as the tunnels. Is that what I'm hearing?

MS. BONSIGNORE: Yes, that's correct. And, in fact --

DR. MAURO: Well, that is this conversation, that assumption.

MR. CRAWFORD: Well, all I saw were radon readings.

MS. BONSIGNORE: Well, there are underground wells that FUSRAP has not even touched.

MR. CRAWFORD: There were injection wells.

DR. MAURO: Injection wells.

MS. BONSIGNORE: Yes. I mean the Army Corps has essentially decided that they can't decontaminate those wells.

CHAIR ROESSLER: How would that impact the worker exposures?

MS. BONSIGNORE: Well, I think that would impact the worker exposures in terms of the material from those wells being in the tunnels.

CHAIR ROESSLER: Anybody have a -- I don't picture --

DR. MAURO: Yes, I guess from our perspective, if there are locations on site where raffinates could have remained or been picked up during D&D, and where there is evidence that people might have worked in those areas, that is important.

DR. NETON: Yes. I mean we need to see this tunnel -- this tunnel information.

DR. MAURO: Yes, because right now we've been operating on the premise that it wasn't there. If it is there, that does

change the picture. And it is important that we put that to bed.

CHAIR ROESSLER: Do you remember why this was a finding to begin with? Did we put this on the list because it was something SC&A brought up?

DR. MAURO: Because it was -- I believe the original -- I'm sorry, Steve, but I believe the original report was silent on raffinates.

DR. OSTROW: That's right. We wanted to know basically did NIOSH take a look and see if there were any raffinates present. And we heard in the report that as far as they know, there weren't any. And now we may be having new information.

MR. CRAWFORD: I don't know that this is new information. That is, I still don't know that there were any raffinates in the tunnel, for instance.

We know that they did take effluents, liquid effluents, and put them into

injection wells, which should be quite separate. They also took all the solid residues and took them offsite. That's what we know during the main production of the ore periods.

We have measurements in the FUSRAP era of radon measurements in the tunnel area. I don't even know how large they were, by the way, or what was in them, or why they were there, but showing elevated radon concentrations. That could be just uranium residues.

We don't know what was in the tunnels. But as far as I know, they weren't used as, you know, main drains for the main raffinate effluent.

MEMBER BEACH: This is Josie. The original finding also talked about renovation activities. And to consider if raffinates might have been present. And the airborne dust needed to be qualified.

MR. CRAWFORD: That was done.

MEMBER BEACH: Okay. And then I also have a note that FUSRAP data is needed for the later years. Is that a possibility? Or did that end in `96, I believe?

MR. CRAWFORD: As far as I know, and, Monica, maybe you can add to this, but as far as I know, we have been unable to locate any further data after 1982. There was FUSRAP activity at the site, Corps of Engineers activity.

We have written to the Corps of Engineers. They say they don't have any data. Somewhere it probably exists. But we can't get it.

MEMBER BEACH: Okay.

MR. CRAWFORD: That would primarily have been -- well, it would have been interesting if we had it. It also probably would have a lot of relevance to the people who actually did further decon under the FUSRAP program.

MEMBER BEACH: But why can't we get

it, though, if it is available? And it should be out there.

MR. CRAWFORD: Well, we have asked for it. And we have asked the right people. They say they don't have it.

MS. BONSIGNORE: They say they don't have it because they can't find it or because they don't think it exists?

MR. CRAWFORD: My understanding is they don't think it exists. We're talking about data in the `90s and early 2000s here.

MS. BONSIGNORE: Right. So --

MR. CRAWFORD: Why it doesn't exist, I don't know.

MS. BONSIGNORE: -- so I'm just trying to get an understanding here because I've raised issues about the destruction of documents at this facility, that I submitted affidavits from two -- actually three workers talking about the destruction of documents. And I'm wondering if there could be a possible relation there.

