

This transcript of the Advisory Board on Radiation and Worker Health, Weldon Spring Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the Weldon Spring Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES¹
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

+ + + + +

ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

+ + + + +

WORK GROUP ON WELDON SPRING

+ + + + +

THURSDAY
JUNE 7, 2012

+ + + + +

The Work Group convened telephonically at 1:30 p.m. Eastern Time, Richard Lemen, Chairman, presiding.

PRESENT:
RICHARD LEMEN, Chairman
R. WILLIAM FIELD, Member

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ALSO PRESENT:

TED KATZ, Designated Federal Official
ISAF AL-NABULSI, DOE
RONALD BUCHANAN, SC&A
DAVE HARRISON, ORAU Team
MONICA HARRISON-MAPLES, ORAU Team
STU HINNEFELD, DCAS
KAREN JOHNSON
MARY JOHNSON
JENNY LIN, HHS
ROBERT MORRIS, ORAU Team
MARK ROLFES, ORAU Team
BILLY SMITH, ORAU Team
TINA TRIPLETT

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

2 1:36 p.m.

3 MR. KATZ: Let's just then get
4 started. This is the Advisory Board on
5 Radiation and Worker Health Weldon Spring Work
6 Group. We'll do a roll call with Board
7 members, beginning with the Chair and please
8 speak to conflict of interest since we're
9 speaking about a specific site.

10 (Roll call.)

11 MR. KATZ: Okay then. We have an
12 agenda. Very simple. It's two issues. It's
13 posted on the web. It's Dr. Lemen's agenda
14 and your meeting. Go ahead.

15 And let me just remind everyone on
16 the phone when you're not speaking to the
17 group, if you would mute the phones. It will
18 make the audio much better for everyone. So
19 press *6 to mute your phone and then when you
20 want to come on you press *6 again. And that
21 will take you off mute. Thanks.

22 CHAIRMAN LEMEN: This is Dick

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1 Lemen. Let's start with the issue of the
2 thorium exposures. I think we have -- the
3 Petitioners have gotten together with SC&A. I
4 believe you've produced at least five
5 documents.

6 And I guess it would be best to
7 turn that over to Ron Buchanan right now, if
8 you would like to make any comments on the
9 issue with thorium exposure and where we
10 should go from here. Ron.

11 DR. BUCHANAN: Okay. This is Ron
12 Buchanan, SC&A. Yes, the Petitioner submitted
13 a total of six documents, one early on March
14 13th and then five later on March 22nd. And
15 these documents were submitted because there
16 came up to question of, was thorium taken from
17 the raffinate pits and recycled and processed.

18 And the reason that this was
19 important was that this would indicate that
20 the thorium would be in a different ratio to
21 the uranium. Because Weldon Spring only used
22 uranium urinalysis to assign internal dose.

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1 And the same way in dose reconstruction, they
2 used a ratio, then, of the thorium to the
3 uranium since there wasn't any thorium
4 monitoring to speak of at Weldon Spring.

5 And so this is the reason that
6 this was brought up. And if you did the
7 raffinate and recycled it then it would be in
8 a different concentration, a different ratio,
9 from the uranium.

10 Looking through these documents
11 there was -- if you read them and compared
12 them, what I concluded --and I passed this by
13 several other SC&A people to look it over also
14 -- was that there was no indication that
15 Weldon Spring there in '57 to '67 took
16 raffinate material and reprocessed it with
17 thorium.

18 Now I want to qualify that in that
19 later documents used some terms that we didn't
20 initially have in the TBD or I did not find
21 in looking through any of the Weldon Spring
22 documents. And we assumed -- it's always been

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1 assumed -- on the premise that thorium was a
2 campaign-type processing in '63 to '66 in
3 which thorium was brought in and processed for
4 thorium metal and then sent out. And nowhere
5 was it talked about in a recycled thorium as
6 recycled uranium came into play at some of the
7 sites.

8 And so I did notice that in some
9 of the documents submitted by the Petitioner
10 they used the word thorium residue, thorium
11 recycled material, and thorium recycled
12 products which is not clear what that is. And
13 they use also scrap thorium.

