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

convenes the

WORKING GROUP MEETING

ADVISORY BOARD ON

RADIATION AND WORKER HEALTH

BLOCKSON CHEMICAL

The verbatim transcript of the Working Group Meeting of the Advisory Board on Radiation and Worker Health held in Cincinnati, Ohio, on June 5, 2008.

STEVEN RAY GREEN AND ASSOCIATES
NATIONALLY CERTIFIED COURT REPORTING
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C O N T E N T S

June 5, 2008

TRANSCRIPT LEGEND

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-- (sic) denotes an incorrect usage or pronunciation of a word which is transcribed in its original form as reported.

-- (phonetically) indicates a phonetic spelling of the word if no confirmation of the correct spelling is available.

-- "uh-huh" represents an affirmative response, and "uh-uh" represents a negative response.

-- "*" denotes a spelling based on phonetics, without reference available.

-- “^”/(inaudible)/ (unintelligible) signifies speaker failure, usually failure to use a microphone.

P A R T I C I P A N T S

(By Group, in Alphabetical Order)

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KOTSCH, JEFF, DOL
MAURO, JOHN, SC&A
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PHILLIPS, CHICK, SC&A
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TOMES, TOM, NIOSH

JUNE 5, 2008

P R O C E E D I N G S

(9:30 a.m.)

WELCOME AND OPENING COMMENTS

DR. BRANCHE: Ms. Munn, are you ready?

MS. MUNN: I believe I'm ready. I'm concerned about the lack of two of our crucial members here.

DR. BRANCHE: Would you like to wait?

MS. MUNN: I think it would be a wise idea for us to wait for about five minutes.

DR. BRANCHE: We'll wait a few more minutes. If you can please mute the line.

(Whereupon, the working group recessed until 9:35 a.m.)

DR. BRANCHE: Good morning and welcome to the Blockson work group. I am Dr. Christine Branche, and I have the pleasure of being your Designated Federal Official this morning. If the Board members who are in the room could please announce their names, I'd appreciate it.

MS. MUNN: Wanda Munn, Chair of the working group, member of the Board.

MR. GIBSON: Mike Gibson.

DR. ROESSLER: Gen Roessler, working group

and member of the Board.

DR. MELIUS: Jim Melius.

MR. GRIFFON: Mark Griffon, member of the Board, not member of the working group.

DR. BRANCHE: Are there any other Board members who are participating by phone?

(no response)

DR. BRANCHE: We do not have a quorum so we can move forward.

Would the NIOSH staff who are in the room please announce your names and whether or not you have a conflict with Blockson.

MR. ELLIOTT: Larry Elliott, Office of Compensation Analysis and Support, NIOSH, and I have no conflict with this site.

MR. TOMES: Tom Tomes, I am with NIOSH also, and I have no conflict with Blockson.

DR. STANCESCU: Daniel Stancescu, I also work in OCAS. I don’t have any conflict with Blockson.

DR. NETON: Jim Neton, OCAS, no conflict.

DR. BRANCHE: Are there any NIOSH staff participating by phone? And if so, will you please announce your names and say if you have a conflict with Blockson?

MS. ADAMS (by Telephone): Nancy Adams, no conflict.

MS. BURGOS (by Telephone): Zaida Burgos, no conflict.

DR. BRANCHE: ORAU staff who are in the room would you please announce your names?

(no response)

DR. BRANCHE: None.

ORAU staff, by phone, would you please announce your names and say if you have a conflict with Blockson?

(no response)

DR. BRANCHE: SC&A staff who are in the room could you please announce your names and say if you have a conflict with Blockson?

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

MR. PHILLIPS: Chick Phillips, SC&A, no conflict.

DR. BRANCHE: SC&A staff who are participating by phone, would you please announce your names and say if you have a conflict?

DR. CHMELYNSKI (by Telephone): Harry Chmelynski, no conflict.

DR. BRANCHE: Other federal agency staff in

the room or by phone, would you please announce your names?

MS. HOWELL: Emily Howell, HHS, no conflict.

MR. KOTSCH (by Telephone): Jeff Kotsch, Department of Labor.

DR. BRANCHE: Any petitioners or their representatives who would like to announce their names please?

(no response)

DR. BRANCHE: Workers or their representatives who are participating who would like to announce their names please?

(no response)

DR. BRANCHE: Members of Congress or their representatives who are participating by phone please?

(no response)

DR. BRANCHE: Are there any others who would like to mention their names?

(no response)

DR. BRANCHE: Before we get started I would simply ask that those of you who are participating by phone if you would please mute your phones it will add tremendously to the quality of the phone participation so that

everyone who is on the phone can hear. If you do not have a mute button, then please dial star six to mute your phones, and then use that same star six to unmute your line. If those of you who are in the room would please mute your phones, that would also enhance the quality of our court reporter.

And Ms. Munn, it's all yours.

INTRODUCTION BY CHAIR

MS. MUNN: Thank you.

For those of you in the room we are planning to work right through to the end of wherever we get to today. We hope to be able to bring this to resolution. We have two items and only two items before us. If you are not aware of the fact that we plan a working lunch, please be aware of the fact that's the case.

And in front of you, you should find a menu for your use. Please put your name, indicate your choice and send it to the head of the table to Dr. Branche here. They'll pick those up in about an hour, and we will be served lunch here at 12:00 o'clock. We don't intend to take much of a break other than

that.

As a bit of background the original report from our technical contractor had seven findings on it. This work group worked through those findings one at a time and reached the point where either the suggestions had been adopted or we had agreement from the contractor that the position that had been taken by the agency was acceptable. When that was reported at our Board meeting, there were two objections. One that the radon data had some outstanding questions, and two, that the data themselves were inadequate. We have convened this meeting for the express purpose of addressing those two items and those items only. If there are any other items that are outstanding or that we need to address, would someone please bring that to my attention right now?

(no response)

MS. MUNN: Otherwise, we are going to respond to the questions that were asked at the Board meeting. Both Dr. Melius and Mark Griffon have been good enough to provide us with their written questions so that we know

precisely what their concerns are. Because the most complex one from an overview standpoint appears to be the radon issues because there are more of them involved, it would be wise for us to begin with that.

RADON ISSUES

I understand our contractor has been working since our last meeting in an attempt to try to respond to the specific questions that Mark brought for us. Am I correct?

DR. MAURO: Yes.

MS. MUNN: Are you, John and Chick, are you ready to talk about that now? Shall we address those, first thing?

And before we do, Mark, that's your understanding. We're all on the same page?

MR. GRIFFON: Those are my questions. I'm not sure if they're -- SC&A did look at these issues. I'm not sure if these questions might be better directed to NIOSH.

MS. MUNN: Do you want to review your question specifically before we start? Would that be appropriate?

MR. GRIFFON: No, that's fine. I don't even have them in front of me so if you have them,

you can read them.

MS. MUNN: I think all of us have received them, have we not?

(affirmative responses)

MS. MUNN: We all do. All right, fine. And I think if we do not, if your questions are not addressed by the information that the contractor is now going to provide, then I'm assuming that our NIOSH folks also have information that they can help respond, too, if that's meaningful to everybody we'll pursue that.

John, would you please?

DR. MAURO: I'd be happy to open it up and sort of what I say set the table, get everybody on the same page. And then from there I believe Chick and Harry Chmelynski, who's on the line as our statistician, will be able to dive more deeply into these issues as required.

MS. MUNN: Thank you.

DR. MAURO: With regard to radon the strategy adopted by NIOSH effectively used -- in order to reconstruct exposures to workers at Blockson from radon, NIOSH took advantage

of data available from facilities in Florida. There were data at Blockson itself regarding airborne radon levels and radon progeny were insufficient to reconstruct doses or exposures from radon.

So they drew upon the extensive dataset that was compiled from phosphate industry in Florida. There's a great deal of information on the subject put out by the Phosphate Institute of Florida. I'm sorry, Florida Institute.

DR. NETON: Florida Institute, FIPR.

DR. MAURO: Florida Institute, okay, FIPR. And that data was extracted from the publication, major publication, from FIPR, and incorporated and used into an OTIB, 0043, I believe the number is. And the basis of that data NIOSH has opted a radon concentration that they feel is bounding for exposures at Blockson. And the number is approximately 2.3 picocuries per liter airborne radon.

And that number was selected because it represented an upper-end value of the observed levels in the Florida facilities for locations at Florida facilities other than

mines and other facilities in Florida that really were not applicable to Blockson. We were asked to look into that and take a look at the data and to see if in fact we come out in the same place.

And so what happened is that Chick and Harry Chmelynski together did a little data diving so to speak going into the original reports and records, writing the numbers, doing some statistical analysis to see if we come out about in the same place that NIOSH did. Because in principle the idea of picking off let's say the upper 95th percentile from relevant data would be at first blush a very claimant favorable approach.

But there are questions. The data set that was used, is that applicable to Blockson? And if so, and if it meets what one would say a reasonable criteria for the use of surrogate data and was used appropriately, which, of course, is a subject of great concern to the Board, one could argue that, well, we have a strategy that seems to work. That would be the way that we look at it.

And so we looked at it from first of

all can we duplicate the numbers that NIOSH generated. Second, do we agree that they used those numbers correctly and that the numbers themselves represented the source of the information, were reasonable as applied to Blockson.

And with that as sort of setting the table, I'd like to pass it off to Chick and to Harry to go into a little more detail on where we come out with regard to our investigations, which, by the way, were ongoing right up until yesterday to get more and more information.

So we're about to hear some materials much of which everyone has seen because as Chick and Harry produced their, what I would call, let's call them white papers, we fired them out. But that work didn't end. It continued right up until I guess you got on the plane. So with that I'd like to pass this off to Chick.

MS. MUNN: Would you like me to distribute these?

MR. PHILLIPS: Yes, if you would, and those were revised on the plane yesterday. And the information that's different from what you had

in the previous version of this should be highlighted so that you can go directly to it. Most of it's just clarification. I believe what we tried to do is address the three, I believe you had four listed, but I think there were really three basic issues marked that we had to deal with, what we dealt with on the radon.

The first one which John was referring to is the appropriate usage of the radon data which was in OTIB-0043 extracted from the FIPR 1998 report that John referred to. I think that may be what we need to address first. And I believe Harry would be better addressing that than me, just say what he did and what he concluded from that. And then we'll address the, I will address the other remaining, I believe, one issue really. There may be two.

So, Harry.

DR. CHMELYNSKI (by Telephone): This is Harry Chmelynski working with SC&A. I looked at the values in the Appendix B to the OTIB-0043 and looked in particular at the ones that were not grayed out because NIOSH had marked a lot of entries that were not appropriate.

And basically what I did was try to recreate their analysis first which was to treat each of the values -- there are about 130 of them or 128 is what I found -- to treat the values as individual measurements even though some of the measurements were reported as means of groups of samples. And when I did that I essentially arrived at the same lognormal distribution that NIOSH had derived. So I didn't have much concern that the lognormal distribution was estimated correctly given their assumptions of each data point should be considered as an individual value and all of them given equal weight.

Most of the entries in the appendix all we know is the value that's reported. If it's a mean, they don't tell you usually a whole lot more about what the other statistics were. But there is one table, which was Table B-3, which covered quite a few in terms of sample sizes, quite a lot of the numbers that are in the Appendix B.

And this table did report not only the sample mean but where they collected measurements, but also the sample variance and

the number of measurements and the standard deviation, and there's a bunch of other statistics. So this gave me a sort of a shoe horn into looking at what the data that underlied (sic) all these mean values would look like.

And even though only Table B-3 provided the variances, what we tried to do was to recreate what the sample variance for all the Appendix B data would be if indeed we had the individual measurements that were simply reported as means in that appendix. And in order to do that you need to have some information on the variances. When you only use the mean, you don't consider the variability around the mean, and in some cases this variability is quite large. And by leaving that variability out you end up with a biased low estimate perhaps of what the actual doses were.

So we reconstructed the variances for each of the entries in Table B-3 and added up the sum of squares treating the remaining entries in Appendix B still as individual values and came up with a variance and a mean

for the entire Appendix B data. What you would call a weighted mean analysis and samples in the Appendix B-3 Table anyway had been expanded.

When I did that I came up with a different lognormal distribution. And I computed the 95th percentile of that distribution, and it ended up being quite a bit higher than the one that was calculated using just the unweighted individual mean values. That was up near about seven picocuries per liter.

But that was an example of one thing you can do with the tables that are presented there. And even that was an incomplete attempt because only Table B-3 tells you anything about the variances.

And I guess that’s it. If anybody has any questions, I could go further into the calculations, but they’re written up in a document I sent to Mark.

MS. MUNN: Is that quite acceptable? Anyone have any concerns with Harry’s description of that particular point?

MR. GRIFFON: They’re not concerns. I just

think NIOSH needs to respond.

DR. NETON: I'd like to say a few words --

MS. MUNN: Please.

DR. NETON: -- if it's appropriate at this point.

MS. MUNN: It is.

DR. NETON: I don't have anything in writing. There's been so many documents going around here it's just been difficult to keep up with it. So I apologize for just verbally discussing this right now.

But we looked at the analysis that SC&A did and at face value, Dr. Daniel Stancescu, who's our statistician on our staff, looked through it for me. And computationally we agree with it. The calculation is done correctly. There's no errors in there or anything like that.

But where we do feel there's a little bit of a disconnect is in the application, in looking at the application of what we're trying to establish here. If we were trying to determine what the highest 95th percentile sample ever taken at the phosphate plant was, then the calculation done by SC&A is correct.

What we're really trying to establish though is what the 95th percentile of the work, 95th percentile work station is. Because if you think about it, we use these data to establish chronic exposures over the entire year. We establish a single value to assign to that worker for an entire year. And we believe that the mean values of the work locations are actually more representative, the 95th percentile of the work location itself, not the variability of the individual data.

In fact, it's somewhat flawed in the sense that the 95th percentile could be anything you want depending on the number of samples that a facility arbitrarily chose to take at a given location. You could weight the values extremely high because maybe you're concerned about a station that's high. You'll take ten times more samples at that location. Now when you rank these, you're going to get an artificially high 95th percentile because of that construct.

And a second point I'd like to make is that there are many more mean values included

here. If you look at the data, Table B-4 also has the variability data associated with it. One could use a similar analysis. But also, many of the other values are six month terrace cut measurements.

And since they are integrated six-month values which are in a sense weighted means in themselves. There are picocurie per liter days divided by days exposed, and you get picocuries per liter. That's how those work. So in a sense almost all of these data represent integrated mean values at the various work locations.

So I think one needs to think about this maybe a little more, but that's at least our current position that we believe that the 95th percentile work location is more appropriately representative of the exposure than the 95th percentile of the highest sample ever taken at the facility.

DR. MELIUS: But, Jim, and this comes up in the uranium issue also, we're supposed to be doing individual dose reconstruction, correct?

DR. NETON: True.

DR. MELIUS: So why are we not interested in

someone was at the high exposure work station?

DR. NETON: We are. That's what I'm saying.

DR. MELIUS: Yeah, but why are we ignoring the, why are we using an average --

DR. NETON: Because he was not --

DR. MELIUS: -- of the work stations as the --

DR. NETON: -- because the highest exposure didn't exist the entire 200 workdays in the year. That's why. The sample, the mean value of all the samples times the end, the days that he worked, is actually his integrated exposure at that work station. That's why we're saying that. It would be inappropriate to take one sample that was high for one day and assume he breathed that sample at that work location for all 200 days of the work year.

MR. GRIFFON: Let me step back one further though. Do you have this raw data or do you just have the means from these final reports and that's why you're kind of stuck with using that anyway? I mean, do you have the raw data?

DR. NETON: No, we do not have the raw data.

Daniel has actually gone back, Dr. Stancescu has gone back and actually reconstructed the data points based on all the nice statistical summaries that they provided us. And we've gone back and remodeled it and essentially got exactly the same number SC&A did. So we're comfortable with the SC&A analysis if we had the real data. So it's a valid --

MR. GRIFFON: That one table doesn't have statistics to be able to do that, does it? Or B-4 I think it is.

DR. NETON: B-4 does have statistics. In fact, if you include -- it's in the FIPR, Florida Institute of Phosphate Research report; it wasn't included in the NIOSH report. If you go back and actually include the variability associated with Table B-4, you even get a somewhat, slightly higher value than what SC&A calculated.