MR. CRAWFORD: These, by the way, would not have been Linde documents or Praxair, their successors. They would have been documents from the Corps of Engineers. Oak Ridge did work for them, for instance.

MR. SHARFI: Chris, this is Mutty. We have 1995 data. That was actually even used in the gamma analysis for the radon part.

MR. CRAWFORD: Oh, okay.

MR. SHARFI: We have FUSRAP data for Building 31. That was done by, I believe, ORNL.

MEMBER LOCKEY: Does anybody know what the tunnels were used for? Anybody have any idea?

MS. HARRISON-MAPLES: My understanding is they were primarily utility tunnels.

MR. KATZ: People can't hear. Can you say it louder?

MS. HARRISON-MAPLES: I just said my understanding is they were primarily

utility tunnels. Antoinette may know more about it.

MS. BONSIGNORE: Yes. I believe that is correct. But I can get a clearer picture from some of the workers over the next couple of days about that.

MR. KATZ: Thank you, Antoinette.

MS. BONSIGNORE: You're welcome.

CHAIR ROESSLER: Okay. I see in your report, Chris, one more item. On page 10, I think we've taken care of that. There was an additional request. I think maybe it was Josie who brought this up, that the two tables that you had in your Evaluation Report, it would be much more helpful if all that information were combined.

And you did that in the color graphic that you sent us. So I think we've finished that part.

MEMBER BEACH: One thing I have on the addendum that was passed out, I believe. It was an NTS.

CHAIR ROESSLER: Is it -- Antoinette, is that you?

MR. KATZ: No, that's Josie.

MS. BONSIGNORE: No.

CHAIR ROESSLER: Josie, okay, I couldn't hear everything you said.

MEMBER BEACH: Oh, I'm looking at my notes really quickly here. I'll get back to you. I haven't got it right in front of me.

CHAIR ROESSLER: I think maybe it was NTS that you are thinking of because I think we've gone through the agenda items I had.

MEMBER BEACH: No, it was actually in the Linde documents. There was a table that had NTS as a heading. And it may have been NIOSH's document. It was probably -- oh, it was on page 11 of the radon findings NIOSH report. And it just talked -- NTS Work Group Issues. So I am assuming that you just cut and pasted a table there.

CHAIR ROESSLER: Point that out again. What page are we on?

MEMBER BEACH: Page 11 at the top of the first column.

CHAIR ROESSLER: Oh, I see. Yes.

MR. KATZ: Jim Neton just said it is a typo.

CHAIR ROESSLER: So that should be Linde.

MR. KATZ: Right.

CHAIR ROESSLER: Thank you, Josie.

DR. NETON: I left that in there.

MR. KATZ: None of us saw it.

CHAIR ROESSLER: I didn't see it. We'll fix it.

It appears then that we have two items on -- that we have covered on the agenda today that we thoroughly discussed. The Work Group has voted, and I have something on that I'm going to summarize for the Board meeting.

However, we have two items that need more information. And what we need to do

on those two items is set up a teleconference that will occur after NIOSH gets the information from Antoinette.

And so I think before we wrap up here, we need to find out when we can expect the information to get to NIOSH, when NIOSH will be able to evaluate it, and when we can set up the teleconference.

MS. BONSIGNORE: Well, Gen, I expect that I should be able to provide some of the documentation actually later today. And then the rest of the documentation, particularly regarding the tunnels and some additional statements from workers regarding the remodeling effort, within the next week and a half.

MR. KATZ: Week and a half, okay.

MEMBER LOCKEY: You will supply that to Ted?

MS. BONSIGNORE: I'll send that to everybody. It's pretty easy to do.

MR. KATZ: That's great. That's

great. Thank you.

CHAIR ROESSLER: So that would be next week. And that would be -- you would have it to everybody -- let's use this as a date -- before Christmas.

MS. BONSIGNORE: Okay.

CHAIR ROESSLER: Before the holidays, I want to be appropriate here.

MS. BONSIGNORE: Right.

DR. OSTROW: Hanukkah began already.

