U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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SEC ISSUES WORK GROUP

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FRIDAY
FEBRUARY 5, 2010

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The Work Group convened, via teleconference, at 10:00 a.m. Eastern Standard Time, James M. Melius, Chairman, presiding.

PRESENT:

JAMES M. MELIUS, Chairman
JOSIE BEACH, Member
MARK GRIFFON, Member
GENEVIEVE S. ROESSLER, Member
PAUL L. ZIEMER, Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
LYNN ANSPAUGH, SC&A
HANS BEHLING, SC&A
NICOLE BRIGGS, SC&A
PETE DARNELL, OCAS
SAM GLOVER, OCAS
STU HINNEFELD, OCAS
EMILY HOWELL, HHS
LARA HUGHES, OCAS
JENNY LIN, HHS
JOHN MAURO, SC&A
ROBERT McGOLERICK, HHS
DAN MCKEEL, Dow SEC Petitioner
JAMES NETON, OCAS
LaVon RUTHERFORD, OCAS
BILL THURBER, SC&A

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

(10:01 a.m.)

MR. KATZ: This is Ted Katz. I am the Designated Federal Official for the Advisory Board on Radiation and Worker Health and this is the SEC Working Group.

Beginning roll call with Board Members, note, please, if you have any conflict with either the Dow Madison site or Ames or Met Lab when you identify yourself for everyone related to the agencies, including the Board Members.

CHAIRMAN MELIUS: This is Jim Melius. I don't have any conflicts.

MEMBER ZIEMER: Paul Ziemer. No conflicts.

MEMBER BEACH: Josie Beach. No conflicts with either Dow, Ames, or Met Lab.

MR. KATZ: Okay. And then is Gen with us, Roessler?

(No audible response.)

MR. KATZ: Okay. Well, we'll call

for Gen and Mark again later because Mark is going to be a little late, too. I think Gen had some business away and was connecting from afar.

MEMBER ROESSLER: Hi, Ted. This is Gen.

MR. KATZ: Oh, hi. Great.

MEMBER ROESSLER: I am not away, actually, this week.

MR. KATZ: And no conflicts, Gen?

MEMBER ROESSLER: Pardon?

MR. KATZ: No conflicts?

MEMBER ROESSLER: No conflicts.

MR. KATZ: Great. Okay. And then let's go on to the OCAS-ORAU team.

MR. HINNEFELD: Stu Hinnefeld, the Interim Director of OCAS. I don't have conflicts with those three sites.

DR. GLOVER: This is Sam Glover. No conflicts.

MR. RUTHERFORD: LaVon Rutherford. No conflicts.

DR. NETON: Jim Neton. No conflicts with those sites.

MR. DARNELL: Pete Darnell. No conflicts.

DR. HUGHES: Lara Hughes. No conflicts.

MR. KATZ: Okay. And then SC&A?

DR. MAURO: John Mauro, SC&A. No conflicts.

MR. THURBER: Bill Thurber, SC&A. No conflicts.

MR. ANSPAUGH: Lynn Anspaugh. No conflicts at these three sites.

DR. BEHLING: Hans Behling. No conflicts.

MS. BRIGGS: Nicole Briggs, SC&A. No conflicts.

MR. KATZ: All right. Then HHS or other government officials or contractors to the federal government?

MS. HOWELL: Emily Howell, HHS.

MS. LIN: Jenny Lin, HHS.

MR. McGOLERICK: Robert McGolerick, HHS.

MR. KATZ: Okay. And then members of the public or staff of congressional offices who want to identify themselves?

DR. McKEEL: This is Dan McKeel. I am the Dow SEC petitioner.

MR. KATZ: Welcome, Dan.

DR. McKEEL: Hi.

MR. KATZ: Okay, then. Let me just remind everyone who is not speaking to put your phone on mute, *6 if you don't have a mute button, *6 to take it off of mute. And please don't put the call on hold. Hang up and dial back in if you have to leave. Thank you.

And, Jim, it's all yours.

CHAIRMAN MELIUS: Okay. Thank you, Ted. This is Jim Melius, Chair of the Working Group. As I said, Mark Griffon will be a little late. He should be joining us shortly. He was on his way to the office when

he called me a few minutes ago.

The agenda today, two major items, one, we will spend some time on Dow, the Madison site, to get an update on that; and then, secondly, we will start talking about the 250-day issue. I think, as you all know, John Mauro at my request has pulled together a lot of the information on the 250-day issue and has inundated us with documents, most of which, I think all of which, we have seen before, at least most of them, but I think it was helpful to see sort of the paper trail because this has been -- we have talked about a lot of different sites in regards to this issue in the 250-day issue. And it is, I think, helpful.

And then my understanding is that Sam Glover is now our main OCAS contact on this, the person who will be working through this Work Group. Some of that compilation was also to help Sam get caught up with all the past discussions that we have had on this Work

Group.

So I would like to start with Dow. And I have asked John to sort of update us on what has transpired and sort of what issues are outstanding with Dow Madison that we had discussed Dow at our last meeting of this Work Group, which was in July, so, really, what has gone on since that point in time.

John?

DR. MAURO: Yes. I'll pick it up from July unless -- well, let me give you a really brief story. There were several stages. The original stage was the 1957-1960 time frame, in which there was an SEC granted and there was the whole -- we went through the entire process related to that time period.

Then there was the -- and, basically, as you recall, Dow was doing thorium alloy work, where there was thorium-232 being handled and uranium at the same time during that time period. And there is a lot of literature. We put some reports

out on that. We had meetings on that.

Following that, there was another time period of interest, the residual period, where the concern was reconstructing exposures from the residual period. And for that period, it was a NIOSH position that they could reconstruct the doses to both uranium and thorium using a variety of methods. And that was the subject of considerable discussion.

Along the line, there was also a special report dealing with some 700 documents that were -- 700 pages of documents that arose during the process which were put into the record. SC&A was asked to review them and to see what relevance it might have.

And it turns out that, by and large, there was nothing of great substance there that really changed any of the dialogue we had, which brings us quickly to the meeting we had on July 24th, where, in effect, SC&A was requested to review the Dow Madison work

done by NIOSH, their reports, dealing with the post-1960 residual period and the methods in general that were being used, in light of TBD-6000.

And then SC&A put a report out dated August 2009. It was sent to everyone. It has been redacted and went through PA clearance. That document is available for public release and that is really the last report that I believe that SC&A put out on the subject.

By the way, Bill Thurber is the person that did 90 percent of the work on this. He is on the line and I am just going to very briefly go over. We had a number of findings related to the residual period and the methods that were being employed by NIOSH.

I would like to say that none of this has any -- doesn't really have any bearing on the 250-day issue, but it does have bearing on the surrogate data issue, something that maybe we should just draw your attention

to, even though today's discussion is zeroing in on 250-day.

There are certain surrogate data issues that have come up and the issues really have to do with, NIOSH in reconstructing doses for this facility is taking advantage of the great deal of data that is in TBD-6000 and is relying on that, the information that stands behind a lot of data that has been compiled related to airborne uranium at metal-handling facilities.

One of the more important comments we had, which I don't believe is an SEC issue, is that the method they have adopted was to use the geometric mean of the generic data for the particular categories of workers, as opposed to -- and that was based on a relatively limited amount of data for that category of worker, as opposed to using the 95th percentile value.

So we have what I would call one of the more conventional commentaries that go

toward whether or not NIOSH was selecting from a data set at the right place in the distribution as their default approach for reconstructing internal exposures. And, by the way, that would apply to the operations period, 57 to 60.

It was also a question of, during the residual period, reconstructing inhalation exposures. And, again, this is one of the more conventional comments that we have had on many occasions.

We felt that the resuspension factor that was selected was too low and they basically based the results on some estimate of residual radioactivity. And in order to get airborne activity, they apply a resuspension factor.

Their standard value of ten to the minus six, I believe this is a generic issue that is being looked at by NIOSH. So this is not a concern that goes specifically to this site but is really a universal concern we have

regarding the use of a resuspension factor.

Another finding we had is that in doing the residual period and looking at the methods employed, one of our comments was that they -- again, this is a recurring theme.

There is a very good OTIB out called OTIB-0070, which lays out a methodology for reconstructing external exposures and internal exposures during a residual period, when you have limited data for the residual period. And OTIB-0070 has one particular protocol that we find extremely useful.

I think one of our comments was that that methodology should be applied. I think it wasn't entirely applied in this particular situation. I guess that really goes to the heart of the issues.

As I understand -- and, Bill, please fill in where I may have missed anything important -- the essence of our concerns with the methods used for reconstructing exposures during both the

operations period and the post-operations period go more toward how the data were applied from OTIB-0060 and the protocol they are using.

There is certainly some discussion that might be warranted regarding surrogate data issues. That is, they did draw upon TBD-6000 and to do some of the dose reconstructions. NIOSH did draw upon data from other facilities, the Bay City facility, to help with the thorium exposure.

So there was a considerable amount of drawing from other resources from other facilities to construct an overall approach to dose reconstruction during both the operations period and the residual period for thorium and uranium.

And when we reviewed this, I guess we felt that, as an overarching perspective, that the idea of using surrogate data -- and I know this is a subject that is before the Board -- in this particular application, when

you are dealing with a metal-handling facility, there is so much experience and data out there at a great level of resolution and granularity that you should be in a position to select from that vast amount of material and, if used appropriately, make assignments to a facility, such as Dow, to place a plausible upper bound. That has been SC&A's position related to that particular aspect of surrogate data.