But again, I think if we think about what we're really doing, we're establishing the workers' exposure at the 95th percentile work location, not the workers' exposure to the highest sample ever taken or the 95th percentile sample ever taken at the facility.

I think that's appropriate. But that's our position.

DR. MAURO: Yeah, but we've been in this situation before, and I think as a ground rule that I think we all agree to is that when we have a circumstance where we have a range of values, and individual samples taken at different locations at different times at a facility. And let's say we know -- and it has a very broad distribution, these are actual spot samples, could vary over orders of magnitude.

You say to yourself, but what do we do when we have that data now. One would argue that, well, if we know the workers that worked in that facility, spent a little time here, a little time there, a little time there; and therefore, no one worker spent all this time at one location where we saw the highest value over some short period of time. I agree with that a hundred percent. I mean, that's not plausible; it's not reality.

But on the other hand but we do agree that in a given facility there may be locations where the levels are relatively high

on the distribution, chronically, and there might have been job categories where the person's job category would place him at that location for relatively long periods of time.

So on the former case where the person is in a lot of different places, under those circumstances you would use the upper 95th percentile on the mean, which is basically what you ^. And I would agree with that because there's good reason to believe that the kinds of exposures that people would get over a long period of time, over a year, two years or three years, reflect an integration of the activity in the building.

But it was plausible that a person might have had a job where it placed him where he was at the high end, then all of a sudden things get, well, you know, maybe the upper 95th percentile of the mean really is not the best number unless we know better. And I guess that's where we are right now.

I think in principle we agree in philosophy. The question is in this particular application do we work off the upper 95th percentile mean or do we say, well,

you know, there might have been locations or job categories where a person may have been chronically exposed to some of the higher end values that were observed.

DR. NETON: Which higher end values? The ones that we have the means for?

DR. MAURO: Well, I mean, the distribution -- in other words --

DR. NETON: If the person was at that location for the entire year, the mean has a number of workdays. Would you disagree with a representative of this --

DR. MAURO: For that location.

DR. NETON: That's equal to his picocurie per liter days' exposure.

DR. MAURO: So what I'm hearing is that the data and our understanding of the practice that took place there was that at one location you may have a large exposure. You have high-end locations.

DR. NETON: We do, and I can speak to that.

DR. MAURO: At those high-end locations where, say, that would be, let's say, our critical person. And we don't know who those people are perhaps, but let's assume then if

we don't know who those people are, we'll give the benefit of the doubt and assign that category where that high-end location is.

DR. NETON: Yes, exactly, that's what we've done.

DR. MAURO: And it would be the mean for that high-end location, and you're saying that's what was done.

DR. NETON: That's what we've done.

Let me point out one more thing before we go further. If you look in the Florida Institute for Phosphate Research report -- and I assume people don't have it. It's a 300 page document, but I happen to have it in front of me -- on page 20 there's a sentence in here that I think is important. It says, "One company supplied radon measurements taken from 1989 through 1996."

Now if you look in the data, that's clearly the data that are in Tables B-3 and B-4 that we have. B-3 goes through like '92 or '86, and then the other one goes, so those two tables are from one company. "The locations that exceeded four picocuries per liter are listed in Table 7, although the levels were

extremely variable. All of these locations were low or negligible occupancy areas."

Now the thing I'd like to emphasize here is all of the locations that exceeded four picocuries per liter are listed in Table 7. Table 7 lists the locations that are in Table B-3. So in other words it seems clear to me that they have extracted and only reported what's in Table B-3 are the high-end values that they found.

In fact, the means aren't exceeding four picocuries per liter in most cases, it's the maximum value. If you look on that column in Table B-3, the maximum value exceeded ^ picocuries per liter. So it appears what we have here are the extracted high-end samples. There were many more sampling locations that weren't reported. They just merely reported the high end ones. So that kind of also helps to, I think, emphasize that we were bounding these high end, because those were clearly the highest values contributing to the high-end bounds.

DR. ROESSLER: In looking at all these numbers and talking about taking the very high

values and so on, I wanted to evaluate just what is the impact of these numbers. And we're used to thinking in terms of dose. And according to my calculations if we take the 7.7 -- which was in the report -- picocuries per liter, and we take that into working level months per year, which is what we think of in terms of occupational limits and doses, I come out with that even using all of this, top numbers and everything else, everything being very, very claimant friendly, it's still below the occupational limit for a year. And I think we need to think about that. It's even with all this conservatism, it's still below the occupational limit.

DR. NETON: It's well below that.

DR. ROESSLER: Well below it. So I think we need to keep this perspective in mind. We still need to talk about what we're talking about, but think in terms of the very, well, think in terms of comparing it to the occupational limit.

DR. NETON: Well, you raise a good point, Gen. This contribution of the dose, first of all, is only going to be relevant at these

levels for lung cancers. Radon causes lung cancer. It's well established. It does migrate throughout the body, and there's a very small percentage that would be contributed to the other organs, but it's a lung cancer issue.

If you look at the doses that we are assigning to the workers in the drumming operation in Building B55, in Building 55, the doses are quite large from the inhalation of all the uranium and the thorium and all those other products. So the fact that whether we're talking two picocuries per liter or seven picocuries per liter is a very small component of the overall internal dose we're assigning.

That doesn't mean we don't need to nail this down, but I'm just saying that it is a very small component of the overall dose assigned to the workers.

MS. MUNN: And ultimately, that really and truly is what we need to be concerned with as we look at the individual worker. How significant is the dose that this particular item contributes.

DR. NETON: And the other issue is --

MR. GRIFFON: We need to look at whether we can reconstruct dose. ^ disease cohort ^.

DR. NETON: No, I know.

MR. GRIFFON: I understand ^.

DR. NETON: Yeah, I was not raising this other than just to point out, put in perspective what we're looking at.

DR. MELIUS: We've discussed this before.

DR. NETON: The other thing to consider is that these radon levels are considered to be uniformly distributed throughout the plant. And, in fact, we are reconstructing doses in Building 55, the drumming station, giving a fairly large exposure at the drumming station.

It's unlikely that the highest radon level that occurred in the 95th percentile existed at the drumming station, Building 55, but we are assigning that as such because we can't forget, you know, where it may have concentrated. So that's another issue I think that we kind of give them double dose here almost. These just all sort of add to the claimant favorability, I think, of this entire calculation.

MR. PHILLIPS: Harry, did you have any comment on that?

DR. CHMELYNSKI (by Telephone): Well, there was the one issue that was raised way back at the beginning that perhaps they measured more often in the high ^. I don't see that as being true since Table B-3, for example, has the highest numbers in it than the gypsum stack is the high one, and they only made 24 measurements there which happens to be the smallest number they made at any of the locations.

DR. NETON: I wasn't suggesting that it was true in this case. What I'm suggesting is that if one takes any dataset at face value and that were the case, the type of analysis that was done by SC&A would be biased high if someone did that.

I mean, if you're looking for the highest sample taken, your analysis is absolutely correct. But if you're looking for the highest work location then it's subject to some bias depending on how they chose to do their sampling at the various locations.

DR. CHMELYNSKI (by Telephone): And that is

a relatively large issue here. Even when I went back to the FIPR study and tried to find out how this data was collected, you find out that, well, they just took a table and put it back in the appendix. And that one sentence that you quoted is about all they say about it.

DR. NETON: Which to me indicates --

DR. CHMELYNSKI (by Telephone): This whole table is very hard to trace.

DR. NETON: Well, it's the highest values of the ones that were provided by this company is the way I read that.

DR. CHMELYNSKI (by Telephone): Well, I don't know if that's what it is or not. It's hard to say what it is.

DR. NETON: Well, that's the way I read it. It says there are only four, the only sites that exceeded four picocuries per liter of all the data supplied are included in the table. That seems pretty clear to me.

DR. CHMELYNSKI (by Telephone): Well, that's possible. But again, whether they were measuring work locations even here, I'm not sure what they were measuring.

MR. GRIFFON: Is this data from one facility? I --

DR. NETON: Yes. Well, Tables B-3 and B-4 are from one facility. There are other facilities represented. And, in fact, I did point out the other values are six-month integrated cup measurements. So those are also weighted samples by nature.

I think I guess with this particular issue it seems to me that this is, we might have some disagreement on how to handle the data, but I don't hear anyone at this particular issue is saying that the data can't be used right now.

I mean, that might come up later, but right now this is the difference between an analytical computation which at this point would not appear to me to be an SEC issue. I mean, further discussions may arise, but on this particular issue I don't view this as a somewhat relevant to the ability to reconstruct dose.

MR. GRIFFON: I mean, I'm just not sure, I mean, right now you're sticking with the TIB-0043 as it stands.

DR. NETON: Right now I'd say that we --

MR. GRIFFON: I haven't seen -- I just got the e-mail from SC&A with how they unfolded this. My question, which I brought into this, was do we have the raw data to see -- but you're saying it's an issue anyway. I know.

DR. NETON: I'm confident if we had the raw data we would get very close to what SC&A --

MR. GRIFFON: I didn't realize you had the information for that other table because I thought well how are you handling this other table --

DR. NETON: We can do that. It can be done.

MR. GRIFFON: -- so I didn't look at all the source documents.

DR. NETON: But Daniel has gone through and actually statistically picked data points based on all of the information provided. There's kurtosis information, all kinds of stuff, so we have a very good feel for what the data distribution looked like. And then he picked new values and generated distribution and got extremely close, not surprisingly, to what SC&A did using the squares of the means without using the

variances. And I'm confident that that analysis would be the same if we had the raw data, or very close.

MR. GRIFFON: And from what I understand the only data excluded -- because I looked at the numbers for the 2.3 ^ that number from the data in your report. But I think that the only data that was excluded is the tunnel data.

DR. NETON: Uh-huh.

MR. GRIFFON: And I don't disagree with that, but there was no other data that was not included in the distribution analysis report?

DR. NETON: Correct.

DR. MAURO: In effect what we have here is we're really talking about the Florida data we have here and which is okay. We're sort of compartmentalizing our discussion. So what I'm hearing is if we were doing a dose reconstruction for Florida, what I'm hearing is that there's a philosophy here. There are different buildings, different locations, different job categories at that period of time where we have airborne radon measurements or radon progeny measurements taken over

varying time periods.

Sometimes they're relatively short periods in these individual measurements, and sometimes taken over longer periods of time. Some of the numbers represent the mean of a number of measurements taken at that location, some are individual values.

DR. NETON: None of them are individual snapshots, no ^ samples. They're all cups.

DR. MAURO: And in the end I think we'd all agree that our objective is to say that given the array of data characterizing concentrations of radon at the various locations in buildings at one or more facilities in Florida, your argument is that 2.3 picocuries per liter would probably place a bound on what the chronic exposure of any given year that any worker at that facility might have experienced.

And because even though there may be a great deal of variability, that variability changes over time. So that over a long time period it's going to, the average is going to come down to something less than 2.33. Certainly over any one day or maybe an hour in

a given location it could be a hundred times higher. And since over time it flattens out, and if that in fact is the case, I think that what you've just described is the right way to come at and place a plausible upper bound on what people who worked in Florida might have experienced.

Now, I have to say that in reading the material it's -- and because I haven't read as closely as others though -- but that's an important story to tell. That is, in the end you basically, 2.3, my reaction to that is surprise. Two point three is kind of low. My house, my basement is 2.3.

DR. NETON: Your basement's a lot more enclosed than these chemical factories.

DR. MAURO: These were open and closed.

DR. NETON: We need to talk about that. That's another issue.

DR. MAURO: I'd like to say I think that in principle, the concept and the philosophical approach to the problem I completely agree with. And with that story, the way you've presented it, this is what you tried to do, and if that's in fact what was done, I mean,

we would agree and come to the same place, that 2.33. And I would agree that the fact that perhaps there's a number in there that's a hundred times higher, I don't know if there are any numbers higher.

But if that was just a relatively short period of time or for a given location then it really would be inappropriate and plausible for a person to have spent a long period of time in that setting. And we could make a pretty good case for that. And I would say, okay.

But we have had other locations where the variability was very large, but it was a function of location where one particular location was always high. And we found out, yeah, there was a guy that worked there all the time. And under those circumstances we had to work with the high-end numbers.

DR. NETON: Yeah, that's true.

DR. MAURO: You see where I'm going? Right now I guess we don't have that, that story.

DR. NETON: I've looked at this a lot more closely maybe than others because Tom and I looked at this. And you have to look at sort

of what the process sample values were. And they're much lower. They jive with what was measured at Blockson itself in terms of working levels in 1976. So we have some high-end values that we believe are high end from the Florida Phosphate Industry that are, they're like vent stack, you know, stack values and such. Those are not relevant when constructing dose at Blockson, but we put them in there. We believe that they are high-ended values. If we were to take those values out and just use the ^ values that were measured at the various process locations that are more similar to the wet phosphate process, we would come up with a much lower number. But we felt comfortable saying, well, given the uncertainty in all of this that we will go with the higher value to make sure that we bounded it. And I think that's what we've done. We can get into the Blockson data later.

MR. GRIFFON: You're already at outdoor background levels. I'm not sure how much further ^, I mean 0.75 ^.

DR. NETON: Two picocuries per liter is not

background levels. I don't know where you --

MR. GRIFFON: Point seven five isn't?

DR. NETON: I'm not assigning 0.75 picocuries per liter.

MR. GRIFFON: I mean your mean value of your distribution is 0.75. I know you're assigning 2.33. The average value that you're getting from all this study from this plant suggests that the outside was --

DR. NETON: Well, let's talk about the measurements that were taken at Blockson Chemical. I mean, they're actually working level values in 1976 that were taken, and those values are all below what we're assigning as well by a factor of two. The highest value measured in the plant, I think, is a factor of two lower than what we're assigning. So we've looked at a lot of data. We're not making this up.

MR. GRIFFON: Yeah, yeah.

DR. NETON: We looked at the Blockson data when we were developing TIB-0043 and when we developed the Blockson site profile, and we felt, well, there were not a lot of samples. I think actually five or six. I've forgotten

how many. So again, we felt more comfortable using the two picocurie per liter bounding value that we got out of the FIPR data.

If you look at the Blockson data during production, this was not a shutdown facility, the values are smaller than what we're assigning. It's actual working levels. We don't have to worry about equilibrium ratios or anything. So if you look at the whole story of all the values we've looked at, I think it's a pretty good story that we've bounded the exposure.

MR. PHILLIPS: I guess from our standpoint what we did in this particular instance is we went back and made as much use of the data that had been used in OTIB-0043 and regenerated the numbers. And so we used exactly the same data that you did in your analysis. We just extracted more of the individual measurements out, so that's what we did.

DR. NETON: I think to talk about the Blockson data is probably the next place to go. That's Florida as John has correctly stated. If we're trying to reconstruct dose

for workers in the Florida phosphate industry maybe we've got a good story and a good approach.

DR. BRANCHE: Before you go there, before you continue rather. Those of you participating by phone if you could please mute your phones. Everyone please. And also the information that Chick distributed is not Privacy Act reviewed just to remind you all of that. Thank you.

I'm sorry. Please continue.

MR. GRIFFON: I was just going to say before you go into the Blockson data, I thought the reason for TIB-0043 was that there wasn't, the Blockson data wasn't sufficient or there's some for concern.

DR. NETON: There are ten samples at Blockson that we have. They weren't mentioned in TIB-0043 by the way. They are mentioned in the Blockson TIB.

MR. PHILLIPS: Which really leads us to the second point, and that is how representative are these data of the Blockson situation. So if you want to, in the '50s, I guess --

DR. MAURO: In that time period.

MR. PHILLIPS: -- in the time period and under the same operating conditions.

DR. NETON: We have ten samples or ten locations where samples were taken. This was when Herman Cember was under contract to help them do this analysis. I think he did most of the calculations, but ten samples were taken, very low samples. Chick has gone and established what --

MR. PHILLIPS: That's the table on page two of the handout you just received.

DR. NETON: But in general, I mean, the samples are fairly low if you use the conversion factors. I think Chick's done this properly. You end up with some pretty low, low values that indicate that our use of 0.1 working level month per year is bounding based on the data taken at Blockson in 1976 when the plant -- this was not shut down. This was not a FUSREP analysis. This was actually the plant in production of phosphate products.

MR. PHILLIPS: It was called an industrial hygiene survey and was done by Olin.

DR. NETON: So we don't see any large values in the plant.

DR. ROESSLER: What does S-T-P-P stand for?

MR. PHILLIPS: Super triple phosphate.