CHAIR ROESSLER: Yes, okay, so let's say we'd have this by the 25th? Does that sound --

MS. BONSIGNORE: I will try to give everybody a Christmas present before the 25th.

CHAIR ROESSLER: Okay.

MR. KATZ: Okay. And, Antoinette, don't kill yourself for --

MEMBER LOCKEY: Yes, around the holidays, that's fine.

MR. KATZ: But -- and then OCAS

needs to do some evaluation of their own data.

DR. NETON: I can't see us having a good response until like the second week of January at the earliest.

MR. KATZ: Okay.

DR. NETON: Partly because we have a Work Group meeting scheduled --

MR. KATZ: Sure.

DR. NETON: -- at the beginning of January.

MR. KATZ: So do people want to check their calendars then for the -- if this is a reasonable time frame, the week of the -- well, there's the week of the 18th and there's the week of the 25th. We have some Work Groups already during that time span. But we have days open.

CHAIR ROESSLER: Let's try and get a date picked now.

MR. KATZ: So is a teleconference -- I mean my guess, you all tell me, is that is probably not more than an hour or two of

discussion. At this point, you've --

CHAIR ROESSLER: I would think an hour.

MR. KATZ: An hour?

CHAIR ROESSLER: Yes.

MR. KATZ: So you don't need a whole day free to be able to fit this in.

CHAIR ROESSLER: Let's look at the week of the 18th. I would prefer doing it that week. There is a health physics meeting in Albuquerque starting on the 24th.

MR. KATZ: Okay. So you want to do it ahead of that.

CHAIR ROESSLER: Since it was only an hour, I could probably get away, but if we could look at the week of the 18th my calendar looks open. What about the rest of you?

MEMBER BEACH: I need a moment to grab my calendar, so I'll be away from the phone for about a minute.

MR. KATZ: That's okay. Thanks.

MEMBER LOCKEY: I am available the

20th and 22nd that week.

MR. KATZ: The 20th and the 22nd?

MEMBER LOCKEY: Yes.

CHAIR ROESSLER: That's January we're talking about.

MR. KATZ: Okay. The 20th is Wednesday. The 22nd is Friday.

CHAIR ROESSLER: It's probably preferable to do --

MR. KATZ: And both of those are open for me. So both of those could work.

DR. NETON: The 20th is good for me in the afternoon.

MR. KATZ: The 20th is good.

Chris, the 20th, does that work for you?

MR. CRAWFORD: No problem.

MEMBER LOCKEY: January 20th, 1:00 p.m.

CHAIR ROESSLER: Mike? Mike, are you on the phone?

MR. KATZ: We need to wait for

Josie to get her calendar.

CHAIR ROESSLER: Yes.

MR. KATZ: Mike, how is January 20th for a teleconference, probably not more than an hour.

MEMBER GIBSON: It looks good.

MEMBER BEACH: This is Josie. The 20th doesn't work for me.

MR. KATZ: Okay. Well, how about the 22nd? That's another option.

MEMBER BEACH: I'm actually traveling the 18th through the 22nd.

CHAIR ROESSLER: And I'm traveling on the 22nd also.

MR. KATZ: But you're -- okay. But --

MEMBER BEACH: It's vacation. I'll be out of town.

MR. KATZ: Oh, I see, I see. You're out. That whole week you are out --

MEMBER BEACH: Yes.

MR. KATZ: -- that's what you are

saying, Josie?

MEMBER BEACH: Right.

MR. KATZ: Okay. And then -- well then can you break away, Gen, at any point the 26th or 27th? Let me just -- the 26th is open, January 26th. The 27th is a Subcommittee meeting.

CHAIR ROESSLER: I will be --

MR. KATZ: The 25th or the 26th are open.

MEMBER LOCKEY: I have an appointment.

CHAIR ROESSLER: The 25th after lunchtime.

MR. KATZ: After lunch the 25th? Eastern time?