So we do see it as scientifically plausible to reconstruct external/internal exposures for metal-handling facilities -- I want to make sure it's clear -- because of the amount of information that's out there.

However, we do have concerns on a case-by-case basis when this is done, whether or not the most claimant-favorable and appropriate approach was used in applying that data.

That, I guess, gets up-to-date my reading of our material. And, Bill, is there

anything you would like to add regarding the work we have done?

MR. THURBER: No, I don't think so, John. As you say, some of the issues that we raised in our review of Appendix C of TBD-6000 are, in a sense, generic issues: the choice of the 95th percentile versus the geometric mean, that sort of thing, but I think you have covered it very nicely.

DR. MAURO: Okay. There's one last issue that I forgot to mention that I believe has been resolved. And that has to do with, during the residual period, one of -- the reconstruction of the internal dose of the inhalation of thorium-232 is based on measurements of thorium-232 collected during the operations period -- this is the pre-1960 period -- of airborne thorium-232 levels. And then that was used as the starting point for inhalation exposures during the residual period.

Now, we find that fundamental

approach is, in fact, the approach recommended in OTIB-0070. We think it is a very good approach. The only commentary we had, which I think has been resolved, is that, in all likelihood, based on the operation that took place at the facility, the vast majority of the thorium alloy that was processed and used was for commercial purposes. And I think less than one percent of the material processed of thorium at Dow was for AWE purposes.

And then this also goes for the residual period, not only during operations, during -- when I say operations, during the period 1957 to 60, but also post-1960, the -- you know, right now I don't believe there's any information that says that there were any AWE activities going on, but there was certainly plenty of commercial activity going on.

So what happens is, if you use the airborne thorium data during the operations, 1957 to 60 period, as our starting point for

the residual period and then from there project what the exposures are throughout the residual period, you are certainly going to be placing a very high estimate of the thorium exposures to the workers during the residual period by, I would say, more than one or two orders of magnitude.

However, we did have an extensive discussion of this matter. And I believe Jim Neton pointed out that the language in the rule was such that when you cannot make a distinction between the sources of exposure to a particular radionuclide, it is appropriate to simply apply the numbers, even though you realize that, in this case, the thorium is due to perhaps mostly by far either commercial operations -- it is appropriate within the framework of the regulations to just assume that all of that exposure to thorium was from AWE activities. And that certainly places an upper bound on what the exposures could be.

And so I think we did resolve that

issue during our last meeting and that that really, I think, closes the loop on our understanding of where things are right now on this site.

CHAIRMAN MELIUS: Okay. Thank you, John.

Any Board Members, Work Group members, have any questions of John or Bill on this?

MEMBER ZIEMER: This is Paul Ziemer. Are you going to mention the status of the investigation into the possible change in the time of the residual period and the outcome on that?

CHAIRMAN MELIUS: Yes. I was going to get next.

MEMBER ZIEMER: Okay. Thanks.

CHAIRMAN MELIUS: Yes. Thanks, Paul.

Others? Mark, are you on the phone yet?

(No audible response.)

CHAIRMAN MELIUS: Okay. NIOSH, do you have any --

MEMBER GRIFFON: Jim, I am on, by the way. Sorry.

CHAIRMAN MELIUS: Oh, good. Welcome.

MEMBER GRIFFON: I had to find the mute button there.

CHAIRMAN MELIUS: Okay. Thanks. For our court reporter, that is Mark Griffon, our other Work Group Board Member.

NIOSH, do you have any comments you want to make in regard to --

MR. RUTHERFORD: Yes. Dr. Melius, this is LaVon Rutherford. You know, it kind of goes through each of the findings and talks about a response to them.

The first one concerning the use of the geometric mean during the operational period. First, I want to point out that that is during an SEC period so it is not an SEC issue, obviously, because it is already an

SEC.

What we did was actually arrange a value, TBD-6000. I also want to point out that that is the only spot I believe we use surrogate data. The actual residual period, as John mentioned; we used the actual thorium concentration from the Silverstein report, which was taken from Dow and we used that as our starting point.

The geometric mean we used actually had two points, the minimum value and the maximum value, to develop a geometric mean with a GSD of five.

So I think we do have a very claimant-favorable position, recognizing that there were only two periods of operations that are actually covered during the operational period for uranium.

If we assume the maximum value, I believe your actual PoCs are going to go down, which was the actual value of, I think, 4,300 dpm per cubic meter. So I really don't think

that it would actually be claimant-favorable by using the maximum value.

And if you actually took the distribution along with the GSD and took the 95th percentile, that really drives you to almost- implausible measures or intakes during that operational period.

So I think we are actually at a pretty good value with the current approach during the operational period for uranium. I will go through each of our responses for each one of these findings. And then we can go back to whichever ones we want to discuss.

The resuspension factor -- again, I think John mentioned that is like an overarching issue that I think the resolution to that is going to affect a number of different appendices and approaches. So I don't know that we really need to address it specifically on Dow.

The third finding that they had was NIOSH consider developing an exponential

decay function for uranium removal during the residual period. For some reason, we didn't do that. We did it for thorium. We used a constant exposure for uranium.

We agree to be consistent, that we should use an exponential decay function. However, I will say that that will lower the dose. And almost -- all but five of the existing claims that we have for Dow are complete right now. So those claims that are already complete would not be affected. But we will look into actually revising our uranium approach to be consistent with the thorium approach with an exponential decay.

The fourth finding, actually, which was not mentioned by John, I don't know that it -- there appears to be a data-entry error in Table C-2 for the residual period.

Again, we agree with Bill on that one, with SC&A, that we did enter some data incorrectly. It is actually just -- we transposed the data incorrectly. But, again,

that will actually lower the dose when we fix that. So we don't intend to go back to redo any dose constructions and actually lower dose on those.

I discussed the surrogate data issue. Again, I believe the only use of surrogate data is during an SEC period and those would be for the non-presumptive cancers.

During the residual period, I guess you could argue that the residual period used it because the uranium starting point is actually based on surrogate data. So that would be the only argument I guess you could use to say that it is surrogate data during that period, during the residual period.

That is pretty much our responses.

DR. MAURO: This is John. Just a couple of quick ones, you know, just reacting and listening. When you had mentioned the uranium, using the geometric means for the two values and that if you used a max value, it

would be even lower than using the geometric mean, I guess I am not following that.

That is, if you have got two values, data points, let's say, for air concentration of uranium for the purpose of -- now, if you took the -- my understanding is, if you've got two values, the geometric mean is the product of those two values and the square root, square root of the product, two values, that would be your geometric mean. And then on that you used a GSD of a factor of five.

And our comment was, in a situation like that, when you have limited data and you are trying to place a plausible upper bound on all of those -- now, this is during the operations period for uranium and I recognize it only applied to people who are not covered under the type of cancer.

How would using the maximum value be less conservative than using a fixed 95th percentile value that you might get out of

that distribution? I am not following that. You lost me.

MR. RUTHERFORD: Well, I'm saying we could use that. We could go ahead and use that maximum value. I think there is concern from our internal dosimetrist, Dave Allen, that it made lower PoCs.

And Jim Neton, maybe, will pipe in on that. I'm not sure.

DR. NETON: This is similar to a discussion we had, I think, on another site, where if you put a GSD of five about the geometric mean, you end up with a distribution that we are applying. And that is going to generate a distribution of values of which you're going to have some very high values up at the upper tail --

DR. MAURO: I got it. I got it. I see. So by getting the geometric mean by issuing those two values, okay, you've got a number and then, independent of that, you apply this geometric standard deviation of

five --

DR. NETON: Exactly.

DR. MAURO: -- where that five puts you way over the upper end of the value you got when you got your geometric mean.

DR. NETON: Exactly.

DR. MAURO: I see. Yes. We haven't checked that, but intuitively, I --

MR. THURBER: John?

DR. MAURO: Yes?

MR. THURBER: This is Bill.

DR. MAURO: Yes?

MR. THURBER: We had this discussion here a few weeks ago and we did some calculations and in some cases, it showed, as you will recall, that using the geometric mean and a GSD of five resulted in a higher Probability of Causation. And in some cases, using the deterministic 95th percentile resulted in a higher Probability of Causation. So I don't think one can say --

DR. NETON: Bill, we're not

talking about using the 95th percentile as a distribution.

MR. THURBER: Yes.

DR. NETON: We're talking about using the maximum value of the range that was observed. That is very different.

MR. THURBER: Yes. Yes.

DR. NETON: See, we're saying you've got a range of values. You can either use the highest value you found of all the values or you can use the geometric mean of the values, of the two values that were observed, the ranges that were observed with a GSD of five.

MR. THURBER: I understand what you're saying, but I think our comment, our finding at the time, back in last August or whenever, was that we felt the 95th percentile, which you can determine from those statistics, was a more appropriate measure. We didn't say, use the maximum value.

DR. NETON: And that is what LaVon

had talked about. If you used the 95th percentile, you end up with some, I think, values that come out extremely high, you know, something around 25,000 dpm per cubic meter for, I think it was at that time, a rod-straightening operation or something.

I think the arguments are on the table. Maybe we don't need to belabor it on this call because, again, as LaVon indicated, this is already an SEC.

These values are being applied to non-presumptive cancers. And we are certainly willing to discuss that as an issue, maybe aside from the SEC evaluations.

DR. MAURO: I think the issue is very clear. What is good about this is that there are different strategies that one could apply when dealing with this particular circumstance.

Now, if you've got two measurements, you are confronted with the situation, you know, what do you do with two

measurements? You know --

MR. RUTHERFORD: John, I want to point out there are more than two measurements. Yes. There are two measurements that were used to define the boundaries of the max and the min. There were a lot more measurements in between those.