DR. ROESSLER: I'm having a hard time visualizing those locations with regard to where people are working. Maybe you have looked at the report more closely and why you chose the number eight which says 40. That must mean Building 40, Filtration. I'm trying to picture what the worker is doing at that location, workers.

MR. TOMES: Building 40 was where they produced the acid. They took the, they digested the rock in that building.

MR. PHILLIPS: And presumably from what we can gather, the grinding operation was also, pulverizing I think they call it, was done in Building 40 as well as the production of the phosphoric acid.

DR. ROESSLER: So you're taking that value then as representative of probably the high value that someone could have received in that operation.

MR. PHILLIPS: Well, if you look, there are three measurements made presumably in Building 40. That's what it appears to be. Two of

them they got no counts. One grinder operation which I assume was close to the pulverizing or ball mill or rod mill or whatever they used --

DR. ROESSLER: You'd think that would have been, I would have visualized that without seeing the numbers as being the one that would be high as far as radon released.

MR. PHILLIPS: One would think so.

DR. NETON: It depends. I mean, this is, if there's a matrix, a rock-type matrix, emanation fractures. This is not a lot of radium in the material. I mean, it's elevated above background by what, a factor of two or three? I mean, these are not Belgian Congo ores that were processed at Mallinckrodt. I mean, they're orders of magnitude lower in radium.

MR. PHILLIPS: And radon is not as freely released from solid material as you'd think it would be even for grinding operations.

DR. ROESSLER: So it's more in the calcining step that you'd expect the releases?

DR. NETON: No, I think the filtration makes sense to me where you actually had more of it

in solution and it's available for --

MR. PHILLIPS: It's after you put the sulfuric acid and the phosphate rock together, and then you filter out the gypsum. That's the point where that would be --

DR. MAURO: That's wet.

DR. NETON: It's a wet process.

DR. MAURO: There's a trade-off there. Okay, you've grounded up your, but now it's wet and as opposed to before with the ^ where it's dry. So you've got these trade-offs going.

DR. NETON: They're already in solution and then precipitated out what ^ ^ radium followed the sulfuric acid precipitate.

DR. ROESSLER: I just want to establish that this particular location is one that is valid for doing this calculation.

MR. PHILLIPS: What we were trying to do is look at the radon values in Building 40, whatever we had. And those are the three measurements that we included that we could identify in Building 40 from this set of ten measurements.

DR. ROESSLER: So the one in number seven,

the STPP would have been in 55, Building 55, probably.

MR. PHILLIPS: Wherever the final products were stored. No, not in 55.

DR. MAURO: No, that would --

MR. PHILLIPS: Fifty-five was, I believe 55 was torn down at this time.

DR. NETON: Well, not before --

MR. PHILLIPS: Used for storage; is that correct?

DR. NETON: Yeah, it was not in use.

MR. PHILLIPS: But not product storage.

DR. MAURO: You see, what we're looking at as I understand it is that the phosphate operation continued, and it's no different in principle than the phosphate operation took place --

DR. NETON: Workers were exposed to this radon before, during and after AEC operations which is another issue.

DR. MAURO: So in concept, in simplest terms one could say, well, listen, whatever the radon levels are that they measured in the '70s as they were doing their phosphate operation, is there any reason to believe that

the radon levels were any different in the 1950s when they also had this kidney unit going on where they were --

MS. MUNN: Just because I had one separate separation.

DR. MAURO: -- now the only thing --

MR. PHILLIPS: The only thing we don't know was what the production rate was at the two various --

DR. MAURO: -- and whether or not, there may have been some design changes, so building ventilation changes, things like that, which, of course, are questions that are reasonably asked, and I guess I don't know whether we have an answer to that. It sounds like a weight of evidence thing now.

So where we really are is, okay, listen, we have the Florida stuff, transfer the Florida information, which given everything we talked about and given your argument, the story you told, certainly I think that you present a very compelling argument that the numbers for Florida are good for Florida.

Now we're saying, all right, now,

let's use those numbers over here. And say, well, how do we judge whether or not you can transfer that information and use it at Blockson. What I'm hearing -- I sort of like -- well, one way to crack the problem is, oh, we do have some radon measurements at Blockson, but they're not in the '50s. They're in the '70s. And when you look at them, and you try to pick the area where you think it might be elevated, you find out that the numbers that they actually measured are lower than the transferred values.

DR. NETON: By a factor of five.

DR. MAURO: By a factor of five. So and now we say, but wait a minute, we still want to test it and say wait a minute, what might be wrong with this story. I mean, all of a sudden the weight of evidence is building in favor of this process. But then you have to say, but hold the presses. Was there anything about what was going on in the '50s at Blockson by way of design, throughput, operations that might have been substantially different than what was going on in the '70s when these measurements were made.

And that's a reasonable question, and right now I guess I don't know if there is an answer to that. Whether or not is there any reason to believe there might have been a difference or maybe reason to believe there might not have been a difference.

DR. NETON: No, we don't have any definitive proof although we did ask this question of Brian Burke (ph) who was the author of the FIPR report, one of the authors of the FIPR report. And in -0043 we have some communication with him where we ask were there any significant changes in phosphate plant processes between the '50s and -- we were asking for FIPR in the '90s, but in the last 40 years or so.

And his opinion was there were no significant changes in the construction of wet process plants between 1950s and even the '90s. The process remained essentially the same. The chemistry remained the same.

He did go on to further say that while environmental regulations led to decreased overall emissions from the plants which is true, the controls had little or not effect on

the occupational radon levels in his opinion. So we have that little piece. We've not gone back because heretofore it's not been brought up in issues what the plant looked like in 1950 versus 1976. I mean, we certainly have workers who worked there during those periods.

MR. PHILLIPS: But to be fair, his experience would be in Florida.

DR. NETON: Well, yeah.

MR. PHILLIPS: As far as the process itself, I expect that's true. But whether they were different ventilation situations in that building from the '50s to the '70s, we don't know.

DR. NETON: Not with certainty.

DR. MELIUS: How did they control emissions, environmental emissions?

MR. ELLIOTT: They probably didn't.

DR. MELIUS: Well, he said they lowered them, that's why I was --

MR. ELLIOTT: Scrubbers.

DR. NETON: Charcoal.

MR. ELLIOTT: Charcoal in the beds. But that probably didn't come on until the '70s or so.

MS. MUNN: I don't recall any comment from the worker groups about significant change in process that would have, I mean, additional buildings, additional ventilation, additional, any kind of change of process. I don't recall that anything --

DR. NETON: Did we ask them, yeah.

DR. MELIUS: The '80s, I don't think it was the focus --

DR. NETON: It was not an issue, I mean --

DR. MELIUS: Yeah, I know --

DR. NETON: -- this whole ^ had been blessed off about six months ago and now it's back on the table.

MR. PHILLIPS: It was asked about Building 55.

DR. NETON: Yeah, 55. We never really --

MR. PHILLIPS: And they described that as having large fans in the upper part which ran continuously. But I'm not sure that I ever saw anything relative to Building 40.

DR. NETON: No, we never --

MR. TOMES: We have asked workers who worked in 40, locations about ventilation. And all of them that had commented on it said that the

facility, any place had dusty operations ^ ventilation back in that era. So that's about all I know from the details.

MS. MUNN: Yeah, but, Tom, you and Chick both were at one of or more of those worker outreach meetings, weren't you?

MR. TOMES: Uh-huh.

MS. MUNN: And I don't recall any indication that there was a significant change. They didn't say anything about changes in building structure or anything.

MR. PHILLIPS: Well, the problem is most of the focus of that was on Building 55 and relatively little on Building 40. But we were focused on Building 55 at that time.

Is that correct? Is that basically correct?

MR. TOMES: I think it's correct. I have had conversations other than meeting with some workers, and it's basically the same. I did ask some details with one of the workers specifically about Building 40 just to get a better idea of how the process, material flowed through the facility. But none of the conversations indicated, like you said,

indicated that there was --

MS. MUNN: No, change.

MR. TOMES: -- substantial change other than when in the ‘50s when they built Building 55 and made some changes.

MS. MUNN: Well, we know about that. That was incorporated in the original site profile.

MR. TOMES: Excess capacity, things like that.

MS. MUNN: Correct.

MR. GRIFFON: This report that we were just discussing, this is 1976. ^ ’83.

DR. NETON: Was it ’83? I’m sorry. I was thinking that there’s another EPA report that was in ‘76.

MR. GRIFFON: And I’m sure we have this reference on our, I mean, this source document, right?

DR. NETON: Yes.

MR. GRIFFON: Because I’m just looking at these calculations. So they only reported one working level, and then you just did ratios to convert for the other --

MR. PHILLIPS: If you look at the references here --

DR. NETON: Yes, it's been out on the O drive for a long time.

MR. TOMES: And there was that ^ in Building 55 in 1970 done by the FUSREP program, and they were all in the lower ranges we've been discussing.

DR. NETON: We wouldn't expect the radon levels to be high in '55 because the radium was gone by the time it got here. We've established that. So again, I'll point out we're giving people these radon levels and working in Building 55 at the same time which one could argue is double dipping. We can't predict where radon would, our theory was we can't predict where radon was sort of diffused throughout the plant.

MR. GRIFFON: Well, especially since you could look at this data. I mean, your work location study there. Some of your higher values are in the auto shop and the admin trailer. That's what makes me just raise the question about any of this data. It could well be, but that's, you know.

DR. NETON: I think 40 is relevant here. That's part of the phosphoric acid production.

You've got to look at what the definition of Blockson Chemical is, right? I mean, it's the Building 55, and I think it says related activities. So we can't start going out onto the vent stack on the phospho-gypsum pile and taking samples and saying that that's relevant to this reconstruction I don't think.

MR. GRIFFON: But my point, I mean, you're making points that like these stack samples are some of the highest ones in your distribution. I'm going back to TIB-0043. But in fact, some of the other higher means are actually in places that I wouldn't have expected to be on the high side of the mean.

DR. NETON: Right, which could be right next to the vent stack.

MR. GRIFFON: It could be, yeah.

DR. NETON: I don't know. I really don't know.

MR. PHILLIPS: The highest source of radon is the gypsum stacks, gypsum piles. So I don't know the relative location to the gyp pile that you're referring to.

DR. NETON: I guess that's what I'm saying is the process, the samples that were taken

near process equipment tend to be on the low end of the distribution from everything that I've looked at. You don't go into a filtration area or a digester tank area and start to see huge levels of radon. I think it's primarily because the concentration of radium in the source term is pretty low, and it doesn't emanate --

MR. GRIFFON: I just expected it to be higher than the auto shop or the admin trailers, but they could be next --

DR. NETON: I don't know. That's why I feel those were the highest, in my opinion they were the highest samples that were identified at that plant that were provided. That's what the document says.

MR. PHILLIPS: And all of this relates to the outdoor versus indoor operations which is also part of this. And for the time period that I had I just tried to verify to the extent that I could whether the, in general, the Florida phosphate plants were a more open, well-ventilated situation than would have been Building 40 based on what we know.

We believe that Building 40 was fairly

enclosed based on the information that I could find as opposed to the Florida situation which -- and I think most of you got that PowerPoint presentation if we could look at it -- and I think that's pretty typical of the Florida operations to the best of my knowledge based on my conversations with the people who would know that. And the fact that the grinding operation was within Building 40 came from one of the workers, I guess in a telephone interview.

Is that correct, Tom?

MR. TOMES: Yes.

MR. PHILLIPS: So I think it's fairly clear from that that there was a difference relative to the potential ventilation situation in Building 40 as opposed to generally the Florida phosphate plants. Now, we don't know from the FIPR report exactly -- well, I guess you can discern a couple of them -- exactly what plants were included in that dataset. So you can't say that those were representative of the general industry in that it was a fairly open operation, but we believe that to be the case. I'm not sure that there's any

argument in that.

DR. NETON: Right.

DR. ROESSLER: Chick, what is your conclusion then the numbers that have been proposed for the Florida operation, which we agree was probably much more open, compared to what you have here, the actual numbers from Blockson in 19 -- I think -- 83? To me, when I look at the numbers, the projected or the proposed Florida numbers are much higher than what your data from Blockson actually shows.

MR. PHILLIPS: A factor of four or five based on those measurements.

DR. ROESSLER: I'd let you make the conclusion from that.

MR. PHILLIPS: Well, I don't know that I can draw any other conclusion than this is the data that we have for Building 40 under conditions which we presume to be fairly consistent with what the operation was during the covered period. So those are the numbers. And then we know we can compare those to the bounding numbers that were generated in OTIB-0043. We may argue which the bounding number might be, and that's still an open question.

But they're well within that bounding number.

DR. MAURO: The way I look at that when I was thinking about it I said, hmm, if the Florida data that we're hanging our hat on is fundamentally more or less an open area and then we're going to transfer that over to the Blockson which sounds like was more or less closed areas, we've got a problem.

But then you say, but we do have data for Blockson a little later, and that sort of offsets that concern. And again, we'll get to that point where we've got a weight of evidence. So I would say without that -- I guess 1970 Blockson data?

DR. NETON: 'Eighty-three.

DR. MAURO: 'Eighty-three data for Blockson, the open versus closed could have been a pretty serious conversion problem; how do we go from here to here. But that sort of offsets it. It sort of says, wait a minute, yeah, that difference might very well have existed. The difference is open versus closed. But obviously it could not have had a profound impact because we wouldn't have seen such low values. So that ameliorated a little

bit my concern of the open versus closed.

MS. MUNN: So the bottom line now is, has this discussion been focused enough to respond to items A, B, C and D that marks our concerns. A, distribution includes not only individual data points but also means. SC&A recently identified this. That's been addressed. I don't know if it's been put to bed.

B, Table B-3, some of the data seems a bit strange. Auto shop, gypsum stack, office, all have 95 percent CLs less than the medians.

MR. GRIFFON: I think we didn't really talk about that one, but I think Harry looked at the source report and gave me an explanation of that one. So --

MR. PHILLIPS: That's not what it seems.

MR. GRIFFON: -- I was misinterpreting that I don't think that's a 95th percentile. I was misreading that table. I didn't go to the source document. That's sort of off the table as a question.

MS. MUNN: C, measurements for Florida study were down in the '90s. Blockson operated in the '50s. Is it possible to demonstrate basic

^ improvements especially ventilation wouldn't have drastically lowered the airborne levels of all contaminants in the '90s. And we did discuss that.

MR. GRIFFON: I mean, we have a new piece for me anyway, I knew it was referenced, but I didn't think we were, but it's in the '80s again. It's not in the '50s, but there's some evidence at least Blockson-specific so pretty close to a '50s.

DR. MELIUS: Yeah, it's getting closer.

DR. NETON: It's at the facility, and it's within, you know --

DR. MELIUS: But I think we have open questions on were there changes in the facility --

DR. ROESSLER: But we also have that one remark from, we have the comment by FIPR that you just read that he doesn't have any evidence that things really changed over time with regard to ventilation.

DR. NETON: In his opinion.

DR. ROESSLER: Yeah, in his opinion. So we have that.

DR. NETON: There's that piece.

DR. ROESSLER: But I agree, it would be --

MR. GRIFFON: It might be process focused rather than -- yeah, I don't know.

DR. NETON: And the conservatism built in as a factor of five different is also there, I mean, so even if there were some changes, one has to wonder would the changes be sufficient to reduce the levels by a factor of five. I mean, there's ways one can get about that I suppose.

MR. GIBSON: That's putting an awful lot of weight into what one man says about one issue that's completely away in another state. I mean, you know, we don't put that kind of weight in a worker's statement so --

DR. ROESSLER: That's only one supporting --

DR. NETON: It's just one piece of a -- like John's argument, weight of the evidence kind of situation. The weight of the evidence is we have no evidence that the radon exposures in the phosphate industry have been much higher than what we're presenting here.

MR. PHILLIPS: I think the way that I would look at that is his statement I think is correct in that the processes have not changed

over that time period. Now, again, his experience is in Florida, and you would not expect a ventilation situation to change because that's mostly outdoors. I mean, not outdoors. It has a top over the facility.

So you wouldn't expect anything to happen relative to ventilation, but I don't know that you can directly apply that statement to Building 40 because we don't know in Building 40 if any of the, anything was done to improve or the ventilation in Building 40 so that the radon levels were less. So I think that we don't know.