14 I guess that was the main issue is
15 during the thorium processing, the thorium-232
16 processing, did they use anything besides
17 thorium ore or did they take some scrap
18 recycled material and bring it on site. That
19 was one of the things that stood out that has
20 not been addressed.

21 And number two would be the fact
22 that the pits one and two apparently could

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1 have been uncovered during the dry stations.
2 But apparently this was before the thorium
3 products arrived in the '60s, '66. Pits three
4 and four were used later on when the thorium
5 processing campaigns were present, '63 to '66.

6 And I guess there is some question
7 -- some of the documents say -- that these
8 never went dry. And so you didn't have a dust
9 or contamination that would be concentrated
10 and anything to blow around if they were dried
11 out. Did it dry out during the '56 to '67
12 period where a worker could be exposed to the
13 raffinate dust which would have a different
14 thorium concentration and other radionuclides
15 perhaps and uranium bioassays would indicate?

16 And so those were the two issues I
17 summarized in the email I sent out at the
18 latter part of March to Ted and he distributed
19 to the Work Group.

20 CHAIRMAN LEMEN: Does anyone have
21 any answers to the question that Ron brought
22 up?

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1 (No response.)

2 Can you hear me?

3 MR. KATZ: Yes. This is Ted. So
4 that would be Mark Rolfes.

5 MR. ROLFES: Yes. Sorry. I was
6 on mute. I started responding.

7 Yes, we've looked at the same
8 references also and we didn't find any
9 information that indicates that there was a
10 separate process where thorium-230 was being
11 extracted from uranium ore concentrates that
12 were processed at the Weldon Spring plant
13 which was the concern that the Petitioner had
14 identified.

15 We are aware that there was
16 earlier work and there was a confusing
17 document which we had hoped to possibly learn
18 some additional insight into why the document
19 was written as it was because it was a little
20 confusing. Because all thorium -- I think
21 this came up as a result of all thorium
22 exposures at both Mallinckrodt as well as

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1 Weldon Spring had been lumped into one
2 document and considered for an epi study. So
3 that's one of the pieces of background, one of
4 the background reports, I guess that led to
5 some confusion. And I just go back and look
6 at this issue again.

7 As far as whether or not the pits
8 dried up, I believe that the documentation we
9 have seen indicated that the waste pits were
10 usually underwater because -- I'd have to go
11 back and look, but I think there were some
12 documents that were written in the more recent
13 time period in the 1980s during remediation
14 and such which had said something about the
15 possibility of waste pits drying up.

16 I don't have those documents right
17 here at the time. And if I'm missing a detail
18 on that, maybe I can call on someone from ORAU
19 to help clarify anything I said.

20 The other aspect of if there's any
21 recycled thorium on site, we have no
22 indication that I'm aware of of recycled

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1 thorium being processed at the Weldon Spring
2 plant. The thorium that came to the Weldon
3 Spring plant would have come from Fernald.
4 Fernald would have -- you know, we can look
5 into if the Work Group would like us to look
6 into the types of material that were sent from
7 Fernald to Weldon Spring.

8 But the recycled thorium issue is
9 sort of different than recycled uranium. And
10 my initial impression for recycled thorium is
11 that the dose metric impact of any recycled
12 thorium contaminants in whatever may have been
13 speculatively processed at the Weldon Spring
14 plant. Since NIOSH is using the daily
15 weighted exposure-derived thorium intakes, any
16 observed activity from an alpha emitter would
17 be assumed to be thorium-232 and would be
18 assigned as thorium-232. So I'm thinking that
19 would probably result in a bounding dose for
20 that exposure scenario.

21 And the other aspect of this, you
22 know we focused a lot on recycled uranium

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1 discussions with Fernald. And the recycled
2 thorium issue is what I'd consider to be much
3 less of an issue than would be recycled
4 uranium just because one of the concentration
5 processes for some of the contaminants in the
6 recycled uranium resulted as part of the
7 isotopic separation in the gaseous diffusion
8 plants. And then it's also a result of the
9 fluorination of uranium at the gaseous
10 diffusion plants, which concentrated some of
11 those contaminants which were later sent back
12 to Fernald.

13 Thorium isn't put through the
14 gaseous diffusion process in the same way as
15 uranium was. And so there wouldn't be as much
16 of a tendency to concentrate some of those
17 contaminants.