CHAIR ROESSLER: Well, now that would be Albuquerque time. What time is that? That would be after two.

MR. KATZ: After two?

CHAIR ROESSLER: Yes.

MR. KATZ: But I mean that's okay.

We don't need a whole half day.

MEMBER LOCKEY: The 25th is open for me.

MR. KATZ: The 25th is open for you? How about Mike and Josie? The 25th of January?

MEMBER BEACH: Yes, that works for me.

MR. KATZ: And Mike?

MEMBER GIBSON: Yes, that's good.

MR. KATZ: It's a Monday. So we're talking about Monday afternoon.

CHAIR ROESSLER: About two o'clock.

MR. KATZ: Two o'clock, 2:00 p.m. Eastern time.

CHAIR ROESSLER: And what time is that in Albuquerque? One o'clock? Okay.

MEMBER LOCKEY: So earlier is better.

CHAIR ROESSLER: No, it wouldn't be.

MR. KATZ: She can't do it until

after lunch.

(Simultaneous speakers.)

CHAIR ROESSLER: Wait a minute, wait a minute.

COURT REPORTER: One conversation please.

MR. KATZ: Yes.

CHAIR ROESSLER: Yes, thank you.

MR. KATZ: You actually really don't need to transcribe that.

COURT REPORTER: Well, I'm happy to go off the record if you want to.

MR. KATZ: No, you don't need to go off the record. We'll try to be disciplined here.

CHAIR ROESSLER: I think I'm not available until after noon, Albuquerque time, on the 25th.

MR. KATZ: Okay, that's 2:00 p.m.

CHAIR ROESSLER: Is that too late for you?

MEMBER LOCKEY: 2:00 p.m.?

CHAIR ROESSLER: Yes.

MR. KATZ: Eastern time.

MEMBER LOCKEY: That's all right. I mean I'll have about two hours.

MR. KATZ: Oh, that will be plenty.

MS. JESSEN: Gen, are you talking about 2:00 p.m. Eastern time?

MR. KATZ: Yes.

CHAIR ROESSLER: 2:00 p.m. Eastern, which would be --

MEMBER BEACH: Eleven o'clock.

CHAIR ROESSLER: And eleven Josie's time.

MR. KATZ: Right. So that works? Mike? Did we hear from Mike?

MEMBER GIBSON: Yes. That works.

MR. KATZ: Okay. And Antoinette? Did we hear from her?

MS. BONSIGNORE: Okay. So are we on January 25th at 2:00 p.m. Eastern?

MR. KATZ: 2:00 p.m. Eastern. So, you know, 11:00 a.m. your time, I think.

MS. BONSIGNORE: Right. Yes. Okay.

MR. KATZ: Okay. January 25th, 2:00 p.m. Eastern time, teleconference at 2:00 p.m. And I'd appreciate -- I guess, everybody, if they set aside two hours, we probably don't need two hours but --

CHAIR ROESSLER: We'll say two hours.

MR. KATZ: Yes. Just to -- I'm just saying -- your calendars, we won't --

CHAIR ROESSLER: But we'd expect within an hour.

MR. KATZ: It seems like the discussion won't last longer than that.

DR. OSTROW: And NIOSH will do something written a couple of -- you know, beforehand?

MR. KATZ: Well, yes.

DR. NETON: It will come out a week or two before.

MR. KATZ: Yes, that gives an extra

week for that. So that's helpful, too.

DR. NETON: Yes, I don't expect this to be a lengthy analysis. A couple page summary of what we've discussed.

CHAIR ROESSLER: Well, okay. Well, I appreciate everybody's attention today. And your time. And I think we are finished.

MS. BONSIGNORE: Gen, I just have -- just two additional questions.

I just wanted to know is there any possibility in the Work Group's mind that this petition will go before the full Board in the February Board meeting in California?

CHAIR ROESSLER: I think that is our intent is that we would resolve everything during the teleconference to the point that we could make a Work Group report to the Board. And then it is up to the Board.