MS. MUNN: But, Mike, as we said earlier, we have discussed these issues in both broad stroke and detailed with the workers at Blockson, and the two meetings that we had there, none of the three people who are here who attended those meetings recall any comment about changes to the process.

MR. GRIFFON: And you weren't talking about Building 40. I think everybody said that, too.

MS. MUNN: Yeah.

DR. MELIUS: One, you weren't talking about

Building 40. Number two, you weren't talking about the 1980s I don't believe.

MS. MUNN: The overall process.

DR. MELIUS: And I think it would be helpful to go back and, I mean, the way I look at it is let's find out, you know, which we should be able to, were there changes between the '50s and 1980s in Building 40's ventilation, production rate and so forth. Is that doable?

DR. NETON: It's attemptable. I mean, if that's what's the desire of the working group, we can certainly --

MR. GRIFFON: The other question I had asked John -- I realize it was sort of misdirected. I should have been asking NIOSH -- was did you have the numbers -- and maybe this would be a quick no on this one -- but did you have anything, enough information about source term or production levels to actually go back and do a sort of from the source term calculation of what sort of radon levels could have existed in the process buildings, you know, using conservative factors like building size and ventilation rates, air exchange rates, whatever. I don't know if you had enough

source term information to even attempt that.

DR. NETON: We have production numbers through ’61, I guess, but I don’t think we have production levels through, but yeah, we would have production numbers for ’53 and ’61 and based on building --

MR. GRIFFON: The reason I say that is just that that smell test that I’m asking about. Like these levels are upper background levels, and if you’ve got a big source production --

DR. NETON: When you start ventilating building one air change per hour, you’re going to reduce considerably. There are, I mean, we didn’t go to this level, and I’m not promising to do this, but there are red rad build incorporates radon contamination, but then you get into other contamination fractions and all that kind of stuff and it’s --

MR. GRIFFON: And the parameters are key. The air exchange is key so we don’t know any more information about that.

DR. NETON: I think what one could establish possibly is what increase in ventilation would be required to reduce a building -- I think Building 40 might still be there actually.

What ventilation would be required to reduce it by a factor of five, for example, over what was measured in ’76. And does that seem --

DR. MELIUS: ‘Eighty-three.

DR. NETON: ‘Eighty-three, I’m sorry. I’ve got this ’76 FUSREP report in my brain. So there are some things that could be done. I mean, if that’s the desire of the working group, we could certainly ascertain that. I don’t know how quickly we could do that though.

MS. MUNN: Would that satisfy the concerns? That’s the only real question is would that kind of calculation, would that kind of --

MR. GRIFFON: Well, again, in my opinion that would add to the weight of the evidence. If you do that it’s just another piece.

DR. MELIUS: If not, I’d need some further information or understanding on overall on this issue of sort of northern operations versus southern operations. Because we know ventilation’s a key factor, and we have these open-sited facilities down in Florida that we’re using as data.

DR. NETON: But I think Chick pointed out,

well, if the FIPR data represents the high end of their facilities, and then the FIPR data bounds the high-end value that we measured in Building 40, I think that sort of that open-ended building kind of goes away. The question is --

MR. GRIFFON: Is that the high end?

DR. MELIUS: That's the last question. What I'm saying is this question. 'Eighty-three, looking at what data we have is the first priority. If we can't get further information, then I'd like to better understand if the potential for any other data that might exist from other facilities that might address this issue. Now maybe it's so variable and so facility-specific once you enclose because then it becomes an issue more of what your ventilation rates are and how those might have changed over time that that's --

DR. NETON: I agree.

MR. PHILLIPS: There is another piece of evidence that I tried to get literally as I was coming up here, but there was a study done, I think it was in '77, of a phosphate

plant in Idaho. I suspect it represented more of a closed building situation. We have the radon numbers in there. I just can't get to the right person to find out whether that was an open or a closed operation. But I have phone calls to that, so that may be -- and those were relatively low, too. They were like 0.22 picocuries.

DR. MELIUS: Larry, didn't NIOSH, they had that phosphate study. I remember most of it being in Florida, but I remember --

MR. ELLIOTT: I don't know if that came out of Idaho or how many northern sites, if any, that they looked at.

DR. MELIUS: Someone look back and see --

MR. PHILLIPS: But there is that study, and the radon value is available in that building where the grinding operation took place. If I can get to the right person to confirm whether that was an enclosed or an open situation, that would be another piece of data to add to this.

MR. TOMES: That was the EPA report.

MR. PHILLIPS: Correct.

DR. NETON: We used that for some of our

other stuff. We used it for the airborne. But we didn't look at the --

MR. PHILLIPS: I called the author and got him in a national park somewhere, but he only wrote the report. He didn't do the field study so he wasn't --

MR. ELLIOTT: Have you talked to Tom Bloom?

DR. NETON: No, we have not.

MR. ELLIOTT: We need Tom Bloom who's a NIOSH investigator on this phosphate study, and he's retired now, but we ought to call him and get his take on what the data contains.

DR. NETON: He's already working for us on the RECA.

MR. ELLIOTT: We may have to go look at the data.

DR. NETON: I think the first thing though is maybe to talk to some of these workers who worked in the buildings and say what were the changes between the '50s and 1970s. And if they say nothing happened, then maybe --

MR. GRIFFON: Especially as OSHA came in. I think you want to...

DR. NETON: That's unlikely to be the case. Somebody can remember some change. But we can

sort of say what effect would that have and then couple that with an analysis saying, okay, we feel like we're a factor of five above what we think is reasonable, even a highest value, and if those changes that we've discovered, what would it take to make it so much higher, sort of a bounding based on ventilation changes. If you know the size of the building, and you know -- then you put the radon in there, and you know the ventilation --

MR. GRIFFON: Actually on parameter basically.

DR. NETON: You can actually come up with the effect I think. It shouldn't be that difficult.

MR. ELLIOTT: Didn't we take a set of questions to Blockson workers from the focus group? But we didn't talk about 40.

DR. NETON: Yeah, but we never asked them.

MR. TOMES: There was some mention in passing but later on outside the public meeting we interviewed five people at one point, and then I called another person back. So I talked to at least six people by phone,

and one of those gentlemen worked the Calciner which was right next to Building 40 so he should know if there was any major structural changes during that time period. It won't answer air change ratio or anything like that, but he would be aware of any major changes. And there are also a couple of other people that we talked to who worked in that building that --

DR. NETON: Well, we could get approximate dimensions of the building, the closedness of it, you know, was it completely, any sort of parameter that we could use to --

MR. ELLIOTT: To expedite this might I suggest that Chick and Tom, you guys get on the phone together with your list of contacts including Tom Bloom and at one time both of you hear what they have to say.

MS. MUNN: It would appear to be very helpful --

MR. GRIFFON: It might be useful to have a work group member on there, too.

MR. ELLIOTT: If you want, Mark, that's fine. I'm just saying --

MR. GRIFFON: I mean since --

MR. ELLIOTT: -- let's not have too many different efforts going out to touch these people. Let's do it one time and hear the answers at once.

DR. NETON: You're honorary work group.

MR. GRIFFON: I'm honorary work group member. I wouldn't mind being on that call.

DR. BRANCHE: If that's okay with you, Wanda, I could have a work group member there, too.

MR. GRIFFON: Can I ask one -- I think we're kind of leaving this subject with some actions. But on page 13 in the TIB-0043 there's a reference to this Virginia-Carolina, Chick mentioned this 0.2. But my point on this one is, this is a reality check for me, this last sentence.

Basically, they conclude that the levels are between 0.6 and 0.9 picocuries per liter at this facility. And the last sentence says, "However, the measurements occurred before remediation and after the uranium extraction facility ceased operation and was torn down, only a concrete pad remained." I don't know that there was much more

ventilation than that. I mean, the building didn't exist, right?

DR. NETON: But we didn't use this for anything.

MR. GRIFFON: But -- you didn't use it for anything, right. But your mean and your distribution falls right in the middle of that. So when we're saying, you know, when we're looking to some data for use in dose reconstructions, all I'm saying is, wait a second, 0.75 is the mean.

I know we're using 2.3, right? But the average that we're measuring in these operating facilities supposedly in Florida that are supposed to be representing exposures in the '50s fall right in the middle of an old concrete pad from a facility that was torn down. I think if people look at this they say, wait a second.

DR. NETON: I don't know, Mark.

MR. GRIFFON: Am I misinterpreting this?

DR. ROESSLER: Are you talking about, this is picocuries per liter. What was the number that you referred to? Is that working numbers?

MR. GRIFFON: I thought 0.75 was picocuries per liter. Am I wrong? 2.33 is picocuries per liter.

DR. NETON: I think it is somewhere in that vicinity.

DR. ROESSLER: Yeah, 2.33.

MR. GRIFFON: Well, that's the 95th and the mean was 0.75.

So again, I'm saying not that it couldn't happen, but --

DR. NETON: Well, what it strikes me as being if these things were sufficiently open, if they were almost equivalent to outdoor operations --

MR. GRIFFON: Well, and that's the question of going back either --

DR. NETON: But then we've got the Blockson data to suggest that that's not inappropriate. So I think to me the key thing is to take the '80 Blockson data and try to give people some assurance that it's appropriately bounded for the '50s given what we know about the building size, ventilation rates or changes that may or may not have happened.

MR. ELLIOTT: I was just about to ask for

the record could somebody succinctly and concisely state what it is that is at issue here so that we can pursue it to ground. I'm wandering back and forth in my mind thinking this is below any occupational limit, the data that we're working with. So what is at risk here? What's the problem? I really want to hear that on the record so that we can make sure we pursue this to ground. I mean, are we losing a lot of dose here? Is that what's being speculated?

DR. MAURO: Along those lines I know you're making reference to the occupational, but if I recall the lung dose of picocurie per liter is on the order of rems for the year. Is that correct? In other words the effect of whole body dose from one picocurie per liter is on the order of 200 millirem per year. That's the effect of whole body dose. Then lung dose has got to be a factor of ten higher than that. So we're not, even though we're within the occupational limit, even one picocurie per liter is going ^ with its associated progeny is going to deliver a pretty high dose.

DR. NETON: Be careful. IREP doesn't use

dose at all. We go directly from working levels to risk --

DR. MAURO: Right, and that's fine. But I'm saying assuming that the dose is somehow a surrogate for risk, I do think it doesn't take very much --

MR. ELLIOTT: Well, I agree --

DR. MAURO: -- for radon to give you a nice dose is all I'm saying.

MR. ELLIOTT: I think we're all in agreement on that, but the point still remains. We need to be very succinct and concise for the record here so that we pursue this to ground.

MR. GIBSON: Larry, this isn't going to be for this working group, but just for the record from my point of view, the whole thing is not going to be satisfied until we get to the bottom line of this whole surrogate data issue. You don't have data for Blockson, and --

MS. MUNN: Yes, we do.

MR. ELLIOTT: We do have data for Blockson.

MR. GIBSON: But you're using surrogate data to try to recreate doses, and it just --

MR. ELLIOTT: And it's our position that

we're allowed to do that in our regulation.

MR. GIBSON: I understand that. But it's my position that until I understand it better, I'm just not comfortable with the use of surrogate data. It's not the data that actually took place at the site. I know that the scientific people can establish why it's justified. I know that's your position that you're allowed to do that. But for the record it's my opinion I'm not comfortable with it at this point.

MR. ELLIOTT: And I respect that, and I understand that. It's just that in the balance here we have a number of claims that we need to move forward.

MR. GIBSON: I just want to put my overarching --

MR. PHILLIPS: Can I go back and comment just briefly on this Virginia-Carolina issue? What you have to remember with the Florida plant is you have additional sources of outdoor radon. You have the lines which are in proximity, and you also have large rock piles with the tunnels in close proximity to these plants, whereas you don't have that

situation at Blockson. So those are large sources of out --

MR. GRIFFON: Would you have those in the Virginia, you were saying --

MR. PHILLIPS: This is the Florida plant.

DR. BRANCHE: It's Virginia-Carolina, but it's in Florida. Is that right?

MR. ELLIOTT: Is it a mine or a quarry?

DR. BRANCHE: That's a revelation. It's called Virginia-Carolina, but it's in Florida?

MR. ELLIOTT: When you say mine, are you --

DR. BRANCHE: Is that correct?

MR. ELLIOTT: -- is it an actual mine or is it a quarry?

MR. PHILLIPS: Well, they call them mines, but they're open pit mines.

MR. ELLIOTT: Open pit. The majority of these, in Pennsylvania there's one mine, underground facility, that I know of that they took. Generally, it's an open pit quarry.

MR. PHILLIPS: I don't know if they showed it in that slide presentation, but you see these tunnels. What that is are when they mined the phosphate ore, and they put it in large piles of phosphate ore, and it has

varying amounts of phosphate in it. And they would do tunnels under these in order to blend that. And that's where the tunnels, that's the radon in the tunnels. So you have two additional sources of outdoor radon at the Florida plant that they're in close proximity to the mine and large piles of rock.

ACTION ITEMS

MS. MUNN: Before we go any further let me go down, I have five items that I have recorded that we've discussed as possibilities for further action. One can't help but be concerned over the continuing question of how relevant this is to dose reconstruction and where we really need to be going. I'm going to go through these five items.

First, I have there's going to be any changes in the building process or the process ventilations in Buildings 40 or 25. Talk to workers and find out if there is any additional information we've missed.

Two, what kind of ventilation could have resulted in a factor of five reduction from the '50s to the '80s.

Three, Chick's going to check on data

from the western regions to see of the author and the folks who worked on that have specific data that would be helpful.

Four, NIOSH is going to involve Tom Bloom in what we're doing here.

And, five, there's going to be a technical call with Tom, Chick, myself, Mark to discuss pulling all of this together and my sixth item is the one that Larry brings up. I still don't have a concise specific about what we're trying to achieve here. What exactly do we want all of this activity to end up with? If we are not going to accept surrogate data for any reason, then we need to get that out on the table.

DR. MELIUS: Can I make one --

MS. MUNN: You were out when that was brought up.

DR. MELIUS: I know, but I have one minor correction to your first point which was looking at Building 40 and 55. It's not just worker interviews. There may be documentation, too. I don't know what's available, and so let's investigate that in some way. I'm not saying generate new reports

or anything, but let's see what would be available. Because I'm just not sure the question's ever been asked, and it may be available in some of the other histories of the -- other documentation that's been done.

DR. BRANCHE: Is it Building -- I know Building 40, but is it Building 25 or 55?

MS. MUNN: Fifty.

DR. MELIUS: Fifty-five.

MR. TOMES: Twenty-five is another name you'll hear called for Building 40. At one time it was called 25. They changed the name to Building 40.

DR. BRANCHE: Okay, so 40 is 25 and Virginia-Carolina is in Florida.

DR. NETON: We're all juggling a lot of data.

MS. MUNN: My concern about these five issues still is, and what does this bring us to. And if we are not going to accept surrogate data at the outset, then there's no need in doing any of this because if you will not, one, accept the Blockson data that we have as being adequate for what we have to do, and two, will not accept the surrogate data as

being referenceable and a reasonable standard, then we're wasting our time and spinning our wheels by going further.

So if we can get that -- I suggest that we take a ten-minute comfort break and have everybody give some thought to what are we trying to achieve, the bottom line, and what we're going to do here, and is it going to get us any further down the road. So let's all sign off for ten minutes, well actually, back here at 11:15.

DR. BRANCHE: Back here at 11:15. We'll mute until then.

(Whereupon, the working group recessed from 11:05 a.m. until 11:15 a.m.)

DR. BRANCHE: The Blockson meeting is beginning again.

Ms. Munn.

Oh, excuse me. Those of you who are participating by phone I really risk sounding like the phone police, but you'd be amazed how difficult it is for people who are participating by phone to hear if a person leaves their line open. If someone who's on the line could please acknowledge that you can

hear me, I'd appreciate it.

UNIDENTIFIED SPEAKER (by Telephone): Yes.

DR. BRANCHE: Okay, thank you.

And again, if everyone who's participating by phone could please mute your phones, we would appreciate that. If you don't have a mute button on your phone, then please dial star six, and then when you're ready to speak, then use that same star six. It's important for everyone participating by phone to mute your lines so that everyone on the phone can hear the conversation here in the room.

Ms. Munn.

WORK GROUP'S GOAL

MS. MUNN: Has anyone given any considered thought to my request that you give us a bottom line? What do we have as a bottom line for this work group? What are we trying to accomplish by these five things we've indicated we will try to attempt to do?