DR. MAURO: Okay. Okay. Well, you know how I am thinking about this -- and I see the mechanics of it now, then. It all rings true in terms of understanding why it comes out the way it comes out.

It's this geometric standard deviation of five. That creates the circumstance by applying it to the geometric mean you got from these two values.

If you were to take all of the values that you do have, which it sounds like you do have more than two then, and you were to make a ranking from high to low and using -- forget about deriving the 95th percentile based on the geometric standard deviation of

five that you get the way -- you know, sort of like an artificial spread, but use the real spread.

In other words, let's get the real data. Let's say you have 20, 30 numbers. I'm not sure how many numbers you actually have for that category of worker. And you rank order them. Don't even try to -- well, you can come up with an upper-bound value.

Let's say you simply just rank ordered them and, from that, you pull off the non-parametric 95th percentile. I would be very interested in knowing where that fits in because if you do have the real data, then you are looking at a situation where the geometric standard deviation that really exists may not bear any resemblance to five. It may be something much less.

And then, all of a sudden, I guess where I am headed with this is, the scientific basis upon which you are making your conclusion is actually drawn from the full

distribution of data that you do have.

And if you are pulling off the high end of that number and applying that as your way of reconstructing in this case uranium exposures for the time period of interest, that would be much more in keeping with the philosophies that we have been talking about.

Taking the min and the max and then you may end up -- I mean, I don't know where you will come out, but taking the min and the max and multiplying two, taking the square root, and getting your geometric mean, and then applying this factor-of-five GSD and then using the full distribution, that brings you to a place where, when you use that as input into IREP, okay, you will come out with a Probability of Causation.

I would be very interested in knowing if you did it a different way, one that I feel is more scientifically grounded, take all your data that you have for that

category, pick off the upper 95th percentile, wherever that happens to fall. And I like the rank order approach, as opposed to the curve-fitting approach, for a variety of reasons. And take it off the 95th percentile and then running with it and seeing where that brings you in terms of the Probability of Causation.

It may end up bringing you lower, you know, than the approach you are using or higher. I just don't know. But it seems to be a scientifically more well-grounded approach than this application of the GSD of five, as adopted. I think it is at least worth looking into.

MR. RUTHERFORD: I will let Dan respond to that.

DR. MAURO: But, I mean, there are going to be lots of -- I am not going to say lots. There are a number of cancers that you do have to reconstruct doses for.

MR. RUTHERFORD: Well, I agree. I

understand the approach you suggested, and we are certainly willing to look into that.

DR. MAURO: Thanks.

CHAIRMAN MELIUS: Why don't we leave it at that? We are trying to focus on the SEC review here.

Anybody else have questions or comments, Board Members?

(No audible response.)

CHAIRMAN MELIUS: Okay. As Dr. Ziemer mentioned earlier --

MEMBER ZIEMER: I'm sorry. What did you say, Jim?

CHAIRMAN MELIUS: I was actually saying as you mentioned. I was actually picking up on your point.

MEMBER ZIEMER: Oh, right. Okay.

CHAIRMAN MELIUS: I was giving you credit for raising it.

One of the reasons that there has been delay in addressing the SEC issues here -- I think they are to some extent

interrelated -- is there have been concerns about some information provided regarding what should be the covered period for this particular facility.

And then, I guess related to that, the petitioner, Dr. McKeel, has had long delays in getting access to some of the information that the petitioners believe and so I would agree with him are relevant to them having adequate information to represent the favor of their petition.

Maybe a way to start on that would be, Dr. McKeel, you are still on the line?

DR. McKEEL: Yes.

CHAIRMAN MELIUS: If you would like to sort of update us on where you are? And then I believe that you had also asked Ted Katz to share some of the more recent correspondence with the Department of Labor with the Work Group members, which Ted did, I believe, earlier this week.

Dr. McKeel?

DR. McKEEL: Yes. So where that stands is I first asked Ted Katz, could I retrieve [identifying information redacted] information that she presented to the Board and then as information packets? I wasn't exactly sure she had given to the Board, but my question was, could I obtain that information directly from the Board under FACA?

And there was a seven-month gap where NIOSH was formulating policies for sharing information that was given directly to the Board.

And the bottom line was the answer came back that no, the Board couldn't share that information. So I've submitted a FOIA request for all of [identifying information redacted] information to Department of Labor.

And they indicate that, actually, they should have a response soon, maybe including today or within a few days, to not necessarily deliver that information but just,

could they provide it and would they provide it.

And, actually, the Department of Labor was very cooperative. And Rachel Leiton sent me copies of both her responses to [identifying information redacted] in which Department of Labor gave their reasoning why they do not think that the information she presented was sufficient documentation to enable them to change the covered period.

I have a response to the last letter, which I have not yet had a chance to deliver to the Department of Labor, but the absence of [identifying information redacted] last presentation to the Board on this subject and the thrust, as I understand it, of the material she sent to the Department of Labor were that there was a particular temper of HK-31 magnesium-thorium alloy that was only made at Dow Madison and that that was the specific temper that was used in the nuclear weapons that led to the classification of Dow

as an AWE site based on thorium work.

So I don't know. That particular point was not well addressed, in my opinion, in the final letter. And that was the essence of what new information [identifying information redacted] claimed she had.

My request at this point is that -- so the Department of Labor has gotten that material. I believe [identifying information redacted] sent similar packets to NIOSH and to the Department of Energy. And I don't know whether she sent it or not to SC&A and/or the Board.

But, in any case, it should be available from NIOSH. And I certainly think that that information -- I do not have a copy of it yet.

So I would like to propose, ask, and request that the Board task SC&A to review all of the material that [identifying information redacted] has presented because it doesn't go just to changing the covered

period.

It goes to what some of the production processes were. It goes to the specific issue, which was new to me, that there was a particular -- I think she cited five or six different tempers of the way that the HK-31 alloys were cured.

And, you know, one of them turned out to be ideal for nuclear weapons. And she says that that was made at Dow Madison's plant.

So I think there needs to be an independent assessment of that apart from Department of Labor, which, you know, is one voice and certainly is the primary decider. I think all of that information is highly relevant to the SEC. So I would ask that that be done.

I think from everything I understand, the Department of Labor will probably send me the [identifying information redacted] information rather quickly. I don't

know what the time frame would be. So that is where that issue stands.

I do have a few comments, just a couple, on the discussion we had about the findings on Appendix C. I don't know if it's appropriate to comment on those.

CHAIRMAN MELIUS: Why don't you wait a second?

DR. McKEEL: Okay.

CHAIRMAN MELIUS: Let's pick up on what you just said --

DR. McKEEL: Yes.

CHAIRMAN MELIUS: -- so we don't lose the train of thought. But I will come back and give you an opportunity for the other comments.

DR. McKEEL: Yes.

CHAIRMAN MELIUS: This is a hard question to grasp because we don't know what was submitted and where it went and so forth. Does NIOSH have any response?

Does NIOSH believe that the

information that [identifying information redacted] sent to Department of Labor that NIOSH also -- does NIOSH also have that information or believe they have that information?

MR. RUTHERFORD: This is LaVon Rutherford. I do believe we have that information that [identifying information redacted] sent to the Department of Labor.

CHAIRMAN MELIUS: And is that information available to SC&A or has it been made available to the --

MR. RUTHERFORD: All the information [identifying information redacted] supplied to us is on the Site Research Database and available to SC&A. Now, from a dose-reconstruction perspective, the information is not really affecting anything associated with dose reconstruction.

CHAIRMAN MELIUS: I guess that is NIOSH's conclusion about it based on their review. That is not something that the Board

has dealt with nor SC&A, if I understand it.

MEMBER ZIEMER: Dr. Melius?

CHAIRMAN MELIUS: Yes?

MEMBER ZIEMER: Paul Ziemer here. I understand Dr. McKeel's request. I would simply make a point, which I make frequently in many such situations, not SEC situations per se but in general, and that is it seems to me that the ball is in NIOSH's court to make an initial evaluation.

I always have to point out I don't like SC&A doing federal work. I want them to do Board work and I think it is premature for us to look at [identifying information redacted] data, which she submitted to DOL.

I don't believe the Board per se -- she has not submitted this to us, as far as I am aware. It seems to me that in the evaluation, it is NIOSH's job to evaluate this kind of thing and make recommendations to DOE or DOL if they believe the period should be changed.

I agree, at some point if it becomes obvious that there is an issue on how that evaluation was done or whether the correct evaluation was done, but until we see, for example, a product, it seems to me at this point, it is inappropriate to task.

We haven't even seen it. So I think we would be tasking sort of in the dark at this point.

MR. HINNEFELD: This is Stu Hinnefeld from NIOSH. I just wanted to offer one thing. I wasn't quite sure what Paul felt like our action would be there. Did you want us to look at this and make some kind of recommendation?

MEMBER ZIEMER: Well, I believe I heard Dr. McKeel say that he felt we should task SC&A to review the [identifying information redacted] data and evaluate, and Dr. McKeel can clarify. I think he was interested both in the processes which might certainly be of interest from a

dose-reconstruction point of view, but the heart of the matter is the issue of changing the covered period, which, in essence, is a DOL/DOE task and to some extent is outside of our purview to start with. So I get a little antsy about getting into that ballpark with the tasking of reviewing material that we have not even seen.

MR. HINNEFELD: Yes. Our role in things like extension of classes or the length of classes or things like that has always been that we would provide any information we found that we thought was relevant to the Department of Energy or Labor, whichever was applicable or both. But we don't particularly give them advice on their interpretation of that information and how to set the Class.