18 And once again, as I said earlier
19 on, this is all just speculative because
20 everything that we've seen indicates that --
21 you know, we've not seen any indication that
22 the thorium that was processed at the Weldon

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1 Spring plant was recyclable uranium.

2 CHAIRMAN LEMEN: On the issue of
3 the drying out from 1988-`89, is it clear that
4 that did or did not happen?

5 MS. HARRISON-MAPLES: Can I --

6 MR. ROLFES: Monica?

7 MS. HARRISON-MAPLES: I was going
8 to ask if I could speak to that. And I'm not
9 sure who that was speaking just now.

10 CHAIRMAN LEMEN: That was Dick
11 Lemen.

12 MS. HARRISON-MAPLES: Hi. The
13 documentation that speaks about some of the
14 pits drying out specifically calls out Pits 1
15 and 2 could have possibly been uncovered,
16 could have had some drying out periods, and
17 that Pits 3 and 4 did not. They were marshy.
18 There was no indication that Pits 3 and 4
19 ever dried out.

20 Pit 4 specifically is where the
21 raffinates and the thorium-232 campaign went
22 into. So there should not have been any

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1 thorium-232 -- there would not have been any
2 thorium-232 in Pits 1 or 2 if they had dried
3 out. And that seems to be the concern that
4 because the thorium-232 would be different in
5 terms of ratio.

6 Could that Pit 4 have dried out?
7 And we have absolutely -- well, I have not
8 seen any indication that Pit 4 ever dried out.

9 And I have seen documentation to say that it
10 did not.

11 CHAIRMAN LEMEN: Well, in the case
12 of Pits 1 and 2 is there any potential for
13 exposure from any type of radiation that might
14 be considered by the Board?

15 DR. BUCHANAN: This is Ron
16 Buchanan from SC&A. If Pits 1 and 2 even
17 before they were used before the thorium
18 campaign you could possibly have had thorium
19 or other isotopes became airborne. You'd have
20 an ambient environmental exposure, perhaps
21 intake, that if you took uranium bioassays and
22 then did a ratio for uranium to thorium,

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1 perhaps it wouldn't be the same in the dust as
2 it would be in the raffinate in the plant.

3 Mark, do you want to speak to
4 that? What if Pits 1 and 2 were dried out?
5 What would be the environmental impact of
6 that?

7 MR. ROLFES: Well, from my
8 recollection, I do think we do have some
9 samples that were taken from the pits during
10 the remediation time period which would have
11 shown the ratios of various isotopes within
12 the chemical pits. And also I believe -- now
13 I don't recall the exact dates, but the waste
14 pits were not like in the center of the site.

15 For example, they were off to the side of the
16 site. I don't know if workers were routinely
17 in that area to do anything or if they were
18 sort of self -- you know, off by themselves.

19 Monica, do you happen to know? I
20 think during the remediation time period, I
21 think there were some samples taken to
22 basically say here are the isotopic

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1 constituents of each of the pits. Is that
2 correct?

3 MS. HARRISON-MAPLES: I believe
4 that is correct. I believe that part of that
5 information we used when we were looking at
6 the assessment for the area around the
7 raffinate pit. As you said, the geography of
8 the plant is such that the raffinate pits were
9 right up against the boundary of the operating
10 area, but they were separate. And they were
11 separated by a fence and personnel didn't too
12 much travel between the two.

13 CHAIRMAN LEMEN: Dr. Field, do you
14 have any questions?

15 MEMBER FIELD: I guess I just
16 wanted to clarify that if there was sampling
17 done for Pits 1 and 2 that thorium-232 wasn't
18 present in the quantities that you would
19 expect if it was recycled or disposed of
20 there. Is that correct?

21 MR. ROLFES: Monica -- I didn't
22 quite follow what you said, Dr. Field. And I

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1 know Monica probably is much more familiar
2 with this than I. Monica, did you understand
3 the question?