This is a little disconcerting because if we have these five additional actions to take care of between now and the time that we've tentatively committed to have a comment

for the Board with regard to our efforts, then we have a lot of work to do in the next two weeks and there's a lot of work being done on other things as well.

So bottom line? Anyone's bottom line? Are we going to be able to accept surrogate data at all or are we going to be able to come to some conclusion with respect to the completeness of the data that we do have? Can we do that here before we leave or not?

DR. MELIUS: Well, I can tell you that where my bottom line is that I am quite skeptical of using, relying on Florida data for a site in Illinois. But I think that the information that we are going to be collecting -- and this is for radon obviously -- is the information that these actions will help. And I agree that, as John and Jim have put it, it's a weight of the evidence issue, and let's see what the evidence shows. And I think we've outlined issues and we'll weigh the evidence.

MS. MUNN: So what I think I'm hearing then is go forward with these five items as quickly as we can. I'll summarize them by e-mail and send them to everyone to make sure that I

have, we have them reasonably agreeably.

MR. GRIFFON: The only other item, Wanda, I just keep on the table, I don't think there's any action, but the statistical analysis. I just got those files. I'd like to look at them. And it may end up, if that's like the final thing, I think it may end up as that's a non-SEC issue, but I still want to have an opportunity to look at that data, you know, the proposed ^ by SC&A at least.

MS. MUNN: And, Mark, I'll rely on you to relay to both John and Chick and Tom what those specific points are that you want to make as you're going through that, and I'll --

DR. BRANCHE: With copies to you, right?

MS. MUNN: -- with copies to me. And please let me know when we can have that teleconference, hopefully sooner than later.

DR. BRANCHE: I'd like to use this opportunity given that request. It's come to my attention that there have been a number of, at least a few requests that have happened for this work group, assignments as it were, to SC&A, that were not necessarily copied to Wanda and certainly didn't copy me. And I'll

be sending out a general announcement to all the Board members, but that we ought not to have that happen.

So when you make your requests, specifically for requests for SC&A to do their work. It's important that Wanda as the work group Chair be copied so that it really is under her, under the aegis of her leadership for this work group. But it's also important that you copy me. Thank you.

MR. ELLIOTT: Can I take a stab here?

MS. MUNN: Yes, please.

MR. ELLIOTT: I would offer that what these items, these action items are staged to do is to inform the working group as to whether or not the radon dose modeling for Blockson based upon data from similar facilities is appropriate to use or not. Does that get it?

MR. GRIFFON: Or is sufficient to bound dose.

DR. NETON: Have we bounded the dose.

MR. ELLIOTT: I'm just trying to get a clear, concise, for the record what we're trying to do.

DR. MELIUS: You reached a conclusion in

doing the site profile and so forth that the radon data that you had from Blockson was not sufficient by itself so you relied on the Florida data for the most part and so forth. And so the question is is that appropriate. And I think we're looking for what's the evidence that would support that, supporting the Blockson data, and so we have some evaluation of that. Supporting that may be more general stuff related to the OTIB but as applicable to the Blockson site and northern sites and close types of information.

DR. NETON: I think I've got a pretty good handle. I do have one question though. In the first item you mention process ventilation changes in 40, and I think you also said 55. Are we, I'm not sure we need to look at Building 55. It's not really, 40 is the relevant building that we're concerned.

MS. MUNN: Forty is the relevant building for me, but I was hearing concerns expressed about when 55 came into this.

MR. GRIFFON: I think I might have said 1955.

DR. MELIUS: I was quoting Wanda.

DR. NETON: Fifty-five I think we all agree would be low potential for radon because the radium source term had been removed before the material got there.

MS. MUNN: Well, that was my understanding, but I had thought I heard concerns expressed but do we know whether there was an increase or a decrease in production and something that had gone on in 55 that would affect us. If that's --

MR. GRIFFON: I thought I said in the '50s. I don't know.

DR. BRANCHE: I thought you were talking about the time period as opposed to a building.

MR. GRIFFON: Yeah, the time period that I was talking about, but maybe someone else said Building 55.

MS. MUNN: Okay, that's wonderful. I would be more than happy to take Building 55 off the, we're just talking about Building 40.

Yes, Gen.

DR. ROESSLER: I have one additional thing that was brought up and I want to point it out. That as you talk to people and analyze

all of this, the difference between the Florida plant and the Blockson plant, of course, general operation is important. But keep in mind what was said about the difference between Blockson and Florida is not only the open ventilation that didn't occur in Building 40, but the background levels which it was pointed out that in the Florida situation this was in an environment probably enhanced radioactivity with it being in a mining area and with it being in the vicinity of other levels. I think that was an important point that we have to keep in mind.

MS. MUNN: Which would increase the background.

DR. ROESSLER: Which would increase the levels, and it would I think answer perhaps Mark's comment about how come the levels were high in the auto shop and other places. There's probably a high background there which wouldn't have occurred at Blockson.

DR. MELIUS: This is a quantitative comparison so it's going to be, it's not going to be ventilation yes, ventilation changes no or something. It's going to be we'll have to

look at it overall.

DR. ROESSLER: Yeah, but it's something to keep in mind.

MR. GRIFFON: And I don't know if there's any more information on the source data, or I'm sure you guys have exhausted that possibility that there might be results, raw data, from the phosphate study, the Florida, whatever it's called, FIPR.

DR. NETON: We can get the raw data. Well, the raw data are probably there. I mean, I don't know if we can; I'm in contact with the person, Brian Burke's still in the system, and he's still in the Florida Institute of Phosphate Research. In fact, I've got an e-mail in to him now regarding some other questions. But I'm not sure the raw data would be meaningful though. I guess I'm not clear, I think we believe the statistical analysis that SC&A has done to reconstruct the, to use the variants to reconstruct the 95th percentile if we had the individual data points, I'm fairly confident that that number is correct if we're given their --

MR. GRIFFON: I haven't looked at it the way

you have, and I do want to ^ that. But I was thinking while we're at the meeting if it's not difficult to get your hands on that, you know, it would just, it might be nice to have it there, you know, just wondering how less than technical things were treated, were they -- I haven't looked at the data the way you have but the raw data might clear up some of those questions.

DR. ROESSLER: When you talk about raw data, and you talked about source, in this report, the surrogate data report that came out on March 29th, there's a page talking about the amount of ore processed at each of the facilities. And I think that's sort of the foundation for this source term calculation.

MR. GRIFFON: I mean more of the radon measurement results.

DR. ROESSLER: Yeah, but I think this is another. When you speak about source apparently the data exists for the amount processed.

DR. NETON: When you -- I'm sorry, Gen.

DR. ROESSLER: No, that's it.

DR. NETON: When you have the mean and the

variants and n, you have basically what you need to come up with how that would expand out in an analysis. I can ask to see if we can get the raw data. I mean, that's certainly doable. I don't know whether we can get --

MR. GRIFFON: That's the easy thing. I think you're right especially if that Table B-4, you said that you have the variants and other information for that table as well?

DR. NETON: Yeah, and --

MR. GRIFFON: It's not in your report. It was in the --

DR. NETON: -- it's in the source document, and in fact, if you add that set of data it increases, essentially the medium value stays pretty much the same. And what happens is you increase the geometric standard deviation because of the variability that's not been included. And that makes sense.

MR. GRIFFON: In these values there was no effort to subtract out a background radon level, was there?

DR. NETON: Not to my knowledge.

MR. GRIFFON: I didn't think so. That was the other reason for ^.

DR. NETON: I think one of those values that you see southwest of the plant may be one of those kind of attempts to establish background. You see there's one column that you questioned; it's southwest. It's the only one that didn't exceed four picocuries per liter in that column, and that was put there sort of as a, what is baseline in this area, and I think it was about two, three-tenths of a picocurie per liter.

MS. MUNN: So do I have another action item here regarding exchange of data?

DR. NETON: Well, I can request the information. I mean, that's easy. Whether we get it or not is beyond our control.

MR. ELLIOTT: And how quickly --

DR. NETON: How quickly. I may or may not be successful. I can at least try.

MS. MUNN: All right, I'll try to get this out to you tomorrow when I'm back in harness, and we need to then establish the earliest possible date for us to have that technical call that we were talking about.

DR. BRANCHE: Excuse me.

There are some people participating by

phone. Could you please mute your line? If you don't have a mute button, then please use star six. Thank you.

Sorry, Wanda.

MS. MUNN: That's quite all right.

I'm a little concerned because our schedule in St. Louis does not have us meeting any time before things pick up, and there's --

DR. BRANCHE: If you dare, there's Monday evening.

MS. MUNN: Yeah, there is Monday evening. That's the only time that I see it would be possible at all for us to get together to see if we've been able to resolve these questions reasonably enough. We have essentially a week and a half in which to do that.

So I'll get the information out to you. I will hope any of you who have action items here will keep me posted especially. Dr. Branche and I need to know whether we're progressing to the point where we're going to be able to provide any kind of report at the St. Louis meeting or not.

DR. ROESSLER: Should we take an availability for Monday evening of the group?

MS. MUNN: It probably would be a good idea. I don't see that we can possibly have anything prior to that time. And personally, I would be loathe to make any kind of recommendation to the Board without our having cleared up these issues that we're talking about here today. So let's do the best we can with the time.

DR. MELIUS: I mean, I'll make it easy in terms of what Gen was asking. I'm not available Monday evening. I'm not coming out until some time on Tuesday.

MS. MUNN: Okay. By telephone are you available?

DR. MELIUS: No, I have a commitment.

DR. ROESSLER: Review for us what's going on on Monday again, Christine.

DR. BRANCHE: There's a Nevada Test Site meeting the morning of the 23rd. Then our site visit to Weldon Springs, the Mallinckrodt Interpretive Center, and then you have a free evening.

DR. ROESSLER: But we're tied up all afternoon.

DR. BRANCHE: No. I would say that my

understanding is that the tour, et cetera, would take about an hour. It's going to take about 45 minutes at the most to get from the hotel to the location. We're leaving the hotel at 12:15, sorry, 12:30 arriving around -- I'd say we'd be finished at the site by three o'clock at the latest and probably back at the hotel by four o'clock at the absolute latest. I mean, that's if we just really take our, just really drag our feet.

DR. ROESSLER: So we would have a four o'clock time available for those of us who are there and for participation by phone.

MS. MUNN: For a five o'clock. The other question then becomes, Jim, if you're coming in on Tuesday --

DR. BRANCHE: You've got the Procedures meeting, and I believe you're taking us right up to lunch --

MS. MUNN: Oh, I am.

DR. BRANCHE: -- Ms. Munn.

MS. MUNN: Absolutely. Yeah, we'll go right to lunch with Procedures. And I don't remember what the agenda --

DR. BRANCHE: That's because you haven't

seen it.

MS. MUNN: We don't have public hearings Monday night, do we?

DR. BRANCHE: Yes, we do. The evening period that is after the dinner hour is on that Wednesday. Currently, I have scheduled -- I haven't set it up because I haven't finished my discussion with Dr. Ziemer about the agenda. But at this juncture the public comment period is scheduled from 4:00 p.m. to 5:00 p.m. which is a little earlier than what you're accustomed to.

DR. ROESSLER: On Tuesday?

DR. BRANCHE: On Tuesday, so the afternoon, the public comment period that immediately follows the Board meeting is currently scheduled from four to five. That could change before I send it out. But we're not starting on that Tuesday until 1:00 p.m.

DR. ROESSLER: So we're back to Monday at maybe four o'clock.

MS. MUNN: Well, but if we do --

DR. BRANCHE: But Dr. Melius is not going to be there.

DR. ROESSLER: He said he wasn't available

that night.

MS. MUNN: Yeah, he says he's not going to be there, not be available until Tuesday.

DR. MELIUS: Yeah, I've got to be in New York City Monday night, and I'm going to be most likely not available even by phone because I'll drive down to the city late, and the New York State Thruway does not have cell phone service.

DR. BRANCHE: Especially if you're driving.

DR. MELIUS: I have a hands-free.

DR. BRANCHE: I'll remind you guys I come from an injury prevention background.

DR. MELIUS: Hands-free, Bluetooth, whatever it's called. And I'm sure Wanda would not distract me during the call.

MS. MUNN: I certainly would be as distracting as possible during the call so it's not a wise idea. If you're going to be in Tuesday, and public comment is early in the day, is there any possibility that we can schedule a one-hour meeting late Tuesday like seven to eight or something of that sort on Tuesday? Can we do that? Because we're certainly not going to have the kinds of

discussions we're having here. It's going to be fairly straightforward I think. We will or will not have --

MR. GRIFFON: You're talking like 30 to 45 minutes, right?

MS. MUNN: Yeah, right.

DR. MELIUS: Excuse me. I was distracted. What time does the meeting end on Tuesday?

DR. BRANCHE: Currently I have the public comment period scheduled from four to five on that first day.

DR. MELIUS: Why don't we just meet at five o'clock?

MS. MUNN: Or at the end of the public comment period, whichever comes first.

DR. MELIUS: We're all there.

MS. MUNN: Good, fine. Then one hour for us at the close of public comments.

DR. BRANCHE: I'll write this down because I've got to get this to Zaida. So the Blockson work group is going to meet on Tuesday, June 24th --

MS. MUNN: At the close of public comment.

DR. BRANCHE: Shall I say ten minutes after? Fifteen minutes after the close?

MS. MUNN: Yes, fifteen minutes after close for one hour.

DR. BRANCHE: All right, we'll send this in. For one hour.

MS. MUNN: And I'm going to --

DR. BRANCHE: Excuse me. For one hour or --

MS. MUNN: For one hour.

DR. BRANCHE: Thank you.

MS. MUNN: You bet.

And I hesitate to leave here without establishing a time for our next telephone call.

DR. BRANCHE: The technical call?

MS. MUNN: The technical call, but we need to accomplish some of these other things I think before we can do that. So all I can ask at this moment is if you'll send me your availability for phone calls.

DR. BRANCHE: But don't you need to include people who are workers on that technical call and Mr. ^?

MS. MUNN: On that technical call, no, I think the NIOSH attorney talked to Mr. Borum* separately. And if we need any input from that, then we'll include that in the technical

call. But the week of the 16th, 17th, 18th, 19th, 20th that's obviously the week that we're going to have to have that call, preferably mid-week.

DR. NETON: I'm out of town the whole week, but I think Tom's available. Tom is available.

MS. MUNN: Okay.

MR. TOMES: Are you referring to -- excuse me. Are you referring to the calling the workers?

MR. ELLIOTT: I think she's referring to a working group technical call which may not comprise the whole working group.

MS. MUNN: No, it doesn't comprise the whole group. It's a technical call.

DR. ROESSLER: You're talking about NIOSH, SC&A, as many of the work group as can be --

MS. MUNN: Mark, me.

MR. ELLIOTT: So you want to have your work done before, as much as you can, before that, I guess.

MR. GRIFFON: I thought the original concept was actually what Larry was saying was we're going to talk to these individuals who might

know something about process history to have SC&A and NIOSH on the phone at the same time, and I said maybe the work group also. I thought that was what we were, you know, when it was initially brought up I thought we were going to have these people, experts or worker experts, you know, whoever, on the phone with us.

DR. NETON: Yeah, I thought that was part of item number one which is determine the process ventilation documentation interviews.

MR. GRIFFON: That's fine. I thought I heard Larry suggest that maybe we could get --

DR. NETON: No, that's true. I think that's all part of number one.

MR. GRIFFON: I'm not sure what we're going to talk about on a technical call.

DR. NETON: Yeah, I don't know. Wanda added that. I'm not sure --

DR. ROESSLER: What we want to see is if NIOSH and SC&A sorting out with the work group being there to ask questions and sorting out what they concluded.

DR. NETON: As a kind of status?

DR. ROESSLER: Yeah, just where are we at

this point before we get into the work group meeting.

MR. GRIFFON: So it should be as close to the Board meeting as possible probably, right, toward the end of that week then.

DR. NETON: See, that'd be better for me. I'm coming back I think Thursday that week.

MS. MUNN: I guess now I'm confused. And one of the reasons I'm confused is because I know how difficult it is to arrange a time when you can get together with workers and trying to arrange a time for the workers, Chick, Tom --

DR. ROESSLER: No, this isn't including the workers. It was my understanding. I thought that --

DR. BRANCHE: There's two different understandings about what this technical -- I thought that what Mark said reflects my notes.