So that responsibility is assigned to them. And we have not really put ourselves in a position of sort of evaluating that information for them and advising them.

So if the desire is that we

provide some sort of analysis to explain either our conclusion that there is no effect on dose reconstruction or that here is the information and this is our position with respect to dose reconstruction, we can do that.

But with respect to the duration of the covered period, I would not think that we -- I mean, I can speak with others in the Institute after we get off the meeting, but I would not think we would start to take on the role of giving advice to the other agencies on fulfilling what are their responsibilities.

CHAIRMAN MELIUS: Yes. Jim Melius. A couple of comments on that. I agree that the covered period and processes; that is not our purview. I guess what was said was about the submission of information as you find it during your research would be -- you know, it's appropriate if you find something that brings into question the covered period or something else important

about the site that DOL should know, then you would bring it to attention.

I guess the only situation where I think that something else arises, you know, do you have information that, in combination with what [identifying information redacted] provided, would be of pertinence to the DOL's review? But even that I think is not something that certainly the Board is directly involved in.

I guess my question was more from the point of view, was there something in that information that would be relevant to what we were reviewing now, which we have already granted the SEC for the current cover. There may be information in there that would be relevant that NIOSH would use in the dose reconstruction for the non-covered cancers.

It may or may not be. I don't know. You know, I have not looked at that information so I can't say. I mean, but that, again, is not something currently -- our Work

Group is currently looking at.

And I guess the issue that we are looking at right now is the question of, should the SEC be extended to include parts or all of the residual period?

I guess the question would be, it would be any of the information there in that -- that has been submitted by [identifying information redacted] and NIOSH has. Is that relevant to the residual time period?

DR. McKEEL: Dan McKeel.

CHAIRMAN MELIUS: Yes?

DR. McKEEL: Can I make a comment about that specifically? I mean, my understanding is that the information involves new information about the AEC contract that governs the thorium work and that that, what she is saying is that she has presented information that indicates the production period for thorium extended beyond 1960. So that would be into the residual period and I think that makes it directly relevant.

And also I would point out that [identifying information redacted] did make her presentation directly to the Board and had handouts which had summaries of that information. And it is in the Board transcript.

So this is not something that was only given to NIOSH or only given to DOL or DOE. It was also presented directly to the Board.

Now, whether she transmitted her information packet to the Board I don't know, but, for practical purposes, her information packet, as Stuart just said, is on the SRDB. So it is readily available to you all and it will soon be to me.

As a practical matter, as soon as I get it, I will forward it to the Board. So that is just something to consider.

COURT REPORTER: This is the court reporter. May I ask who you are?

DR. McKEEL: I'm Dan McKeel.

COURT REPORTER: Dan McKeel? Okay. I just wanted to make sure.

DR. McKEEL: Yes. Sorry.

COURT REPORTER: Okay. Thank you.

CHAIRMAN MELIUS: Anybody else have comments from the Board Members?

(No audible response.)

CHAIRMAN MELIUS: Dr. McKeel, you had some other comments also?

DR. McKEEL: Yes, I did. I will make them very briefly. I believe that the surrogate- data issue is a big issue and would take exception to the discussion this morning. There are several places where surrogate data was used. And the SC&A review of Appendix C cites these as well.

For example, film badge data from the Bay City, Michigan Dow plant was used. And the comment was made as far as justifying this as appropriate use of surrogate data was that the Bay City, Michigan facility was similar -- that's a quote -- to Dow Madison

without any other justification at all. So I don't think that has been proven how similar it was. So that is just a statement.

The other surrogate data that was used was data from Conalco, which eventually wound up owning the Dow, former Dow facility but air sampling data from the 1980s was applied back to characterize air concentrations during the operational period in the 1950s. And I would question that as being entirely appropriate.

The other thing is that I have raised repeatedly, and it really has not been settled, and that is that the Silverstein report from 1956 and 7 -- although Dr. Silverstein on paper was the radiation safety officer for Dow Madison plant, it is clear that he was based in Michigan. He did not live or stay, certainly, at the Dow Madison plant.

In fact, none of the workers that are now alive and have given testimony are

aware of Silverstein's work. That doesn't mean that it doesn't exist, but they do point out that Dr. Silverstein in one of his reports provides a diagram of what is supposed to be the Dow Madison pot room, where they did the castings for thorium alloys.

And it simply is not a picture of any configuration of that pot room that any of the workers alive now are aware ever existed. There were seven pots shown in the schematic; whereas, there were ten actually at Dow.

So they believe that that is a sketch of another facility, maybe the pot room at Bay City, for example. But it is not the pot room at Dow Madison.

So I have contested, and I don't believe it has really been settled. There is a very loose use of the word Dow, which encompasses many of the sites. Dow had a single thorium license to cover their facilities in Michigan, in California, the Dow Madison plant. And I think the only relevant

data that is not surrogate data is data directly from Dow itself.

So, for example, when you talk about Bay City being similar to Dow Madison, one thing that wasn't similar was that they had film badge data from the Bay City, Michigan facility. If it is so similar to Dow Madison, why wouldn't they have any film badge data for Dow Madison? And there is zero film badge data or bioassay data for Dow Madison.

So if Dr. Silverstein were the radiation safety officer at both facilities, it seems inconceivable that he would institute a film badge program at one and then at another place, where it is stated there were identical production facilities, he wouldn't institute a film badge program at Dow Madison.

We don't have any indication that there was a film badge program at Dow Madison. So I just think that whole issue is a huge issue.

The Surrogate Data Work Group has

not been involved in that decision. And clearly in my mind, the justification for using that surrogate data at Dow Madison certainly doesn't comply with the criteria, either the draft Board criteria or the OCAS IG-004 surrogate data criteria. So I just make a plea that that be examined.

The final comment that I wanted to make was about using exponential decay for the residual period for both uranium and thorium. Now, I can understand it for uranium, where, as far as we know, once the extrusion work that was done and the straightening operations were done during 57 and 60, that there was no more introduction of new uranium at the Dow facility.

And so you could say that there was a level present at the end of the production period and then it decayed exponentially throughout the residual period. That's okay, although uranium-238 has a very long half-life.

But, anyway, let's say that that were true. For thorium, I don't think that is the case at all. As was acknowledged by John Mauro, the language of the Act says that if you can't distinguish between AEC and commercial radioactive materials, then all of it has to be considered as AEC material. And I think that is very clear.

So in the case of Dow Madison, there was active production of magnesium-thorium alloys HK-31, HM-21 that extended from 1961 through the 60s, the 70s. Conalco made it. And, actually, it extended up until the time that Spectrolite bought the facility and the workers have testified that there were thorium production runs into the early 1990s at least.

So what I believe should be a more appropriate model is that you had multiple introductions of thorium source term material. And so a single exponential decay curve wouldn't describe that situation at all.

Rather, what you have is multiple introductions of thorium.

We know that there was thorium all over the facility in the 2006-2007 period, when Pangea was cleaning it up, actually starting in 2004 but completing it late in 2007, there was thorium in every building in the Dow building complex.

So, you know, if you thought of multiple exponential decay curves, then there was always a peak and a beginning of the down slope. And then another curve would be superimposed on that so that what you would actually have is an average value during the residual period that would more approximate close to the peak values, rather than a decay curve where at the end of that decay curve, you know, it was sharply curtailed. So I just question that model as being the appropriate one.

The final, other comment I will say is that, although everybody seems to

accept that TBD-6000 is an excellent model for what happened at Dow Madison. I will comment that TBD-6000 has zero information about thorium in it. That's one.

And, number two, when you talk about metal, heavy metal operations on uranium and thorium, there is a very highly pertinent issue that basically has been glossed through.

And that is that at many DOE sites -- and I have seen pictures of them. I can produce pictures of them. Many of the extrusion presses for uranium were covered by vacuum hoods. And they were constantly operating and sucking the dust away from those machines as that uranium, which was often -- you know, it was a very dusty operation. It would often crumble. Pieces would fall out. Men would have to dig those up.

But, anyway, those vacuum hoods were expressly designed to carry that dust away. And it is clear at the Dow Madison facility, there were absolutely no hoods at

all on any of the extrusion presses, of which there were I think nine at one period.

In my reading of TBD-6000, the distinction between an extrusion press with a hood and without a hood and showing the comparative doses of uranium or thorium dust inhalation just aren't present in that document. So I don't think that is an entirely adequate document for the uranium intakes that were experienced at Dow Madison.

Okay. So thank you very much.

CHAIRMAN MELIUS: Thank you, Dr. McKeel.

Any comments from Board Members or NIOSH?

(No audible response.)

CHAIRMAN MELIUS: No? My only comment -- and maybe Stu or someone can clarify -- is your comment on the multiple exponential decay. My understanding, I thought, was that during the residual period only, the sort of the covered processes were

what were taken into account.

It's different during the covered period, as opposed to the residual period. Is that correct?

MR. HINNEFELD: Yes, that's correct, that during the residual period, that we were required to reconstruct the material that is residual from the covered operation.

CHAIRMAN MELIUS: Yes.

MR. HINNEFELD: And so those ended in -- I forget the date now -- 1960 or whatever the determination was at the end of the covered period that the Department of Labor has made. Then we would be reconstructing, during the residual period, contamination that was left over from those operations that ended in whatever it is. I forget the date.

COURT REPORTER: This is the Court Reporter. Please identify yourself.

MR. HINNEFELD: I'm sorry. I'm sorry. Stu Hinnefeld.

COURT REPORTER: Okay. Thank you.