4 MEMBER FIELD: Let me phrase it
5 again.

6 MR. ROLFES: Okay.

7 MEMBER FIELD: I was just
8 wondering if there was analysis performed for
9 thorium-232 at Pits 1 and 2.

10 MR. ROLFES: Let me take a look
11 and maybe Monica could answer better than I.

12 MEMBER FIELD: It sounded from
13 Monica about what you said before that there
14 is no indication there was thorium-232. And I
15 would just like to confirm that if there was
16 sampling that took place.

17 MS. HARRISON-MAPLES: Right. I'm
18 not sure if the sampling specifically looked
19 for thorium-232. But I know that the Pits 1
20 and 2 would have had the raffinates from the
21 uranium processing and the thorium in that
22 raffinate is the progeny from the 238.

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1 MEMBER FIELD: 238.

2 MS. HARRISON-MAPLES: Right.

3 MEMBER FIELD: Yes.

4 MS. HARRISON-MAPLES: So I don't
5 know how 232 would have gotten in there. And
6 we have no indication that 232 should have
7 been in there.

8 MEMBER FIELD: Okay.

9 MS. HARRISON-MAPLES: I don't
10 recall specifically what was analyzed for in
11 the remediation period.

12 MEMBER FIELD: Okay.

13 MS. HARRISON-MAPLES: I don't want
14 to speak without having the documentation
15 right in front of me to verify it.

16 MEMBER FIELD: Yes. And I haven't
17 been on this Committee before. So I don't
18 know of other specifics about the site. I'm
19 trying to catch up a little bit. But was
20 there air monitoring done in the vicinity of
21 the pits at all that you're aware of?

22 MS. HARRISON-MAPLES: Billy, help

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1 me out. I believe that the air monitoring was
2 done around the perimeter of the facility.

3 MR. MORRIS: This is Robert
4 Morris. We did find data periodically over
5 the course of time which we used to derive
6 intake rates for the environmental intake
7 rates.

8 MEMBER FIELD: Right.

9 MR. MORRIS: Sometimes we had to
10 use an atmospheric dispersion approach to
11 relocate the concentrations to a location
12 nearer the pit. But we revised the
13 environmental site profile technical basis
14 document for occupational environmental
15 exposures.

16 MEMBER FIELD: I guess for the
17 thorium-232, if it was indeed covered, then
18 thoron should not have been a problem from the
19 waste sites.

20 MR. MORRIS: We agree with that.
21 That was one of our inherent assumptions.

22 COURT REPORTER: This is the court

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1 reporter. Who were the last two people who
2 were speaking?

3 MEMBER FIELD: This is Field.

4 MR. MORRIS: And I'm Robert
5 Morris.

6 CHAIRMAN LEMEN: This is Dr.
7 Lemen. If those were assumptions, do you have
8 any backup for those assumptions other than
9 just that they're assumptions?

10 MR. MORRIS: Well, I believe we
11 do. You know it's been a year or more since
12 we wrote that. But there were good bases for
13 everything we did. If you want to open that
14 conversations, then I'll need some time to
15 look at those documents. I didn't realize
16 that was on the agenda today.

17 CHAIRMAN LEMEN: Well, I think we
18 need to try and resolve these two issues and
19 the thorium issue as to what we do about that.

20 Does NIOSH feel comfortable at this time that
21 they have enough data to make a decision on
22 that?

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1 MR. ROLFES: This is Mark, Dr.
2 Lemen. And I'm looking back at a Weldon
3 Spring environmental intake rates and external
4 dose rates paper from April 12, 2011. And I
5 think this is what Bob Morris was referring
6 to. On page 16 of 38 of this document,
7 there's a figure that shows the locations of
8 particular air samplers, radon gas detectors,
9 and some gamma monitoring stations.

10 I don't know exactly -- let's see.
11 The air sampling it says ended in the year
12 2000. And I believe it said that the air
13 monitoring was done. Let's see. There are
14 particulate concentrations from 1975 through
15 1986 in our table. Let me flip to that.

16 There was monitoring data in the
17 more recent time period, but not during the
18 operational time period, is my recollection.
19 But I believe that the approach that we've
20 adopted is a claimant-favorable approach for
21 assigning ambient exposures to workers from
22 uranium and --

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1 CHAIRMAN LEMEN: When you said --
2 this is Dr. Lemen. When you say, Mark, that
3 it's a claimant-friendly, can you explain that
4 a little bit more so that the Petitioners that
5 are on the line will understand what you're
6 saying?