MR. GRIFFON: Originally that's what I heard, but if it's a different construct, that's fine.

DR. BRANCHE: But it's up to you, Wanda, what you want.

MS. MUNN: Well, it's my understanding that

these contacts, the individual contacts, were going to go on from the various individuals involved. And then Tom, Chick, you and I were going to discuss that and try to relay the core of the information or any new information that was gathered to the entire group. I was seeing these action items as a separate thing entirely, as individual action items. If I'm mistaken and misunderstanding what the desire of the group is, please let me know.

MR. ELLIOTT: It just seems to me and the suggestion that I made if Tom Tomes is going to talk to Tom Bloom, he ought to have Chick and anybody else that wants to be privy to that conversation on the line. If Chick's going to call a prior worker, contact his, or Tom's going to call the prior worker contacts that we have, then we ought to do that jointly with whoever wants to be engaged.

And then I think your paradigm could still play out where you still have a technical call with all the members of the work group that you want or those that can be in participation to cover the bases of what you learned in those other contacts. That's,

I think, where I saw this going, but it's only a suggestion I'm offering.

MS. MUNN: I think that's appropriate because my thought when I said earlier as we go through each of these steps, please keep Christine and me involved in what you're doing so that as you're going along, as we can join in, we will if it's possible. But you're not going to get very many members of this group I think sitting in on many of these calls because we're all busy doing other things.

MR. GRIFFON: So you're suggesting -- I think this makes sense, Wanda, that as you make these contacts, maybe by e-mail you can, Tom or John or Chick, can say, can let the work group know.

MS. MUNN: Advising us.

MR. GRIFFON: Yeah, I'm going to interview by phone this individual on whatever. Because you've got to be, you've got to go by their schedule.

MS. MUNN: We have to do that, absolutely.

MR. GRIFFON: And if you're available and want to join us, here's the 1-800 number or whatever, you know.

MS. MUNN: Yes, that's exactly --

MR. GRIFFON: -- that's fine.

MS. MUNN: Yeah, that's what I have in mind --

MR. GRIFFON: And have the technical call to sort of pull it all together.

MS. MUNN: Is just pull it all together. That's my grand plan because I don't see how we can do anything else in coming to the next ten days. All right, I'll get that out to you.

MR. ELLIOTT: John, I'm sorry. I didn't know that -- I didn't want to commit. Who do you want, Chick or -- I want to know who Tom can coordinate with on this.

DR. MAURO: Why don't you contact me. I'll make sure everybody that needs to be involved ^.

MR. ELLIOTT: Okay, thank you.

I'm sorry.

MS. MUNN: That's quite all right.

Are we where we need to be with respect to the radon issues then?

DR. MELIUS: Can I make one more comment? I would just remind everybody that there's also

a petitioner and other people from the site and a congressional interest in this case. And I think we need to be operating as much as a -- is the information available and as open a fashion as possible on this. And the tighter we get with timetables and so forth, the more difficult that gets to be. And let's see where we are, but in terms of the types of information and so forth.

MS. MUNN: Who do you want us to have on copy, Jim?

DR. MELIUS: I don't think there's anything to copy on right now because I haven't heard anything being developed or whatever.

MS. MUNN: No, but as these individual contacts are put together, if you feel that we need to have other individuals other than this working group aware of what we're attempting to do in the next ten days, please let me know, and then I'll try to make sure that they're on copy.

MR. GRIFFON: And then it also may be wise to contact the petitioner and say we're looking to interview some people that have particular knowledge of, and do you have any

suggestions. I don't know if that's, you know.

DR. BRANCHE: Who are you suggesting would contact the petitioner?

MR. GRIFFON: NIOSH.

DR. BRANCHE: Okay.

MR. ELLIOTT: Well, we have our lists of contacts, I think, and certainly we try to keep these petitioners apprised of all our activities on a petition. So that doesn't typically go to inviting them or -- it's mainly notifying them. It doesn't include in all regards an invitation. We'll welcome if they want --

DR. NETON: We may get a list of some --

MR. ELLIOTT: -- we don't want to overwhelm one individual with 15 people on the phone.

DR. MELIUS: No, no, no, I'm not suggesting that. I think it's, just make sure they're kept informed.

MS. MUNN: Just let them know what we're doing.

MR. ELLIOTT: Yeah, yeah, they have a --

DR. MELIUS: We have a staff person who's been very involved in this who just, you know,

keep everybody up to date on process and what reports have been, that we have reports here that have, clearly have not been Privacy Act cleared yet.

SUFFICIENCY OF DATA

MS. MUNN: Very good. I think we know where we're going with radon. The only other item that we have on the table is the question of sufficiency of data. There have been concerns expressed that the data that we have is not sufficient for us to come to conclusions. I'm not sure exactly how to begin to address that, and exactly what needs to be said or how we can address it. I'm open totally to any suggestions.

DR. MELIUS: I have a number of questions, one of which I raised earlier which is more of a general question about the approach used. And that is that as I understand it, NIOSH has taken the uranium monitoring data and calculated uranium intakes based on that data or based on what was available for, well, a number of people that were in these operations. It doesn't cover their complete years of operations. There's two or three

years that are missing unusually at the end, not the beginning. Usually we have the opposite issue.

And as best I can tell without trying to go in and match up all the information and so forth, we have limited information about the individuals that are covered by that monitoring data. And my concern is what I expressed earlier when we started talking about the radon, is we are treating this as a single distribution and a value was taken from that, in this case, 95th percentile.

And that has been applied to anybody who, as I understand it, that would apply for compensation, be a claimant, and for whom there was not monitoring data available or some limitation to that monitoring data. And my concern is that we're taking a single distribution based on everybody that was monitored, and then applying that to people that worked in different job tasks who would have different exposures.

And that's explored a little bit in like Chick's report dated March 27th, 2008. I doubt that's been Privacy cleared, and I'm not

sure that matters in terms of this discussion. It would seem to me that it would be, that that approach is not appropriate for individuals in high risk, in higher exposed populations, people handling the material and so forth. Because they, in fact, would have a different distribution.

We have enough information to believe that these people would have higher exposures than they would actually have a different distribution of exposure. So that when we have an unknown from that group, then one should be applying their distribution in some estimate based on their distribution, not based on the distribution of everybody that was sampled at the facility.

MR. TOMES: Well, the data that we have we believe it to be for the workers who were mainly working in Building 55. And the basis for our assumption that is favorable, that those workers in Building 55 received the highest exposures. And we have on some of those workers we know what they did, and we have data for people who actually handled the materials they were trimming up after it was

dried and the operators in that building.

So it's our belief that we have captured the data for those workers who were most highly exposed in... And even though there is a small amount of data, it's in line with the amount of workers who actually worked in the building.

DR. MELIUS: When capturing that, you are mixing those with people that have much lower exposures. In fact, the people get the detailed information there are people in job categories that are not comparable to people that would be in process operators or whatever within that building. And the question is, my question is, is the distribution you're using that mixes everybody together, everybody that's sampled together, are the appropriate distribution to be using for people that apply, individuals that apply.

DR. NETON: I think there's maybe a slight misunderstanding, and maybe I'm misunderstood. We actually do two separate analyses, do we not? I mean, we do an intake based on what we believe to be the highest exposure in Building 55. But then do we not also look at the

exposure in the balance of the plant and the worker would get the highest dose. So we picked the highest exposure that was out in essentially the calcining area I think, the calcining area where we thought is the other highest operation in the plant. And we would pick the highest dose of those two to apply to the workers. So it's not just a single distribution.

DR. MELIUS: Albeit, it's still, you know, it doesn't reflect the distribution for people that are working in that building.

DR. NETON: It doesn't. It's hot. It's the 95th percentile. So are you suggesting that we can't use coworker data then and pick a 95th percentile? I mean, that's what we've done. It's a coworker study.

DR. MELIUS: What I'm actually questioning is your basic coworker model, which is that --

DR. NETON: You don't think it's high enough?

DR. MELIUS: -- that you're not, what I'm saying is that you're not actually using coworkers. What should be the definition of coworker? Is a security guard a coworker for,

you know, the chemical plant operator?

DR. NETON: We've done that substantially on almost every site, and you're saying that it's not -- we believe that that's a bounding analysis for that worker. It's high. It's certainly on the high end, but it's bounding, plausibly bounding.

DR. MELIUS: Is it bounding is my question.

DR. NETON: I don't know why it wouldn't be. Can you posit a scenario that's higher in Blockson than what we've assigned? It's all documented in the site profile, why we believe that that value is sufficiently bounding. There's no one that could have gotten a higher exposure than that or 95th percentile. I'd be interested to hear why you think that that's not plausibly bounding.

DR. MELIUS: I don't think that that's the appropriate methodology to be used to develop a bound, in particular to develop a bound, but then doing two things. One, applying it to a person -- two steps -- one, applying it to a person that's within the time period when there was monitoring. Secondly, you're then applying it to a person that worked during a

time period when there was not monitoring, which is a separate --

DR. NETON: I'm confused as to what your argument is. I don't see it.

DR. MELIUS: My argument is that the basis for your 95th percentile distribution is the wrong basis.

DR. NETON: We have reconstruction exposures to uranium in Building 55 that is covered under the facility. We've taken urine samples from workers who were exposed to the uranium and taken a 95th percentile intake and assigned that to all workers and saying that that is a bounding value for all workers who were exposed in the plant. I don't know where else --

DR. MELIUS: What I'm saying is you should be only taking the distribution for, if I'm a chemical operator in that plant, then you should be using the, apply to me the 95th percentile for the distribution for chemical operators who worked in the plant, the available monitoring data for them.

DR. NETON: When we have no monitoring data, we are allowed to use coworker data, and

that's what we've done. And we defined coworker data as a bounding analysis. We've done this at Bethlehem Steel. This is not just a Blockson issue. You're raising a much larger issue.

MR. TOMES: I would like to mention this distribution on this particular set of data. I've analyzed this numerous ways just to make sure that I'm faithful for the specific issue that you're referring to. The 95th percentile value of this distribution is actually higher than the highest individual exposed data we have. And so basically we're saying that this data covers the operators because we know a few operators who were in the upper end distribution. But when we fit the data and the way we ranked it, fit it, that we are actually exceeding that value. So we are saying that there is, that this covers the highest exposed person. So that we --

DR. MELIUS: Yeah, but that's misunderstanding the statistics. You're now modeling -- the question is how are you applying it to people that haven't been monitored. And you don't know if the people

that haven't been monitored would have a higher or not. I mean, using the 95th percentile is what it is. And simply one would expect it to be higher. Some of it depends on your sample size and the basic distribution of your raw data. It's a statistical analysis.

MR. TOMES: Well, it's based on assumption that we do have data on those operators in Building 55 that is based on the assumption, and we do have --

DR. MELIUS: You're mixing them in with other people. I'm saying that I don't think it's appropriate. This is what the individual dose reconstruction, that if I have somebody that's a chemical operator, I ought to be looking at the distribution -- an unknown exposure chemical operator -- that I should be using the distribution for chemical operators in some point on that distribution.

MR. TOMES: It actually lowers the 95th percentile value if you exclude the lower values because --

DR. NETON: We're confident that all those exposures are lower than what we're assigning.

DR. MELIUS: Why are you confident?

DR. NETON: Because it's the 95th percentile of the plausible exposure scenario that generated the highest dose in the building.

DR. MELIUS: You don't know that.

DR. NETON: Yes, we do.

DR. MELIUS: No, you don't, Jim. You know it based on what you, what samples you have. You don't know it based on what people that weren't sampled.

DR. NETON: We've looked throughout the balance of the plant and picked out the calcining operation at the highest airborne area in the plant in Building 40 and are using that in Building 40. And we're using the uranium drumming operation in Building 55 as bounding. I can guarantee you that no one received a plausible higher dose than that in those two facilities. I think it's well described in our site profile.

DR. MELIUS: Well, I guess we'll just disagree.

DR. ROESSLER: Well, Jim, are you bringing this up -- I don't quite follow this unless you're bringing it up as a fairness criteria

which I read the surrogate data criteria, and there's one that was brought up but not really listed in there. And that was the fairness. Are you saying that because the doses would be calculated so high that that's not fair to use this?

DR. MELIUS: No, no.

DR. ROESSLER: I just wanted to make sure.

DR. MELIUS: What I'm basically questioning is the approach NIOSH is using in their coworker model that lumps everybody together in terms of all those people within the facility together or within parts of a facility together. And the people actually have, we know that those are the sum of a number of different distributions. There are operators. There are whatever. I don't want to violate Privacy stuff. But there's people with lesser exposures. They're all thrown into that.

MS. MUNN: So let me see if I can restate the position. As I am hearing it, the position is you find unacceptable any coworker data that is not based on workers with similar job titles and similar job experience.

DR. MELIUS: Correct.

MS. MUNN: So that any aggregate which looks only at the highest numbers although we've determined that that would be more than claimant favorable and would, in fact, result in a much larger number of people being potentially compensated than otherwise.

DR. MELIUS: It's not a question of that it may be claimant favorable for the person in the low exposed group. The question is what's an appropriate and claimant favorable for the person in the higher exposed population.

MS. MUNN: Well, what I think --

Go ahead, Jim.

DR. NETON: That's what we've done. We picked the highest exposure scenarios and modeled them and picked the 95th percentile. I would challenge someone to show us an exposure scenario that is potentially higher than what we've modeled in the plant. We've looked very closely at this operation, and this is it. I don't --

DR. MELIUS: Well then we just disagree. That's all I, okay.

MS. MUNN: But if we disagree, then this

brings our entire process to a screeching halt because if we disagree on the ability to use appropriate 95th percentile coworker data as it has been used. And if we disagree on the adequacy of data that is presented, then I do not believe that it's possible for us to come to any conclusion other than it can't be done.

DR. MELIUS: What can't be done?

MS. MUNN: What this program is attempting to do can't be done.

DR. BRANCHE: That's not what I heard Jim say.

MS. MUNN: Well, try to rephrase it for me.

DR. BRANCHE: Certainly. I understand that Jim has a contention, and his contention is -- and you'll correct me if I've misunderstood you -- it's not that the coworker model is invalid, but rather that there should be categories for the coworkers for which doses apply.

So as you said, workers with similar experiences, should their dose if unavailable for a particular individual, the individual for whom a dose is not available, the coworker information that's used to reconstruct their

dose should be of a similar work experience or a similar job title.

Is that correct? You're asking for a categorization.

DR. MELIUS: Yeah, it should be their coworkers.

DR. BRANCHE: However, now, given that that's what you're saying --

Did you want to say something, Emily?

MS. HOWELL: I actually have a question. I usually refrain from asking questions during these meetings, but I just want to be clear. Is it proper -- maybe this is a factual, scientific question -- would it be proper to be categorizing workers if we were to do so by their job title? Because I would assume that a person could have a job title, but one production engineer could work in Building 40, another could work in some other building.

And would it be proper then to just lump all of those production engineers together? Would it be more proper if you're going to need a categorization to categorize them based on the buildings that they were in? Because couldn't a security guard in Building

40 have more, have a more close exposure rate to the production engineer in Building 40 than two different production engineers?

DR. MELIUS: You're absolutely right, but and I think we're using chemical operator as a hypothetical or a factor that would impact exposure. The mean exposure for a chemical operator -- I was actually keeping within a single building, would be a certain. Now if you had chemical operators that roamed from building to building, moved from building to building, had multiple buildings, then there'd be other ways at looking of how to take into account their characterization.

My concern is lumping everybody into one large coworker model and assuming that that is claimant favorable taking the 95th percentile, that is claimant favorable. And to apply it to everybody even though the individual claimant that's applying would be someone that is, you know based on your CATI interview or whatever, that that person is a chemical operator.

DR. BRANCHE: I can't imagine that your question, this is the first time that your

question has come before this group. So how have you responded to that in the past?

DR. NETON: It's not been an issue until this point.

DR. BRANCHE: Oh, it's not?

DR. NETON: No.

MS. MUNN: This is one of the things that we have heard repeatedly though in site after site after site in worker group after worker group after worker group. We don't do the same job all the time. We don't work in the same place all the time. And so the final concern then is since you can't identify where I was at any given time, and you can't tell from my job title what my actual work or where my actual work position was, how can you possibly tell me what my dose has been.

And the approach that has been taken as being the most favorable for all claimants is our 95th percentile approach based on the record that we have. The highest exposed individuals form the basis for that. If we cannot identify where each of these people were, and that's the argument we hear all the time, then if we take the position that I

think I'm hearing presented here, that leads me to the conclusion that we cannot do what we're charged with doing, and what we have done successfully for a number of years.