CHAIRMAN MELIUS: Even though that may not be logical in terms of the exposure people experienced, it is the way the legislation is set up.

DR. McKEEL: I understand that.

CHAIRMAN MELIUS: Yes. Thank you. Yes. No. Thanks. Thank you.

What I would propose we do is -- I think we all need, at least I need, to re-look at the letter from the Department of Labor, I think in the context of what Dr. McKeel, some of the issues he raised and some of the other questions.

But I think we would, I think, try to at our next meeting of this Work Group pull everything together and try to -- I think we need to reach a conclusion on this particular SEC petition as applied to the residual period as best we can based on where things stand at that point in time, and recognizing that there are unresolved issues that may be continued

concerns about the covered period.

So maybe at the end of the call, after we have talked about the 250-day issues, we will sort of figure out a schedule and put it together. And I would plan on doing that between now and obviously not the next Board meeting but the following Board meeting.

Is that satisfactory with other members of the Work Group?

MEMBER ZIEMER: This is Ziemer. Could you clarify -- I think I have a general sense of what you're saying, but specifically what will happen now? Are you talking about another Work Group meeting to come to resolution on this issue?

CHAIRMAN MELIUS: Right. Yes. That is a quick sum.

MEMBER ZIEMER: But the extended-period issue is not one that we as a Work Group or Board can sort of come to closure on, I don't think. I mean, suppose we say yes, we think that that is -- well, I

guess, what exactly are you proposing to do with that? It wasn't quite clear.

CHAIRMAN MELIUS: I don't believe we can do anything or should do anything on the covered- period issue. That is the Department of Labor.

All we do is, again, one, if we have information that is relevant to that that we find that through other documents or interviews or something that perhaps NIOSH or ORAU missed or didn't appreciate, that we bring it to whoever's attention to be communicated to Department of Labor, but, you know, we are not charged with reviewing that particular issue. And I'm not proposing that we should.

I think at least that is my understanding of our role.

MEMBER ZIEMER: Right. This is Ziemer again. And then, although it is not the purview of this particular Work Group, I think Dr. McKeel's issues on the surrogate

data will need to be dealt with. And, of course, the Surrogate Data Work Group is working to come to closure on the criteria issue and perhaps that will speak to those issues as well.

I think that is more in our purview, anyway. We need to put to rest the issue of use of the surrogate data for this facility in the covered period, although we already have an SEC there.

CHAIRMAN MELIUS: Right. So it's not the --

MEMBER ZIEMER: So it has to do with -- well, it would have to do with dose reconstructions for the non-covered cancers, I guess.

CHAIRMAN MELIUS: But it is also the residual period.

MEMBER ZIEMER: Right. Right.

CHAIRMAN MELIUS: Yes. I believe in --

MEMBER ZIEMER: And so far as that

starting point may be affected by the surrogate issue.

CHAIRMAN MELIUS: Correct. We can do that. So presumably, if we reach some better closure on the surrogate data issue at our meeting next week, I think then we'll probably have a better idea of sort of scheduling and how to sort of pull those, sort of that surrogate data issue matters as well as the other issues we have been talking about and can bring some closure to the site, at least based on the information we have to date.

MEMBER BEACH: Hey, Jim, this is Josie.

CHAIRMAN MELIUS: Yes?

MEMBER BEACH: It would be helpful for me if you could -- I know we are going to set a date for the next Work Group meeting, but if you could send out an e-mail kind of outlining the issues?

CHAIRMAN MELIUS: Yes.

MEMBER BEACH: Because it is very complicated between the surrogate and the 250-day.

CHAIRMAN MELIUS: Yes. And maybe one of the things we want to charge SC&A to do is to provide that outline as a task to make sure that we have covered all of the points that have come up through that. Maybe we can talk about that at the Board meeting.

DR. MAURO: Jim, this is John Mauro. I would just like to point out with regard to the surrogate data issue, there have been specific Site Profile and SEC petition reviews where we were deliberately tasked to say, even though the criteria that were developed, the draft criteria developed by the Surrogate Data Work Group, were very much draft, I know we are in the process -- you are in the process of trying to finalize that as part of the process to help feed that decision, those judgments. We did review a number of documents where we explicitly

evaluated the degree to which the particular approach adopted at that facility met or did not meet the four criteria.

That was not done here. I do not believe it was done here. Bill, who does a lot of this work, I do not believe we have ever explicitly compared, okay, here is how the approach used --

CHAIRMAN MELIUS: That is correct, John.

DR. MAURO: -- stacks up here. Our position in terms of, say, the 1960 time frame and the use of the uranium information and the Bay City data for external, I believe was used, that we did not do a one-on-one comparison on how it stacks up.

Our response, if you recall, regarding surrogate data was that it was our general feeling that, given the amount of material that is historically covering all time periods, all types of facilities, related to the machining and handling and rowing and

extrusion of uranium that is out there, that there probably exists a pathway where we feel confident there is a pathway of finding the right data.

Dr. McKeel makes some very important points. That is, if you are going to do that, you had sure better make sure you pick an extrusion facility that didn't have a hood if you are going to use surrogate data.

And I agree with that completely. That is, you know, checking to see the applicability and -- which I have to say right now, I can't say when we looked at this whether or not we went to that level of detail to see did the particular surrogate data adopted take into consideration some of these factors.

So I would like to leave you with that.

CHAIRMAN MELIUS: I appreciate it, John. Let's see where we are on the surrogate data issue after our meeting next week. And

hopefully we'll have some -- I just hesitate to say we would assign something for when perhaps the way you would review it would change or something.

DR. MAURO: Correct. That's for sure.

CHAIRMAN MELIUS: Also I think we need to think about -- there is already an SEC for the current covered period. And so we are really talking about the residual period.

And so there may be surrogate data issues related to that. There also may be surrogate data issues related to the earlier period. I'm not sure. There's some different information on that but those who I think would be probably more -- could be more in the area of the dose, you know, dose reconstruction for non-presumptive cancers.

MEMBER ZIEMER: Dr. Melius?

CHAIRMAN MELIUS: Yes?

MEMBER ZIEMER: Ziemer here again. In terms of evaluating that, I would like to

insert one other thing. Again, we're sort of getting off into the surrogate data issue, but I think one of the points Dr. McKeel mentioned was what I would classify as a work practice issue. This is aside from the hardware and the facility and the hoods and all of that.

It is very curious if Dr. Silverstein indeed was the RSO. I think I would characterize him as a corporate RSO, which means he has overall policy calls, even though he may not have physically been there.

It would be very curious as to why one facility had external monitoring and the other didn't. One of the surrogate data issues when we talked about equivalence is not just the same process, but the work practices also come into play.

I think certainly if SC&A gets into this, we want to look at that work practices issue. Was there a conscious decision not to have external monitoring at Dow Madison? Because such a decision itself

says something about maybe an evaluation of what kind of levels were expected there.

I think that has to be part of the surrogate data evaluation as well. Why were there different work practices?

CHAIRMAN MELIUS: That's a good point, yes. Thanks. Okay.

CHAIRMAN MELIUS: We're now going to change gears and/or topics and focus on the 250-day issue. I believe that John was going to sort of give us an overview of where we have been on this issue.

DR. MAURO: Yes. This is John Mauro. I would be glad to try to do it briefly. It has quite a history, as you know. And I have sent out a package of SC&A reports and also recently what I would call a road map on all of the minutes, transcripts of the various Work Group meetings and Board meetings, where the 250-workday issue was discussed. In some cases, it was a relatively brief discussion. In some, it was a very

elaborate discussion. And I believe everyone should have gotten that.

And hopefully, you know, as necessary, the page numbers and the dates of the minutes are all laid out there so that if we actually start to delve into any one of these complex discussions, we could quickly, as necessary, go dive into that particular section of the transcripts and get clarification of what transpired.

But I will try my best to give you the broad brush story of the 250-workday issue and where we are right now. The process first began by struggling with the very difficult question of what criteria should be used. We first thought in terms of we had meetings where, well, what is equivalent to a criticality exposure for those who had the language in the regulation, uncontrolled exposures, where the types of exposure were comparable to what one might experience with criticality.

And that took us down a road that lasted a while. And we filled out a number of work products to try to explore that a bit. We had quite a bit of animated discussion early on regarding that matter.

I think we walked away, this is really what I walked away with anyway, and I think it is also in the transcripts, walks away with, that the exposures that were experienced in the past on the criticality situations varied from the millirem range to the thousands of rem range. You know, we have a nice report that sort of summarizes all of the criticality experience.

So that really didn't help us very much except to say that, oh, my goodness, you know, going down that road, it wasn't too helpful in terms of zeroing in on can we pick a dose or a range of doses.

But at the same time, I think that the complex discussions we had went toward that, well, we all agree that when the doses

start to exceed around ten rem and start to approach 100 rem, now we're talking general acute exposures, whole body, certainly within the realm of what we believe was the intent of, might have been the intent of, putting in that language. And I think we sort of walked away with that as being one of the places that would help guide our thinking.

We also had lots of discussion on what about biological endpoints like, did anyone experience a drop in white blood cell count. That would be another circumstance that under uncontrolled circumstances that might be indicative of a condition that may warrant a 250-workday consideration.

And there is lots of discussion and nuance on matters like that. I guess we walked away from that conversation that we are really not quite sure if we can come up with something: nice, clean criteria, either dose-based or based on not dose but maybe biological endpoints, medical aspects, that

would really help to make it a clean decision-making process.

So that was really more of what I would say the high-level discussion, to see if we could come at this in some general way with general criteria, sort of what we are doing right now with surrogate data, come up with some fundamental principles that will help guide us, make these decisions.