7 MR. ROLFES: Sure. In most cases,
8 when we complete a dose reconstruction, that
9 the ambient internal exposure pathways is very
10 minimal in comparison to the approach that we
11 would take for a worker that was involved in
12 some sort of workplace operation. First and
13 foremost, if we had an individual that was
14 monitored for uranium exposure, we would use
15 their uranium bioassay results.

16 And if you take a look back at the
17 information I think we presented in our
18 initial evaluation report, there was a large
19 number of employees that were monitored for
20 uranium internal exposure.

21 So really the ambient internal
22 exposures are a small portion of the total

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1 dose that we would assign. And usually we
2 make assumptions as to the amount of time that
3 the worker is on site. We usually choose the
4 highest ambient concentrations from any
5 location on the site if we have no idea where
6 that person worked.

7 I'm trying to think of some other
8 overestimating assumptions or claimant-
9 favorable assumptions regarding the assignment
10 of ambient dose. But one of the biggest ones
11 that we choose is to use the highest ambient
12 exposure rates or air concentrations on the
13 site if we have uncertainty as to where that
14 worker worked in the outdoor environment.

15 CHAIRMAN LEMEN: Okay.

16 DR. BUCHANAN: This is Ron
17 Buchanan. I just want to clarify. I think,
18 Mark, there was environmental air samples for
19 uranium taken during the operations period.

20 MR. ROLFES: Oh, yes.

21 DR. BUCHANAN: Okay.

22 MR. ROLFES: Yes, definitely.

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1 DR. BUCHANAN: And so those were
2 used in TBD 4 to set up an ambient intake
3 level. So there was uranium air samples
4 during `57 to `66 there.

5 MR. ROLFES: Yes. There were both
6 uranium and thorium. That's correct. And I
7 was looking at the more recent air sampling
8 that was done in the later years and that was
9 more perimeter air sampling in the later
10 years.

11 CHAIRMAN LEMEN: This is Dr. Lemen
12 again. Dr. Field, do you have any more to say
13 on this issue?

14 MEMBER FIELD: No, I think -- I'm
15 still trying to put all the pieces together,
16 but not at this time.

17 CHAIRMAN LEMEN: Ted, is it
18 appropriate to let Petitioners make any
19 comments they want to make at this time?

20 MR. KATZ: Oh yes. Of course.
21 You can always invite the Petitioners to
22 comment on the issue.

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1 CHAIRMAN LEMEN: That being the
2 case, I'd like to ask the Petitioners that are
3 on the line if they have any comments they
4 want to make to NIOSH or to the Board about
5 what has been said so far and if they have any
6 suggestions as to what they want to see happen
7 at this point.

8 Tina?

9 MS. TRIPLETT: I don't have
10 anything at this point.

11 CHAIRMAN LEMEN: All right.
12 Anyone else have anything?

13 MS. K. JOHNSON: This is Karen.
14 And I'm not really sure what to say at this
15 point. I hear a lot of I guess, I think, I
16 believe, but I haven't heard any actual
17 references to documentation. I would really
18 like to hear some of those or see them in
19 writing.

20 CHAIRMAN LEMEN: Mark Rolfes,
21 anyone from NIOSH, can address that question?

22 MR. ROLFES: Yes. This is Mark

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1 Rolfes, Dr. Lemen. And regarding the
2 references specifically for some of the air
3 monitoring and for our environmental intake
4 rates and external dose rates for Weldon
5 Spring plant and our White Paper from April
6 12, 2011, that is available on the NIOSH
7 website and beginning on page -- let's see
8 here -- 33 of 38 there are -- one, two, three,
9 four, five -- four and a half pages of
10 references that we've referred to and where
11 we've gathered data, maps of the site,
12 positions of the air monitoring locations.

13 CHAIRMAN LEMEN: Is there any way
14 that the Petitioners can get a hold of that?
15 Can you send it to them? Or are you saying
16 they should go to the website and just pull it
17 up?

18 MR. ROLFES: If the Petitioners
19 haven't seen a copy of this report, it is
20 available on the website. I can also talk to
21 someone here to see if the Petitioners have
22 not received this document we can see if maybe

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1 we can send a copy to them either
2 electronically or a hard copy, if they prefer.