DR. MELIUS: Some of us would argue whether it's been done successfully, but I think the point is that, I mean, the fact that Christine's question is, the point is the way we've approached reviewing these --

DR. BRANCHE: It's not my question. I was simply restating your --

DR. MELIUS: Well, no, your observation was that we have, the way we've reviewed these we've tended not to ask these questions. We review procedures in a very general fashion. We don't apply them to particular sites.

We do dose reconstructions and reviews, and we don't look at the procedures behind those reviews. And we do SEC evaluation reviews, and we tend to focus on certain issues, and this has not been one of the issues that's been focused on for some reason, usually because some other issue becomes more important.

MR. GRIFFON: But I mean where it has come

up -- I'm sorry. I had a phone call, but where it has come up is that we have delved into the question of representativeness. And again, I haven't looked at this. I mainly came in for the radon thing. But we have asked the question of with the data you have do you, does it adequately represent, and I think SC&A might have explored this already --

DR. NETON: I think they have.

MR. GRIFFON: -- adequately represent, and does it adequately represent the higher exposures.

DR. NETON: Well, I'd like to speak to that because we actually have two distributions at Blockson Chemical. We have the uranium urine samples that were used to bound the exposures and dust concentrations that existed in Building 55. And then in this Table 2, we have a list of 15 or so upper loaded dust concentrations in the phosphate industry in milligrams per cubic meter. And by a factor of ten the highest value is 50.4 milligrams per cubic meter in the phosphate industry; we applied that to workers.

And so we would take the highest dose

from either of those two and assign it to the case. So I think we have covered the balance of the plant. I don't see where there's a situation where there are subpopulations of workers out there that are receiving lower dose than they could have received.

Now, if the issue is though that we should use the coworker exactly for the type of worker that they, a model for the type of job they did, that is not practical in this program because 50 year old data workers oftentimes survivors don't know the job title of their spouse or whatever. They've forgotten. They were on temporary work assignments for two years, and it doesn't show up in the personnel record. It's just not practical to develop, even if we could, individual models for job categories. It's just not possible. And so without this approach, we try to bound given the distributions we can and pick the highest of the two. That's what we're doing, and I guess I'm at a loss --

DR. BRANCHE: I'm looking at the law.

DR. NETON: -- as to why that's not

appropriate.

MR. ELLIOTT: I don't think the law says anything about coworker distribution.

DR. BRANCHE: Not the distribution, just that you can use data.

DR. NETON: And this is clearly not surrogate data in the sense that it's data from the facility, in my opinion.

MS. HOWELL: Well, we've always defined coworker and surrogate data distinctly. They're not the same thing.

DR. NETON: So now whether the data within the plant can be applied to all workers in the plant and bound that, and I think is what's being brought to question here.

DR. MELIUS: Does that ^ give you ^ dose reconstructions with sufficient accuracy?

DR. NETON: And I'd submit that we've done that for virtually every site.

DR. MELIUS: And I think you've made an assumption that doing -- again, for the sake of argument -- there's not adequate data to do it by job title, and I don't think you've ever tried.

DR. NETON: Yes, we have. We have done that

in the past, and Mark remembers very well. At Y-12 we tried to do job title analysis at Y-12, and we could not.

MS. MUNN: And there were good records at Y-12.

DR. NETON: Oh, yes.

MS. MUNN: A lot of good records.

DR. NETON: It gets down to 50 year old data -- and I forget the number now, but 50 percent of our cases are survivors who know very little about their spouses' job duties. Work history's always a problem.

MS. MUNN: We'll be on mute for five or ten minutes and be right back.

(Whereupon, the working group recessed from 12:10 p.m. until 12:20 p.m.)

DR. BRANCHE: We're back. If someone who's on the line could indicate that they can hear me, I'd appreciate that.

UNIDENTIFIED SPEAKER (by Telephone): I can hear you.

DR. BRANCHE: Wonderful, thank you.

An issue's come up and I just wanted to make certain that everyone understands that according to the regulations and the rules in

the Federal Register, NIOSH can use coworker data. Now legally NIOSH is fully functioning within authorized territory. The question here is really scientific issues. I don't want anybody on the phone to be concerned that we've been spending all these years doing something illegal.

MS. MUNN: I'm at a bit of a loss to know where to proceed from here. The agreement to disagree doesn't quite seem to get us to where we need to be.

DR. MELIUS: I will look at the points that Jim made and review the situation again and see where I am on this.

MS. MUNN: This is a crucial issue since it is a potential showstopper.

DR. MAURO: I might want to just put some factual information that sort of enriches without drawing any conclusions.

MS. MUNN: It would be welcome, John.

DR. MAURO: We've looked at the number of people that worked in Building 55 each year while they were doing uranium production. There weren't very many in any given year, between ten and 15 people. So we're talking

about a relatively limited number of people in Building 55. This is the building that was under control, access control, because of security issues and radiation protection issues.

I think Jim's point is well taken in terms of when we're dealing with a site where we have thousands of workers, we may only have bioassay data for a small group of people. Let's say ten percent. And then all of a sudden you could ask yourself how are we going to take data, ten percent of a population of thousands of people, and convince ourselves that the upper bound or the upper-end value from that small population of workers is going to be representative of such a large group of people with such diverse activities.

And we run into this problem all the time, and we're struggling with it right now at Nevada Test Site where we have 1,500 claimants and the number of bioassay samples we have are relatively limited. So we need to revisit this issue again. It's going to come up again and again.

As you know in our report we looked at

this issue very carefully, and I think that in this case though we have a situation where we have in any given year about ten, 15 people and bioassays about 125 bioassay samples were collected from 25 people that worked at the facility over a period of a number of years. So now we're talking about sampling the urine, grab samples of urine, from the working population.

Now all of them didn't get the same number; some may not have gotten any. But by and large what we're saying is that most of the workers that were operating, working in this facility, it's almost as if we were working -- right around this table -- it's about the right number of people.

Let's say we were all working in Building 55, all of us, back between 1953 and '57. And we all were in that building, and some of us may have worked for different operations. And every so often we collect a urine sample from you, from you, from you, from you. And then six months pass.

We grab another one. And we collect them all. And we say, okay, we've got 120

urine samples collected from different people, different times. And then we say to ourselves, all right, now remember that any given urine sample just reflects the intake you may have accumulated up to that point in time. And it may have been taken shortly after a large intake or a long period of time after a chronic intake. We really don't know.

And in any given person you don't really know whether that person was being exposed to relatively high levels for a long period of time or a short period of time. So you're sort of at a loss. But then you say, but if I collect 122 samples, in effect, I feel as I spot sample from everybody, most of the people. And I say I'm going to down that list and pick off the highest 95th percentile value.

That, in my mind, the way I look at it, that says, that's one of the highest concentrations in a uranium in urine that was seen, and now I'm going to say we're going to assign that value at that point in time -- and it may only be a short-term thing. That high concentration does not necessarily mean that

person experienced that concentration in his urine always.

But we have to pick one, and we're picking a high one. And we're going to say, you know what we're going to do, we're going to assign to everyone an intake rate that would cause that urine concentration as if he was exposed continuously at a level that would give him that urine concentration all the time.

When we looked at that from that, I would say, commonsense perspective, and there's a lot of statistical work up and Chick could go into the analysis, and there's a lot of analysis we did. But when I look at it I say to myself do I feel convinced that by assigning that number, that intake, to all workers for all years that were in Building 55, do I feel as if it's unlikely that anyone could have gotten more than that.

And I've go to say that SC&A looked at this very, very carefully, and it's a thought problem, you know? What's the likelihood that everyone would have been exposed at that upper 95th percentile level day after day after day,

and in my mind it's probably highly unlikely.

So we walked away, and, you know, in this particular application because we have the number of workers was limited and in a number of workers where the urine was sampled was largely -- I'm not saying they were all sampled, but a large fraction were sampled.

In this case this surrogate model seemed to pass our test of robustness. As being, yeah, we can talk about the upper 95th percentile from this population of workers and then apply it to all workers at all times, you've placed a plausible upper bound.

Under other circumstances I would say there are a thousand workers here, and you only had samples from 25 workers, I would say, yeah, Jim. I would agree with you a hundred percent. We've got a problem, and we've got to make sure that those 25 workers sure as hell better have been the upper end subgroup within that thousand workers.

But in this case we've got them all, well, most of them. So I'm trying to keep as looking at this story, we do walk away feeling that NIOSH did place a plausible, SC&A's upper

bound. This approach and the data that was available seemed to be, place a reasonable upper bound.

And I understand Jim's concern, and I think in this particular application though I think that NIOSH is on pretty sound ground. That's where SC&A comes out.

MS. MUNN: Thank you, John.

MR. GRIFFON: I mean, I'm just listening and wondering if, because I had some of those baseline questions, but I don't want to go backwards but I'm just here for a guest by Wanda's invitation. But if, John, you just said they have a high percentage or they got them all, as you said, if they got them all, why are they using a coworker model at all. Obviously, they don't have them all.

DR. MAURO: They don't. No, they don't.

MR. GRIFFON: Something's missing.

DR. MAURO: In a perfect world --

MR. GRIFFON: But what are the numbers? What are the --

DR. MAURO: Yeah, but in a perfect world every worker that worked, in other words, every year there were a different ^. And if

we had monthly bioassay samples from every worker every year, then we'd have everything. We wouldn't need a coworker model. But we don't have that. There's a time period where we don't have data for workers. There are workers that we don't have data for. So that's the reason why you go to the 95th percentile.

MR. PHILLIPS: You don't know that there are no workers --

DR. NETON: Here's the problem. We have the workers who are actually working on the uranium drumming operation mostly. I think John's right. The problem is that a number of people walked through these areas. You go to these town hall meetings, and there are security guards. There's porter-type folks. They say I spent a lot of time in there. I spent a majority of my time walking through there because I was attached to that operation.

There's no way to demonstrate that's true or not. We used the 95th percentile bounding and say, well, we don't know what your exposure was, but we know that it's less

than x and we're assigning that value to those folks. That's what we've traditionally done at all of the sites.

MR. ELLIOTT: What the law does say on this is that we are to provide reasonable estimates of dose understanding full well that the records may not be full and complete in all regards. And I think that's where this goes to have we provided a reasonable estimate.

DR. MELIUS: No, it goes to whether you can do a dose reconstruction with sufficient accuracy, not whether it can be done, whether it's a reasonable estimate. And no one's arguing that you can't use estimates. The question is, are those estimates appropriate to be able to do individual dose reconstruction with sufficient accuracy. As we all know there's a hole in the regulations. We have a disconnect between our SEC evaluation criteria and our sufficient accuracy criteria. Makes it difficult, and this is one of those difficult situations.

MR. ELLIOTT: I don't know that we do.

DR. ROESSLER: I'm reading from the rule here I think, because I had this question

about sufficient accuracy. And it says radiation doses can be estimated with sufficient accuracy if NIOSH has established that it has access to sufficient information to estimate the maximum radiation dose.

MS. HOWELL: Sufficient accuracy is established when a plausible upper bound can be reached.

MR. GRIFFON: But it goes on, it's important, too, Gen, maximum dose for all members of the class, plausible circumstances, something like that. Maximum plausible.

DR. ROESSLER: For every type of cancer for which radiation doses are reconstructed that could have then occurred in plausible circumstances by any member of the class or if NIOSH has established that it has access to sufficient information to establish the radiation doses, all members of the class more precisely than estimate of the maximum radiation dose. That was a long sentence, but --

MR. GRIFFON: Part of that definition, too, sort of competes against the plausible circumstances to me. It tells us that we

can't just throw a high number at it and then for all members of the class says you've got to make sure you can bound it for everyone even the most exposed person. It's sort of competing there.

DR. NETON: We went down this path before, and I don't know.

MR. GRIFFON: We have discussed it. It's the question of, to me it's the question of does this issue reach an adequately --

DR. NETON: Well, this is a generic issue that is not just relevant to this discussion. I mean, virtually every SEC petition that's pending right now has this issue because they all have coworker models, and they all assign 95th percentile under certain circumstances, the Rocky Flats, all of them. I mean, the 95th percentile the external data has been used throughout this program from its inception. I've never heard anyone object to that until this point.

MR. ELLIOTT: They may object to how we arrived at it.

DR. NETON: They may object to what the 95th percentile is, but no one has objected to that

approach. I've not heard any objection until this meeting today.

MS. MUNN: Quite to the contrary. It's been widely accepted. Well, if you're going to use the 95th percentile, that's acceptable. If we're going to change the way we look at that now, then in my view it's a showstopper. And it's a showstopper not just for Blockson, but, and not just for other phosphate plants, but for the entire program.

DR. MELIUS: The Board has never had a discussion of the coworker model in general, and the general applicability and the approach used to it and something that's been dealt with it in, as far as I recall, only within the Procedures work group, never been brought to the Board.

MR. ELLIOTT: Well, it's dealt with in the review of the dose reconstructions that are conducted using that approach, and to date I've not seen one instance in any of those --

DR. MELIUS: And in the --

MR. ELLIOTT: Let me finish, Dr. Melius. I've not seen any indication that that has been an issue in any of the dose

reconstruction reviews.

DR. MELIUS: Because when I brought it up, I've talked to John. I've talked to the other people and Bob. They say, well, no, we just make an exception procedure if that's involved and utilize the procedure. We don't, they don't review the procedure as far as doing individual dose reconstructions. That's what I was referring to earlier in terms of sort of the disconnect in our approach to doing ^. We keep sort of circling around issues.

MR. GRIFFON: In the DR review it is the application of -- appropriately apply what they were supposed to do.

DR. NETON: It's also covered in the implementation guide which was presented at the Board, one of the very first meetings. The concept is --

MS. HOWELL: And the dose reconstruction rules.

MR. ELLIOTT: It's in the dose reconstruction rules.

DR. BRANCHE: That was my question. Has it come up in the Subcommittee?

MR. GRIFFON: It's come up in the, like I

said, in the DR, in the subcommittee of DRs it really has been pushed back to the ^. But in other cases like Rocky Flats we did discuss it.

DR. NETON: But I was thinking early on this came up with Bethlehem Steel where the Board was tremendously involved with many, many, many meetings at the Board level, and no one ever questioned the 95th percentile air concentrations. They asked the question what that value was. I never heard anyone bring up the issue that the 95th percentile applied to all workers, all claimants at Bethlehem Steel was inappropriate. And that's exactly what we're talking about here.

MS. MUNN: It is.

MR. GRIFFON: I feel we've discussed it, but we haven't questioned whether you could actually not use --

DR. NETON: Well, I know. One would think that would be the time to bring it up.

MR. GRIFFON: But it does get to the individual. I agree. It's sort of the site specific stuff we discuss that that mean, but can you use it ever, I don't think we've

questioned that.

DR. NETON: Well, that would have been the point to bring it up I would think.

MR. GRIFFON: Right.

DR. MAURO: There's no doubt that this, I guess we've never had this conversation before in a global sense. That is, whenever we came to this problem, and we encountered data adequacy, that's what we're talking about, data inadequacy.

MR. GRIFFON: And representativeness.

DR. MAURO: Adequacy and representativeness, we always sort of dealt with it when we came across it at Bethlehem Steel we talked about it. We talked about it at Rocky. We're talking about it right now in spades on Nevada Test Site. And it all goes to the heart of the concern that Jim brought up about. But we really never talked about what was ^.

In some cases we did have a conversation, roundtable discussion about what's the philosophy here. When would you use upper 95th percentile as your criteria. And we've had some disagreements on those conditions. But I think in general when we

came across this it's almost like it was general agreement on each individual's cases that if you don't have complete datasets, then you go to, you build a surrogate model that blocks off some percentile from the dataset.

But you have to feel convinced that that dataset is representative of in general the population of workers you're working with. And that becomes a tough question. That's exactly the question that Jim is asking. To what degree is the dataset that we have before us, those 122 urine samples for those 25 workers, did that dataset capture the full distribution of possible exposures the workers may have experienced in Building 55 and by plucking off the upper 95th percentile of that dataset that we have a degree of confidence that we placed an upper bound on all those workers that were not completely modeled or weren't monitored or weren't. That's really the question. And we come down all the time --

DR. NETON: But I think Dr. Melius' point, if I understand it correctly, is that that 95th percentile cannot be applied to all workers

because there are people with lower exposures who are going to get much higher exposures than they would have gotten. It's not sufficiently accurate. I think that's what I'm hearing is it's a sufficient accuracy issue meaning you haven't done an individual dose reconstruction sufficiently accurate for that individual.