I think, quite frankly, we tried that, and we found it very difficult. That is the story that emerges I think in my recollection of reading of the transcripts.

And then we moved into a mode where we say, okay. Listen. Let's also, in parallel, while we're entertaining these ideas also look at some real world examples of where we might have experienced, where situations might have occurred that one would say we had better consider the 250-workday issue here.

And it emerged for us -- and we have reports on this that was part of the

compilation -- at the Nevada Test Site with some examples of circumstances that one might consider to fall within the category.

DR. MAURO: We also had the Met Lab report, Metallurgical Laboratory report, that more recently came out and prior to that was the Ames report. In the Ames report, that raised a lot of very interesting discussion.

The Ames report in a nutshell demonstrated pretty convincingly that there were multiple blowouts that occurred where workers likely experienced very high exposures to airborne concentrations of uranium.

And even if they were only exposed for a relatively short period of time, five minutes, on that order, a matter of minutes, the dose commitment, internal dose commitment, to the lung and perhaps some other organs, like bone, could have been very high, in excess of 100 rem. And a lot of discussion was held during the Work Group meetings.

But that is not really an acute

exposure. So now we get into this dilemma of is this comparable to something one would consider like a criticality.

SC&A's position was, well, yes. We are talking about acute, short-term exposure. You run into this definition of acute. Is acute the duration of exposure or is acute the dose rate the dose is delivered?

You know, if you are exposed to external exposure from a criticality, that is acute in the most narrowly defined terms. You know, it occurs over a very short time, and the energy is delivered to every tissue in your body, almost instantaneously.

Ames is different. Ames, yes, the exposures occurred in a relatively short period of time, but the inhaled material that's in your body now is being delivered over a protracted period of time.

And we had a lot of animated discussion on that that type of exposure scenario constitutes something that should be

considered to a 250-workday issue. And we certainly have not resolved that.

I think that goes to the heart of the matter because I believe we will find that in many circumstances, when we do encounter situations where people might have been exposed to fairly high levels of internal matters for short periods of time, where the doses might be on the order of tens or even hundreds of rem to some organs but they are dose commitments, not acute, short-term exposures, and we are all struggling with does that mean that we have a 250-workday issue?

That is what emerged from our Ames work. What emerged from the Met Lab work -- and, by the way, the author of both the Ames report and the Met Lab report was Hans Behling, and he's on the line.

To distinguish, something different occurred at the Met Lab, which was very early on, where one could argue that the radiological setting in terms of health

physics practices, the kinds of things that were going on, resulted in some workers who were there clearly -- and you know this for certain -- clearly for relatively short periods of time, much less in 250 days, where the potential for relatively high external and internal exposures existed, to the extent that I believe there are even some workers who experience a drop in red blood cell count.

So here we have a situation where we're talking about, a little different than Ames -- Ames was mainly a concern because of this external exposure from the blowouts. Now we have a situation where on a day-to-day basis while people are working at the pile at the Met Lab. It was so early in the -- and this, of course, is an SEC-covered period. Both of these are.

But the question is, should there be consideration of the 250-day issue to the people at the Met Lab, who, many of them, were there for relatively short periods of time and

the nature of the exposures, neutron, external gamma and internal, one could say, were they under control? Well, you have to question the degree to which they were under control because there was very little knowledge at the time of good radiological protection practices.

And so I guess I will stop at that point in terms of characterizing that we have a circumstance where it is almost as if we have to -- I'll tell you where I walk away from this. I say, you know, it is very hard to make general rules. We would love to be able to make general rules and guidelines to help steer us through the application of this concern on a case-by-case basis, I mean, on an over-arching guideline the way we are doing with surrogate.

The more I think about this problem is understanding the circumstances the way they existed and making judgments. In this particular case, it is clear and

unambiguous that large exposures that occur over a relatively short period of time, whether they were external or internal, we really can't put a handle on how high those exposures are.

They were clearly high enough that they were delivering doses that, whether they're external or committed, are doses on the order of levels that everyone agrees are dangerously high, such as the number that I have in my head, by the way, is 100 rem.

To me if there is any guideline that I go by that I walk away from after reading all of this stuff is that if I've got a circumstance where the potential existed for organ doses that are on that order, I'm starting to think, yes, we've got ourselves a 250-workday.

I just gave you not only my best shot at capturing the history of the story that started, I believe, in 2006 and -- I apologize. I also gave you a little of what

my perspective is on how to deal with this problem.

And, with that, Hans, certainly if there are other aspects to it that you think that I missed, please help out.

DR. BEHLING: Yes. John, I think you summarized extremely well. And I just want to say the distance between, really, criticality events and a short-term exposure that, however, may require you to manifest itself in terms of organ dose is really a difference between perhaps inducing -- both of them will result in high doses. That's for sure. But obviously the criticality-type exposure has a potential of inducing the acute radiation syndrome.

However, as John pointed out, EEOICPA is not really there to compensate people for acute radiation syndrome. We are here to compensate people for radiation-induced cancers and so that being a difference that I consider is really

immaterial to the issue that involves the 250-day criteria.

COURT REPORTER: This is the Court Reporter.

CHAIRMAN MELIUS: Thank you.

COURT REPORTER: Would the person who spoke please identify himself?

CHAIRMAN MELIUS: That's Hans Behling --

COURT REPORTER: Hans Behling?

CHAIRMAN MELIUS: -- from SC&A.

COURT REPORTER: Okay. Thank you.

CHAIRMAN MELIUS: To extend John's metaphor, we have tried the high road and the low road. And neither one gets us there yet.

DR. MAURO: Well said.

CHAIRMAN MELIUS: I would add one other complication to this that I think came up in both Ames and the Met Lab situations was that, even in those situations where I think everyone sort of understood that some people -- that the 250-day rule wasn't appropriate

for people working there in terms of fairly compensating them or whatever we want to call that.

The other issue that we have to wrestle with is, well, then, how would you define the Class? Was it somebody that was there for one day, one incident, you know, ten days, a month, or whatsoever?

And when you have a series of discrete incidents that are exposures that occurred or operations that occurred that led to the exposure, how do we appropriately capture that in terms of a Class Definition for someone there that just captures those? I think that is a further complication to trying to come up with a scheme or an approach that addresses this.

Any Board Members have comments or questions?

MEMBER ZIEMER: Well, this is Ziemer. I will throw in my comments. I have been giving a lot of thought to this past

week. I don't have a solution to it. I think it is a dilemma. Part of the dilemma, of course, is the fact that we use the 250-day criteria in a sense to define a break point between the biological consequences and no biological consequences, as it were, that is very arbitrary.

What I was trying to think about, for example, was let's take a place like Ames where we had the blowouts. I don't recall whether NIOSH felt like they could bound those.

One of the things -- criticality incidents are usually fairly straightforward for bounding anyway, but let's suppose that you have incidents like the blowouts, where -- well, let me ask it this way. Do we have incidents where we're pretty sure what the lower end of a bound might be? Let me put it in as potential.

The potential is that you would get at least some value. Maybe you can't put

an upper bound on it, but you know it's at least this amount. Say it's 10 or 20 rem or something like that.

It seemed to me if you could do that and if we were in a position to pick a number, like John Mauro talked about. Is there a dose number where, yes, we agree that aside from 250, if you've got at least this much dose, there's health endangerment by definition and, therefore, if you were at an incident where that occurred, we would throw you into the SEC, for example?

I am trying to think in terms of that kind of thing so that if you said, "Okay. We know that at such and such a site there were blowouts and if a person could establish that they were present during the period where those were known to occur," even if you couldn't bound them, could you include that? That is in your identified time periods during which discrete incidents occurred that were likely to produce doses above some value or

that would be one thing.

Another thing would be if a person could establish by medical records that they got a dose, even if we didn't know what it was, that resulted in non-stochastic effects, which are not covered specifically; that is, the non-cancers, but they are evidence of high dose, could you include that person as part of an SEC? Because we know that in many of those cases where there are non-stochastic effects years later, there are indeed stochastic effects.

So I have been trying to think about it in those kinds of terms.

CHAIRMAN MELIUS: Again with the metaphor, I think you are trying to get us back on the high road, but that actually -- I mean, my own thinking is maybe not that we -- you know, we started out I think with something similar. I don't think we were thinking of it as a lower bound, but I think we were talking about what exposure

constitutes health endangerment.

MEMBER ZIEMER: Well, that is kind of the issue. And, of course, it is different for every organ and every age, but on this thing, to some extent, just like the 250 days is sort of arbitrary. One might have an arbitrary guideline that you use to make a decision.

Obviously, you know, what is the difference if a person is there 249 days, there is no health endangerment, and 250 there is? Well, you know, that is just arbitrary. But it is a decision tool.

CHAIRMAN MELIUS: And I actually like that in that maybe use that as the decision tool. Then based on the particular facility that we're dealing with or circumstances we're dealing with, you can then sort of develop a Class Definition that would encompass those at that facility who met that, qualified in that way.

And so it might be different among

different facilities. And there may be multiple ways of sort of qualifying to do that, I mean, the same with the stochastic effects.

And so, I mean, I think there are other ways of thinking about this. But that may be a way of approaching this to sort of combine the high and low roads.

MEMBER ZIEMER: This is Ziemer again. I guess I would like to ask NIOSH, maybe Jim Neton. Jim, is it conceivable that one could characterize events in terms of a lower dose potential, even in cases where you know you can't get an upper bound but you are pretty clear that you would have at least a certain dose or am I thinking about this wrong?