MS. BONSIGNORE: Okay. I just raise that issue because I know that there is going to be a Board meeting in May in Buffalo. And I would hope that the Board would

consider that factor in the scheduling of this because I know that all of the workers who are involved in this would like to be present.

MR. KATZ: So you are asking for this to be delayed by the Board until May? Is that what you're saying, Antoinette?

MS. BONSIGNORE: That would be the preference of a lot of the workers, yes.

MEMBER LOCKEY: This is Jim Lockey. I think that is a reasonable request.

CHAIR ROESSLER: Yes. I guess my first goal was to take care of it as soon as possible because, you know, we don't want to delay the workers. But if that is your preference, it sounds fine to me.

MS. BONSIGNORE: Okay. Thank you.

CHAIR ROESSLER: Thank you, Antoinette.

MS. BONSIGNORE: And one last thing, and this is something that I had sent to Steve Ostrow, there were a couple of memos that I had sent to Steve. I don't know if he

is still with us.

DR. OSTROW: Yes, I'm still here.

MS. BONSIGNORE: Okay -- regarding some activity at Linde dealing with P-539 studies. And I was wondering if SC&A and OCAS could shed some -- I don't know if OCAS has seen those memos, but I was wondering if someone could shed some light on what P-539 is.

MR. CRAWFORD: We don't know. But anything that can kill a dog in a few hours is unlikely to be a radiological hazard. It's probably an organic poison of some sort because that was in the memo that it was highly toxic. And they were concerned about -- it was a catalytic chemical of some sort.

From the description, it doesn't seem to have any radiological component that we could identify.

MS. BONSIGNORE: Okay. Because I have a safety guidelines document from that time period that one of the workers provided

to me a few weeks ago that talks about P-539 and something else called C-33. And they seem to be connected in the same type of -- delineated in the booklet with respect to how workers should be handling those compounds.

And I'll scan a copy of the guideline -- it's like rules and practices safety guidelines for the facility. I would just appreciate, if possible, if there could be some information as to what P-539 is and what C-33 is, particularly if that would relate to information that should be added to the site exposure matrix.

DR. OSTROW: Antoinette, this is Steve. This guideline that you have, whatever it is that you are going to send us, it doesn't say in it what these compounds actually are? It just refers to them just by the, you know, their code names or whatever?

MS. BONSIGNORE: Yes, that's correct. That's why I'm raising the issue because I don't know what it is and none of

the workers know what it is.

CHAIR ROESSLER: Did you get this, Steve?

DR. OSTROW: I got the original one. And the whole Board got it. We distributed it.

MR. KATZ: And OCAS.

DR. OSTROW: But, you know, we weren't -- SC&A wasn't directed to actually do an investigation. And I don't think OCAS was either. I don't think you guys knew what it was either.

DR. NETON: We looked at it, and we are familiar with a lot of code names that were used for uranium and ores in that era. And none of those ring a bell with any of our research that we've done thus far.

CHAIR ROESSLER: Is this an item that we could, if we had more information, could do something with at our teleconference?

MR. KATZ: Yes, that is something else to report out on if there is any new

information.

DR. NETON: I would also suggest though, I mean if this is a potential chemical exposure that has been unnoted, maybe the Department of Labor, you know, maybe Antoinette should send those to the Department of Labor concerns because that is sort of a Part E issue, I think.

MR. KATZ: Right.

MS. BONSIGNORE: Right. Well, I just want to make sure that whatever these codes are that they don't relate to anything that was radiological in nature. And if we can establish that, then I will certainly forward the information to the Department of Labor if someone could tell me who at the Department of Labor I would do that -- you know, send that information to? Would it be John Vance?

DR. NETON: He would be a good person.

MR. KATZ: John would work.

MS. BONSIGNORE: Okay.

CHAIR ROESSLER: So it would be --

MR. KATZ: So that's a third point to follow up on in the teleconference, if there is any new information.