DR. MELIUS: I think the question is you have one question is for the unknown person that has worked in Building 55, unknown background. The spouse giving you information has no idea. Somehow you have an inkling that person may have spent significant time in building, in that building. Then I think using the overall distribution may be appropriate. I think that the question is when you have somebody that's the chemical operator there, what you know, and I think the SC&A report provides supporting evidence, not conclusive, but supporting evidence, that has a different mean and they have a higher exposure than average. The question is is it appropriate to use the overall distribution for all workers in Building 55 to apply to

that person that you know is in a category that would have a higher exposure. Then --

MR. GRIFFON: Are you, in effect, lowering that person's -- I mean, if you look in the example in here there's a certain individual in these urine datasheets who is always number one ranked on all these sheets that I'm looking through. Now if his twin is out there, if you don't have data for him but his, the guy that did the same job every day and got the same exposure, the 95th could almost be lower because there's a lot of --

DR. NETON: That gets into the issue of --

MR. GRIFFON: That's the question.

DR. NETON: -- we've bounced about quite a bit which is if the population you have represented the highest exposed workers.

MR. GRIFFON: Exactly, yeah, yeah.

DR. NETON: Now, I would agree that if we knew for some reason that a person was in the highest end of the high category, we would accommodate that fact. But the fact is oftentimes we don't know.

MR. GRIFFON: I mean, just glancing at this for two minutes I would question like this one

guy or woman has urine levels that are like five to six times higher than everyone listed here on a regular basis. Now is that some unique, you know, what did this person do or was that --

DR. NETON: Right, that gets to the point though.

MR. GRIFFON: Are we by putting all this data in are we skewing and lowering the exposures for that one job? That's the level that we've explored before in other places. And we've had the... I mean, even with Rocky Flats we ended up pushing and being convinced that if we used the 95th for all workers we were satisfied that we'd bound. But the original proposal wasn't to use the 95th. It was proposed to use the full distribution or the 50th.

DR. NETON: ^.

MR. GRIFFON: So I think we've answered this question before. I mean, I'm coming into this --

DR. NETON: Well, that's a little different issue than what I think we were talking about before.

MS. MUNN: A slightly different issue.

MR. GRIFFON: That would be my issue at any rate.

THE PATH FORWARD

MS. MUNN: I'd just like to ask. James, what do you see as a path forward?

DR. MELIUS: I don't know. I'm going to -- I've listened to Jim Neton. I will go back and re-look at the site profile again and see. But I will tell you right now that I don't believe that what John Mauro has said, I don't believe that SC&A has done an adequate exploration of that. I question whether all of the chemical operators actually were sampled are included in the dataset. We certainly know based on the little information we have, and it's limited, that it appears that the chemical operators, that there are categories of people that had job titles that had higher exposures in that dataset, appear to be. And again, it's a few people.

DR. NETON: You would expect that.

DR. MELIUS: Yeah, I know. But it would match up with their job descriptions. I want to be careful what I say here. And that there

are other people that are certainly included in the dataset that have more peripheral association with Building 55, would not necessarily be expected to be in there. Certainly, they're included on that basis.

So I question whether we really have captured all of the people that worked full time, and what percentage of those that worked full time in that building in the sampling. And to what extent that's knowable based on other information I don't know at this point. But I'm just going back through all the detailed individual information that's available.

Secondly, I remind you that it's not just a question of applying these data to people working there in the years that there was sampling done. There are, I believe, roughly three years of production for which there's no sampling data available in that. So we're not only taking and applying this distribution of 95th percentile this distribution of people within that time period, we're also applying to a group for which maybe the same individuals, maybe other

individuals.

I don't know what happens with changes that were in the facility going forward. There's certainly some variations in production over that later time, that later period but for which there are no data.

DR. NETON: No production data.

DR. MELIUS: I meant no sampling data. You know, we have production data.

DR. NETON: But you can use that.

DR. MELIUS: Well, is that the factor that, you're assuming that that's the major factor that affected production. I'm not even rating the statistical analysis by SC&A, and given the questions about who was sampled when, the years and so forth, I would, I'm not convinced that that is the major factor affecting exposure.

MS. MUNN: The concern is twofold. First with respect to Blockson, whether we can get any further down the road in resolving the differences of opinion. And secondly, the way the decision here will affect the remainder of the program. How we proceed here is not clear to me.

DR. MELIUS: Well, I'm not proposing we try to settle this for the rest of the program, here today or in our next Board meeting. I think what I said I would do is I would go back and listen to Jim's arguments that he's presented, and I'll go back and re-review it in that context.

I would also ask SC&A to re-review what they've done in the context of the issues that have been raised. I don't think they disagree with John in what he stated. I don't think he's fully addressing this. And then we'll, I guess we'll talk in St. Louis.

DR. BRANCHE: Ms. Munn, are you okay with asking SC&A to take another look at these data?

MS. MUNN: I would ask of SC&A whether they feel there's anything further in this data that can be provided for us.

DR. MAURO: I guess the answer to that is no. Right now, I mean, it's a tough, you know, to say there's really nothing more. But we have hit this with everything we had. Looked at it upside-down and sideways. The number of reports you've seen, reports, Harry

Chmelynski is on the line asking questions such as why was the process, we know that the bioassay samples were taken over a certain time period. Were they taken during the time period when the production was at its highest? And the answer was yeah. It looks that way. It looks like that at least was up there. So even though we don't have bioassay data for let's say later years, look at the production data, you would expect that the bioassay data that we do have captured the years where there's the highest potential for exposure. Then we ask ourselves the question, well, did we get enough data from different job categories. And the answer is, well, it would have been great to have more data from certain job categories. Would have liked to have had that. And if we had that we'd be in a stronger position, but is that a fatal flaw? And I'm talking right now in almost like commonsense discussion, the analysis was done, lab analysis was done statistically on the data. And the way it comes out is that we feel that it would be, the 95th percentile number from the sample, and especially since

the sample represents a large number of workers -- I'll say it again. It's not that we're talking about a thousand workers and we only have samples from 25 workers. We have samples from 25 workers, and I don't know the total number of different workers that were there in any given year was something on the order of ten to 20 working in that building. So we do have a lot of data capturing a lot of the different workers. It would have been great if the worst worker -- for example, let's say right now we're presuming that the worker's category was the guy that ^. And it would be great if we had a complete dataset for all the workers every month that did that job. But I say to myself, but wait a minute, but I do have 122 urine samples for workers that were in that building some of whom did that. And I say -- and remember, that's one sample taken. I'm going to take that as the upper-end value. I'm going to assign that to everyone as if they were exposed at that level for six years, five years. I walk away saying that my guess is, if anything, it's a plausible scenario. So in my mind it could

have happened but probably not likely.

MR. GRIFFON: That's not quite the way you described it

DR. MAURO: Help me out because if I'm going to get it wrong --

MR. GRIFFON: You're saying as if you did this for five or six years. That's not true. You have a urine sample for that individual that did that occasionally.

DR. MAURO: Yeah, right.

DR. NETON: That anybody did.

MR. GRIFFON: I mean, the urine in many ways is better than the air sampling because the air sampling raises all kinds of questions.

DR. MAURO: I really like the urine samples. I like that you've got 122 urine samples for 25 workers and the total number of workers that worked in Building 55 is limited to about that number.

MR. GRIFFON: You understand it's not quite as conservative as --

DR. MAURO: It could be more conservative.

MR. GRIFFON: -- you might have --

DR. MAURO: Right.

MR. GRIFFON: -- that might be the worst

job.

DR. MAURO: I would be the first to admit if there was a guy that was doing this eight hours a day, seven days a week.

MR. GRIFFON: They didn't do it though.

DR. MAURO: But it wasn't like that.

DR. NETON: But that's the point. Who did the worst job that was there for whatever length or duration it was, we think we have a sample for.

DR. MAURO: See, within that 122 samples that upper-end value, and then assuming that he's at that point for five years, we walk away saying I don't know what more you can do. This is almost like -- the way I look at it is this is a place where the coworker approach works, in our opinion, much better than what we've seen in other locations. There's always going to be this challenge on a coworker model whether or not it's of adequate representativeness, but this is one of the places where it's at its strongest.

MR. GRIFFON: Just a couple background because I think we're going to, some of you want to look at this more, but the 25 workers

that are mentioned out of how many? I don't know the context.

DR. MAURO: We had all the --

MR. GRIFFON: Is it in the site profile?

DR. MAURO: Yes, we were able to estimate that.

Do you remember actually the total number of workers that worked in Building 55 in a given year?

MR. PHILLIPS: Well, it depends.

Tom, you can help me with this.

Up front when they started talking about forward looking, they were estimating like 20 workers.

MR. TOMES: Well, not actually working in Building 55 but on the project.

MR. PHILLIPS: In the worker interviews what I gleaned from that it was more like 12 or 13.

MR. TOMES: There was two operators on the back shifts, and there was two operators on the day shifts with two extra day men to handle because they dumped material in the day shift.

MR. GRIFFON: And then we're talking Building 55 but nobody's mentioned Building 40

if you're pretty sure that 55 --

DR. NETON: No, we have a different model for Building 40.

MR. PHILLIPS: And if you look on the report in there, it plots the number of bioassay samples for a month, and it comes out to be about 12 or 13. So there's a good, some probability that everybody in that building was sampled except for the people who occasionally --

MR. GRIFFON: And some years have been logged, but there's no sense of why this -- and AEC did this all, right? Blockson didn't do it themselves.

MR. PHILLIPS: HASL.

DR. MELIUS: You're missing the last three here.

DR. MAURO: But see, we were concerned about that, and we plotted the throughput. And I'm sorry, you can't see this. In one of our handouts, but one of the things we looked at was, is it possible that the time period during the latter years, starting let's say around '58, all this was in a throughput of uranium, increase substantially. But it

didn’t. It was, in fact if anything, it was a little lower in the aggregate in the later years than it was in the earlier years. And it’s in the earlier years when we got the bioassay data. So there’s no guarantee.

MR. GRIFFON: That’s better than the reverse.

DR. MAURO: It’s better than the reverse, yes.

MR. PHILLIPS: And just logically if indeed the highest exposed worker was the one loading the end product, then the throughput should be proportional to the exposures for that individual. So definitely in proportion to --

MS. MUNN: So the answer to the question that we studied, we’re debating here is that probably there is no more to be said between SC&A and Dr. Melius. If there’s no issue, cannot add anything that we have not already seen, and therefore, the possibility of discussing this further either offline or here is not likely to come to any change of position.

DR. MAURO: I mean, I answered the question. I thought ^ might add value.

Harry, are you still on the line?

(no response)

DR. MAURO: Harry Chmelynski?

DR. CHMELYNSKI (by Telephone): Yes, I'm still here.

DR. MAURO: Is there anything, after looking at all these data in the analysis that we've done to date, is there any other things that you think might add value by doing some more digging or do you have in mind now for example as you worked through the problem were there other things that you would have liked to have done that you didn't do?

DR. CHMELYNSKI (by Telephone): To be honest I spent a lot more time on the radon data than I did on the urine samples. My impression of the urine sample data compared to the other sites I've looked at on this project, this one seemed relatively complete in terms of the coverage of sampling. I'm not sure we got everybody but -- and we probably didn't -- but seems like they had a goal of doing pretty much complete testing and that made me feel pretty comfortable with the 95th percentile.

Now in terms of what else I would look

at I think the question of are these, should there be some matching done in terms of job category. Yes, that's always one that should be done.

MR. GRIFFON: Can that be done? We tried for a few right, with the worker interview, CATIs.

DR. MAURO: In other words in the original records we have, in fact, we have the --

MR. PHILLIPS: We only have a few.

DR. MAURO: Right.

MR. PHILLIPS: That's the only thing that could add clarification if you have other people who came forward who you identified who you could associate their job categories with. That's the only thing that I know that could expand our knowledge on this.

MS. MUNN: That's not practical.

DR. MAURO: There's a little bit more to this though. My understanding was that the, for example, the guy that filled up the cans, that that wasn't a full-time job. So what happens is that though he may have a title for a job because of the nature of the work, I think that people, these folks wore a lot of

hats.

Let's say we found out I always called it this; I always called it that, we're still going to be confronted with the dilemma. You know, even though you were given that title, one could say, well, because of that title your potential for exposure is lower. But at the same time we also know that when we looked at this it sounds like that there were people doing multiple different jobs because it wasn't a full-time operation where they were continually filling up this.

So I like the idea that you pick an upper end, especially since you don't know exactly what the job categories were. What you effectively have done here is to assume the worst. That is, since we don't know what the job categories were for everybody, you can't be that definitive, you have to be claimant favorable and assign the 95th percentile to everyone for all time. That's the big one, for all time. So I go back to say, I guess if we got some more information on job category that can't hurt.

MR. GRIFFON: Has anyone asked -- I'm sure

you've done this interview, group interviews at the sites, you've asked about urinalysis.

DR. MAURO: Yes.

MR. GRIFFON: And everyone, did they all undergo urinalysis or was it kind of --

DR. BRANCHE: Do what, Mark? Would you repeat, did they do all what?

MR. GRIFFON: Did they all undergo urinalysis?

MS. MUNN: No, not everybody who worked at Blockson in one of the buildings underwent urinalysis. But most, there's a large enough percentage that it's pretty high.

DR. NETON: It's confusing among the workers. We have a worker who insists he never left a sample. We have a complete monitoring record for him. I mean, so it's 50 years old. You're not going to get very clear information from workers.

MS. MUNN: But in response to the question, Jim, it doesn't seem that there's any future in your discussing this further with SC&A.

MR. GRIFFON: But I think if we have specific questions --

DR. MELIUS: I mean, I may come back with

specific questions.

MR. GRIFFON: You can e-mail it to Wanda and C-C NIOSH and SC&A and go forward that way.

MS. MUNN: I have to ask the same question of NIOSH. Do you see any additional information other than with respect to this particular item that is likely to be developed or that we could develop as a result of further conversations with Jim?

DR. NETON: None based on what I've heard so far today, but we're open to additional inquiries if people have questions to be answered.

MR. GRIFFON: Can I ask one last thing?

The packet you gave me, Jim, is that all the 120 -- I didn't count -- but is that all the --

DR. NETON: I don't know. I just gave you what was e-mailed by John.

Did you mail all 120 urine samples?

DR. MAURO: I mailed all the files that Tom --

MR. TOMES: It may be ^ that's how we received them.

DR. NETON: But if you look under the A-B ^

(Whereupon, multiple speakers spoke simultaneously.)

DR. BRANCHE: And for the record, as John and I talked in a long conversation yesterday, such information will be mailed because it's got -- we're not going to use electronic means to convey such information in the future.

MS. MUNN: That's true. We need to keep very close tabs on that.

I attempted to say is there anything else we need to bring to the table, but I asked that question when we began, and there was nothing else at that time. As I see it right now we have action items to pursue with respect to the radon question, but we will not have, unless Dr. Melius presents additional questions to either SC&A or NIOSH or both --

DR. BRANCHE: Or you.

MS. MUNN: -- or me, we do not have, we're at a stalemate there and have no answers that we can give one way or the other. We'll try to resolve that radon issues before our meeting in St. Louis.

Does anyone else see any further action that we can take with respect to the

disagreement relative to data?

(no response)

MS. MUNN: If not, I declare this meeting adjourned. We will be in contact with you by e-mail and telephone regarding our next communications.

DR. BRANCHE: Thank you. Ms. Munn has called the meeting to a close and so if the person closest to the phone can turn it off. We're not leaving it on. We're turning it off altogether. Thank you.

(Whereupon, the working group adjourned at 1:00 p.m.)

CERTIFICATE OF COURT REPORTER

STATE OF GEORGIA

COUNTY OF FULTON

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of June 5, 2008; and it is a true and accurate transcript of the testimony captioned herein.

I further certify that I am neither kin nor counsel to any of the parties herein, nor have any interest in the cause named herein.

WITNESS my hand and official seal this the 15th day of November, 2008.

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STEVEN RAY GREEN, CCR, CVR-CM, PNSC

CERTIFIED MERIT COURT REPORTER

CERTIFICATE NUMBER: A-2102