I recognize for chronic things, you could make the same argument, but we sort of assumed on a sort of regular facility where you don't have "incidents," everything is operating kind of normally, that the 250 days

gives you a year of exposure. And sort of intuitively you say, "Okay." That means in a general sense if they are operating normally, a person -- it sort of puts them over a five rem dose if you use that as kind of an operating -- you know, the limit for typical operations without acute incidents.

The 250 days in my mind kind of puts you at a five rem cutoff point, that if you worked more than a year, then possibly you got above five rem.

MR. HINNEFELD: This is Stu Hinnefeld, Paul. Jim I'm sure has dropped off the phone because his particular conflict is affected by the 250 days.

MEMBER ZIEMER: Yes.

MR. HINNEFELD: So he has dropped off.

MEMBER ZIEMER: Okay.

MR. HINNEFELD: With respect to your question, you asked, are there incidents where we could say, "Well, if someone were

present for this incident, the dose would be at least as high as some number."

MEMBER ZIEMER: Yes. That's sort of what I am thinking about.

MR. HINNEFELD: I don't know that we have ever tried to do that.

MEMBER ZIEMER: And then you'd have to decide what that number was. But conceptually can you do that?

MR. HINNEFELD: Well, you know --

MEMBER ZIEMER: And then if the number is 100, like John Mauro is suggesting, in my mind I would use a lower number. I would use like 50, which is kind of the threshold for non-stochastic effects. But, in any event, whatever that might be.

MR. HINNEFELD: Well, theoretically there might be some incidents where we could say that someone could if they were present for this incident could have been exposed to at least 50 rem. I think theoretically that seems to be possible now.

I don't know, though, that when we start to go down that path, that we will really be confident that we will be able to say that.

MEMBER ZIEMER: I am just trying to think of a way to think about this. I may be completely off on a wild track here, but I'm trying to deal with an issue that says -- I mean, we all feel sort of intuitively that there are cases where a person wouldn't have to be around 250 days if they were present when one of these events occurred.

MR. HINNEFELD: I think we would disagree with that.

CHAIRMAN MELIUS: I don't recall on the Met Lab discussions, but I do recall with the Ames that I think we were pretty close to making these types of calculations.

I remember at one point Jim Neton was going to go back and sort of do dose reconstructions for those people. In fact, I think SC&A had done some hypothetical

reconstructions on people just to try to see where you would end up in terms of dose and so forth. I don't remember the details of that, but I think we thought that it was something that we would be able to do.

You know, you are dealing with issues of sort of bounding because these are difficult to reconstruct accurately obviously.

MR. HINNEFELD: Right, but the issue is we are talking about incidents we can't reconstruct --

CHAIRMAN MELIUS: Right. So --

MR. HINNEFELD: -- because we're going to be in SEC class. And so I don't know if we can do a lower bound or not.

CHAIRMAN MELIUS: Yes, come close, I guess. We may not be comfortable with dose reconstruction. I mean, in fact, at one point, Ames, we were trying to think, could we do the dose reconstruction, you know, essentially come up with a reasonable upper bound and so forth?

DR. GLOVER: This is Sam Glover. I did want to mention I think Arjun summarized it in the SC&A December report that it's a catch-22 thing. If you can set an upper bound, you can make it a non-SEC.

And so I was thinking, Paul, very similar to what you were that there may be circumstances where we can come up with some number that it's not the upper bound, but it gives you some feel for the level of hazard, that it was a big number.

MEMBER ZIEMER: Well, yes. I'm focusing on lower bound here, that if a person was -- and you would have to place the person. I mean, it's not like, all right, there was this event and the person was ten buildings over.

If you can't show that they weren't -- if you have a situation where they could have been close enough to the event, whether it is a blowout or whatever it is, then you would say, "Well, there is a high

probably they got at least a certain amount."

We don't know what the upper bound is, but if you had a lower bound, like you could say, "Well, they certainly would have gotten at least 50 rem from that event," then I would say, "Okay. Well, maybe you put them in."

But, again, it is a conceptual thing. You don't really talk about numbers unless conceptually you say, "Yes," you can do it.

DR. MAURO: Paul, there is something very attractive about the way you are thinking. This is John Mauro speaking. I didn't think of it this way.

In effect, when you think about the 250-day again, you know, to go back to the idea that, well, if there is a radiation protection program, things are under control. We are managing the work correctly.

We are going to be limiting people to three rem per quarter, really, five rem per

year, but three rem per quarter was the number that historically was used, you know, in trying to keep them under that.

So what I am hearing is one concept could be if there was a circumstance that arose where a person could have experienced in a relatively short period of time more than is the quarterly limit, I mean, this almost becomes a regulatory driven philosophy. It means that, first of all, there was some degree of loss of control. And that goes towards the language.

That may be a good way to get a handle on this. That goes toward the language that is currently in the rule; that is, loss of control. There is a definition of loss of control, clearly a loss of control where a person experienced an exposure that was in excess of radiation protection limit.

There are circumstances where people are allowed to get more than three rem and a quarter under action conditions where

people are under controlled conditions go in that deliberately -- and you know what their exposures were. They were controlled.

If a person for some reason was in a situation where there was a very real possibility that he could have experienced more than three rem in a quarter, that is a nice place to start to think about this. I like the way that goes.

And now that sort of triggers, triggers the process in a way. And now, of course, then if you buy in on that philosophy that this is the place to trigger when you start to think about this, the next step becomes, does that include dose commitment from internal emitters? I think that is going to be a very difficult question to deal with.

But in theory it should apply if you adopt that philosophy that there clearly was obviously a loss of some control because the person was not supposed to get more than three rem in a quarter, we have got a

situation.

Now, if it goes to the other side, where the dilemma comes in, does that bring you to the place that is comparable to a criticality? Then, of course, things get very difficult.

The idea of zeroing in on loss of control and the circus there, I didn't think about that before. And I, for one, find it an attractive way to get at this thing.

DR. BEHLING: John and I guess everybody else, this is Hans Behling. That was the very issue that I was trying to bring out in the Met Lab report in talking about tolerance limits.

Just for an example, I went through all series of air concentrations, internal exposures, et cetera, but, for instance, in exhibit 1, which is on page 16 of my report, I cite as one of the examples a tolerance limit that allowed a person at the time of the Met Lab operations to be exposed

for a single day up to 280 microcuries of iodine-131, which based on the dose conversion factors would lead you to have an exposure well over 300 rads to the thyroid. That was one of the limits.

And so when we talk about limits in terms of contemporary limits, you have to also realize that those limits have changed over time and especially when you start out at the time of the Manhattan Project, where we talk about limits that, by today's standards, are some -- one of the comparisons I made was air concentration limits that were invoked during the time of the Met Lab, as compared to contemporary limits defined in units of facts.

And for some isotopes, the ratio between what was allowed then and what is allowed today was a 50,000-fold difference. So we have to realize that one of the problems we have to encounter when we talk about limits, regulatory limits, as a defining parameter for this 250-day issue is that it is

a sliding scale in terms of time-wise.

MS. HOWELL: This is Emily Howell. I just wanted to clarify for the record something that I think everyone in the Working Group understands, which is some of the ideas that you guys are throwing around would require a rule change. And there is nothing wrong with that. I think the Agency is beginning a review process and is open to hearing those.

I just want to be clear with members of the public who may be interested in this topic that we are talking about the scientific issues here. And some of them would require regulatory changes.

I also wanted to clarify that, again, I think, looking at these questions scientifically is important, but in terms of understanding the terms used in the regulation currently, it is really up to the Department to interpret the regulation and how they want to interpret things like criticality.

But that shouldn't limit your discussion. I just want to be clear with members of the public and on the transcript.

CHAIRMAN MELIUS: Any other comments? Anybody think that this is not something worth pursuing?

(No audible response.)

CHAIRMAN MELIUS: Okay.

DR. GLOVER: Hey, Jim, this is Sam Glover.

CHAIRMAN MELIUS: Yes?

DR. GLOVER: Just since I wasn't when you initiated the Work Group -- and I do want to say that I was very appreciative of John sending this week a very large package of information. It was very, very helpful to I think both Stu and myself.

When you set out to -- when you established this Work Group, was it to define your parameters of how you were going to look at the 250 days or to provide guidance to us or --

CHAIRMAN MELIUS: It was --

DR. GLOVER: -- to pick up the issue? I just want to know what your --

CHAIRMAN MELIUS: It's been a long time, Sam, but it was to provide guidance to you, I think.

DR. GLOVER: Yes.

CHAIRMAN MELIUS: But it was how to deal with particular sites that got referred to this Committee, where because of the way the petitions were worded -- I can't remember going back but also because of when our review of these places where the SEC classes were granted, that we had concerns about the -- was 250 days appropriate?

In some cases, the petitioners raised the issue. I'm thinking of Ames and Nevada Test Site -- I can't remember -- and Met Lab. So it came out of that that it was sort of a continuation of trying to deal with the SECs there based on the petitions but also the idea of trying to come up with an overall

approach, recognizing that there, as Emily pointed out, are some regulatory interpretation issues as well as some of the scientific issues to deal with that.

Actually, my next question was going to be, again, going back to something Dr. Ziemer pointed out, though, we usually let NIOSH take the first steps in addressing these issues. I am not looking for a commitment here on the phone, but I think it is something to think about. I think to move this forward on a scientific basis, I think that if NIOSH could develop a sort of background paper or something addressing this issue, are you comfortable doing that and we have provided enough guidance for that.

I mean, I guess alternatively SC&A could, but I guess I get a little concerned that, I mean, we usually try to let NIOSH take the first step into this area if we are all agreeing that it is something that is worth pursuing and we are really not reacting to any

other reports or rulings or whatever from NIOSH.