CHAIR ROESSLER: That she will give us the information. Then does OCAS have any assignment to --

MR. KATZ: Right. To just follow up to the extent that you can pull the thread. But it sounds like they have already discussed --

DR. NETON: We talked about it internally. And short of going through every document, looking for this code name material, I don't know what else we would do on it. It's not something we've run across in the thousands and thousands of pages of documents we've reviewed.

MR. KATZ: No, I was actually curious and did a Google search and couldn't --

DR. OSTROW: Yes, me, too.

MR. KATZ: -- couldn't find anything either.

MS. BONSIGNORE: Yes, I did a Google search as well and didn't come up with anything. Came up with 538, 536, no 539.

MR. KATZ: So it sounds like although we will wrap up the work in January, it seems to me -- I don't know, Gen, if this is what you'd want, but the report out might make more sense to do then. The Work Group -- it would make more sense for the Work Group to report out in New York than to report out in California.

CHAIR ROESSLER: I think that's what --

MR. KATZ: And since the Board is going to take up the discussion in New York.

CHAIR ROESSLER: Yes, I think that's what we agreed to do.

MR. KATZ: Okay. I just want to be clear about what --

CHAIR ROESSLER: We will not put it on the agenda for the February meeting.

MR. KATZ: Okay.

MS. BONSIGNORE: Thank you.

DR. NETON: Well, one of my concerns, though, is if there was some sort of opinion of the Work Group and the Board heard it, often times then the full Board would take up the issue in some other forum or format for review. They could inform -- they could --

MR. KATZ: No, I understand.

DR. NETON: -- pass it over to the Board and they could take action.

MR. KATZ: So Jim -- what Jim is saying, Antoinette, and this is -- I mean I'll leave this to your judgment -- if we wait until New York for the Work Group to report out to the Board, what may happen in New York then is the Work Group reports out to the Board and then the Board says oh, well, let's look into X, Y, and Z now because we are uncertain about certain things.

So the only thing I'm saying to you, Antoinette, is that the risk is that the Board may not act at all in New York other than to hear the Work Group and discuss it a little. But it then may make more charges for research as opposed to coming to a decision in New York. You can't tell.

So another option would be for the Work Group to report out in February to the Board and the Board to have some discussion of it but not to take action until New York. That's just another option. And I'll leave it to really what your wishes are, what the petitioning class's wishes are.

MS. BONSIGNORE: Well, my main focus is that any presentation that I provide to the Board, I want that to be in front of the people that I represent. That is important to me. It is important to them.

And so with everyone's indulgence, if I would -- can take a couple of days to speak to everybody --

MR. KATZ: Yes.

MS. BONSIGNORE: -- to the workers and get their view on this?

MR. KATZ: Absolutely. Just let me know what your wishes are.

But I just want you to know that there is an option that it could be -- the Work Group could report out in February but the Board not take action until -- or whatever -- other than maybe assign research between February and May --

MS. BONSIGNORE: Right.

MR. KATZ: -- the Board would not actually take action on the petition in terms of disposition until May.

MS. BONSIGNORE: Okay. Okay. I think that sounds reasonable.

MR. KATZ: Yes.

MS. BONSIGNORE: I just want to make sure that I'm respecting the wishes of the people that I represent.

MR. KATZ: Absolutely. Just let me

know. And we'll make decisions accordingly.

MS. BONSIGNORE: Okay. Thank you very much.

DR. MAURO: Ted, before we close, I didn't note any action items for SC&A. Is that correct?

MR. KATZ: That is correct, I believe. Right.

DR. OSTROW: I didn't hear any.

(Laughter.)

MR. KATZ: Okay. So are we -- I think we're adjourned. And thank you, Antoinette, and thank you the other folks on the phone that have contributed as well. And happy holidays for sure.

(Whereupon, the foregoing matter was concluded at 12:39 p.m.)