DR. GLOVER: This is Sam Glover. That is kind of what I was wondering on the surrogate issue if your guys' recommendations sort of are "Here are some things we thought you may want to consider" and then we responded to that.

I apologize. I wasn't part of that and wasn't sure how you went forward on that issue.

CHAIRMAN MELIUS: Surrogate was a little bit different in that the Board started to, through a Work Group, develop criteria. Then while we were developing criteria, NIOSH published criteria. We were trying to then get the two to mesh since that time.

MR. HINNEFELD: This is Stu Hinnefeld --

CHAIRMAN MELIUS: This is why we have been more dealing with specific sites, trying to address this issue, but as part of

that coming up with some sort of overall scheme for addressing it or how it should be addressed in a more general sense.

MR. HINNEFELD: This is Stu Hinnefeld. We can tank that option. I think based on the discussion and earlier discussions and the communications that have been shared, I think everybody who has participated recognizes that this is kind of a difficult question to frame or to put down an approach that seems consistent that accomplishes the objective here and still, though, is somewhat consistent with the facts and the intent of the regulation, which says that this is sort of an extraordinary circumstance.

So kind of where we are going here is that they are quite likely -- and I don't know that any of us are arguing with this, but there are circumstances other than criticalities, where you have this instants external dose, where you could have sufficient

possibility of harm, as described in this program, as we treat it in this program, so that you would get there in less than 250 days. And so there is a lot.

You have talked about taking the high road and the low road and all roads lead back to where we started from. So we can try, and we can come up with something. And I would think that we might even put some alternatives in there, like, well, we can do this or we can do this, those kinds of things.

I would hope that that would be accessible for our effort, for our product, to not come -- I don't know that we want to come back with a definitive recommendation here.

CHAIRMAN MELIUS: An alternative to that, Stu -- and maybe this makes it easier in terms of the regulatory issue -- is maybe we just schedule a Work Group meeting where we would sit down and just go through this. I mean, we all have a framework for it. And maybe we need to put that framework out and

some description of it.

But then we would just get together for a day in Cincinnati and sort of talk it through given we've got a lot of background, a lot of facts we have developed already. So I don't think there's a lot of sort of technical stuff.

And maybe doing it in that setting, rather than -- then producing a document, appropriate documentation, may be a better way of --

MR. HINNEFELD: Stu Hinnefeld again. That would certainly be helpful from our standpoint.

CHAIRMAN MELIUS: Yes.

DR. MAURO: Jim, this is John Mauro. I just had a thought that goes toward the regulatory-driven philosophy that, as a dimension, as we think about this, I would like to just put it on the table -- what we have is if you were to adopt that approach, the question almost then becomes here we have

a worker who is there for less than 250 days and, therefore, is not included within the cohort that is being compensated who has come down with a particular cancer.

And so, all of a sudden, if internal is going to be on the table, dose commitment, the question then becomes for him, was this worker present at a site where a situation existed where the potential for -- let's say the iodine story that was just described to us by Hans at the Met Lab. The issue, then, really is only applicable in that circumstance to thyroid cancer.

Similarly, one can argue that for a transient, such as the type we have with blowouts at Ames, if we were going to go with that, the situation becomes applicable to only some set of cancers, certainly lung cancer, perhaps others.

What I am getting at is one of the dimensions of the discussions and the think piece is, do we start to apply it if we move

down that road and it becomes cancer-based?

That is, the person might have been present during a given transient that is documented where we really can't place an upper bound but we certainly know the exposures were high, but it would only be of concern for particular classes of cancer.

That is something we have never discussed before. And I think I would just like to put that out as something to entertain as we think through this problem.

CHAIRMAN MELIUS: We actually did discuss it. If I recall correctly, the original SEC proposal, regulation proposal, from NIOSH was to do just that, that SECs would be organ-specific.

DR. MAURO: That predates my date, though. Okay. I understand.

CHAIRMAN MELIUS: I don't think it predates your date, but, anyway, it was a long time ago. Anyway, not in terms of the 250-day issue but overall.

DR. MAURO: Oh, the overall. Yes, yes.

CHAIRMAN MELIUS: Overall rem regulation.

DR. MAURO: Got you. Okay.

CHAIRMAN MELIUS: I think the Board's recommendation was not to do it that way. Again, it doesn't mean we would reject it out of hand or whatever and consider it.

I mean, another way of thinking about this is that we are already giving -- I think Dr. Ziemer mentioned this already. You know, we sort of have sort of the threshold is the 250-day threshold or maybe it's you, John, that talked about it a little bit.

So I think the other issue is sort of equity. If we are compensating people based on their exposure of 250 days, is it fair to people that in these situations, SECs that would not have worked 250 days but may have had sort of similar exposures to not compensate them and so forth?

Now, I think we think of it that way. Then it's sort of, how do we approach it? The more I think about it, the more I think it may be better just let's have another Work Group meeting in person where we can all get together and spend more time and sort of look through the different possibilities, rather than try to produce, either NIOSH or SC&A produce, another document at this point in time.

DR. GLOVER: This is Sam Glover. I think, Stu, we would be happy to participate in that. We would be happy to participate with Stu.

CHAIRMAN MELIUS: Hello?

MR. HINNEFELD: This is Stu Hinnefeld. I can hear you.

CHAIRMAN MELIUS: Okay. Work Group members?

MEMBER ZIEMER: This is Ziemer again. I think that is a good approach. We still have some issues such as this specific

new client issue that could be discussed, but to the extent possible, you have to keep it parallel with the existing SEC regs.

CHAIRMAN MELIUS: Yes. I say this without getting in trouble with Emily, but I think if we do it -- we are having discussions. And I think we have a little wider latitude in terms of what we are talking about. And then if it requires a change in the regulations, that is something that could be considered.

But let's sort of focus on the issue and how we may come up with something that would be workable and fair in this area, rather than trying to produce a report and worry about, well, how does that fit into the regulations or whatever at this --

MS. HOWELL: I think to sort of respond a little bit to Dr. Ziemer's concern and Dr. Melius -- this is Emily -- I think that you guys are certainly, the Board is certainly, within its rights, if it determines

that a different framework would be helpful that is not within the rule. You know, you can always send a letter to the Secretary with the results of your work and the basis for it.

I know you will be hearing a little more next week about a program review that NIOSH is undergoing. So these kinds of discussions, I mean, I think it is up to the Working Group and NIOSH to figure out if you want to come up with options that are within the rule versus that would require a rule change, but, again, these are questions that our office may have to see kind of what you come up with and figure out.

We are not going to be able to for everything necessarily give you an extant answer of whether or not something is envisioned by the rule and would be allowed under the current rule framework.

DR. NETON: Yes. That's a good point. What I would see us doing is developing sort of the options or the

approaches. And then they would have to be looked at from a legal issue, regulatory issue, as to whether they fit or not or could be fitted or whatever.

MEMBER GRIFFON: Jim, this is Mark Griffon. I agree it would be good to do this. I think it might be useful, too, if we can find the discussions that you reference because I do remember there were discussions early on and discussions around the time when the Board was commenting on the SEC regulation. I think if you find those transcripts and maybe pull them together for the Work Group members all in one spot, it might be useful in terms of not --

CHAIRMAN MELIUS: Yes.

MEMBER GRIFFON: I feel a little déjà vu in these conversations. So to the extent that we have had some of these discussions, it might help us when we're trying to pull it all together into some policy options.

MEMBER ZIEMER: Jim, this is Ziemer again. Am I online or am I --

CHAIRMAN MELIUS: You are online.

MEMBER ZIEMER: Okay. I always forget which button I pushed.

CHAIRMAN MELIUS: Right. I have the same problem.

MEMBER ZIEMER: I might point out I just received this week a letter from Senator Reid. I don't know. Ted, did that get distributed to the Board yet?

But, in any event, he specifically requested that the Board take another look at the 250-day issue, in any event. And I think we want to be responsive to that request to the extent possible as well.

So I think what Dr. Melius has suggested would certainly in fit in with that request that we got from Senator Reid to address the 250-day issue as well.

MR. KATZ: Paul? Paul, this is Ted. I just went off with one of the Board

Members.

I did receive that, I think yesterday, late. I was already away out of the office. And I forwarded it to the whole Board by Blackberry, but a couple of times I got failed messages. I don't know whether it's failed to go to everyone or just failed to go to perhaps one Board Member.

MEMBER ZIEMER: Well, in any event, we will be distributing that. But I just wanted to point out that we do have a congressional request, actually, to study this issue further. So I think it's appropriate.

MR. KATZ: Right.

CHAIRMAN MELIUS: It failed to get to me, Ted.

MR. KATZ: Okay. Then it probably failed generally.

MEMBER ROESSLER: This is Gen. I didn't get it.

MR. KATZ: Okay. Then I know that there is no way for me to remedy this without

being out of the office right now.

CHAIRMAN MELIUS: We understand, Ted. Thanks. Good.

Okay. I think we've reached the end of our meeting. What I will do is when we are in Los Angeles next week, I think we can work on scheduling a meeting of this Work Group. It will be an in-person meeting in Cincinnati. And we will go on from there.

I would like to thank everybody, NIOSH and SC&A, for their input and involvement; Dr. McKeel, earlier when we were talking about Dow; and, obviously, the Work Group members. And we'll see everybody in Los Angeles next week.

MEMBER ZIEMER: Great. Thank you.

(Whereupon, the above-entitled matter went off the record at 12:05 p.m.)