3 CHAIRMAN LEMEN: Would it be
4 appropriate for NIOSH at this point in time to
5 talk directly to Karen about her concerns and
6 give her the document so she can look at it
7 before you have that discussion? And then
8 maybe we can come to some conclusion on this
9 issue.

10 MR. ROLFES: Yes. This isn't
11 something that's new to us since we have
12 spoken with the Petitioners in the past about
13 these concerns. And if there's new concerns,
14 then we'd certainly be willing to --

15 CHAIRMAN LEMEN: I can see where
16 the Petitioner is coming from because I heard
17 a lot of guesses and assumptions and stuff
18 like that. I think that before we can come to
19 final decision on this one issue that I would
20 like to request if it's not inappropriate and
21 tell me if I'm wrong, Ted, that NIOSH get
22 together with Karen and any other Petitioners

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1 to try and resolve any questions they might
2 have about this issue before we make a final
3 decision. Is that appropriate, Ted? Ted?
4 Did we lose Ted?

5 MR. KATZ: I'm sorry.

6 MR. HINNEFELD: This is Stu
7 Hinnefeld. I don't know what happened to Ted.

8 MR. KATZ: I was on mute, but go
9 ahead, Stu.

10 MR. HINNEFELD: I was just going
11 to say that we can certainly send those to the
12 Petitioners. If they'll just let us know now,
13 would you rather have a hard copy or an
14 electronic copy meaning an email with a file
15 attached that has that document that Mark
16 referred to from 2011?

17 MS. K. JOHNSON: This is Karen.
18 Electronic would be fine. And I'm not sure
19 that it is not something we haven't looked at
20 before.

21 MR. HINNEFELD: Yes, I understand.
22 But if it's -- we're specifically discussing

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1 it here. You'll get this email then with one
2 file attached.

3 MS. K. JOHNSON: Okay. That would
4 be fine.

5 MR. HINNEFELD: And, Ms. Triplett?

6 MS. TRIPLETT: Yes, that's fine.

7 MR. HINNEFELD: Electronic is
8 okay?

9 MS. TRIPLETT: Yes.

10 MR. HINNEFELD: Okay. Then we'll
11 do that. Mark, you can talk to Josh.

12 MR. ROLFES: Okay.

13 MR. HINNEFELD: I'll send him an
14 email and then you can talk to him about
15 sending it to him to make sure he's getting
16 the precise report you're talking about and
17 then email it to them. And then we'll rely on
18 Josh Kinman to get in touch with the
19 Petitioners and arrange a call. How does that
20 sound?

21 CHAIRMAN LEMEN: That sounds good
22 to me. Dr. Lemen. I was wondering. I don't

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1 want to keep putting this off and off and off.

2 If I could request at least from the Board if
3 you could make that contact in the very near
4 future before we have our meeting in Santa Fe,
5 if that's possible.

6 MR. HINNEFELD: They should
7 certainly have the file and we will at least
8 be in contact to try to schedule the call
9 before then. We have to deal with everybody's
10 schedules including the schedules of our staff
11 who will have to participate in that call. So
12 we will certainly be in contact before the
13 Santa Fe Board Meeting in terms of trying to
14 schedule it. And maybe we can even have it
15 done by then.

16 CHAIRMAN LEMEN: I would really
17 appreciate if we did go forward with that.
18 Let me just ask the other Board Member on the
19 phone, Dr. Field, if you're in agreement with
20 that approach or if you would like to see it a
21 different way.

22 MEMBER FIELD: Yes, I think that

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1 makes sense. My concern though is that and my
2 guess is that the documents that are going to
3 be provided are things that they've already
4 seen. But we'll find that out when they look
5 at them again.

6 But what they'll probably -- I
7 don't want to speak certainly on behalf of
8 them, but I can anticipate that some of the
9 questions that they may have may go back to
10 how firm is the information on were these pits
11 covered, just to use one example. And I'm not
12 sure that's going to be in the materials
13 provided to them. It just sounds like there's
14 evidence from various sources that these Pits
15 1 and 2 may have been open, that thorium-232
16 was just in Pit 4. But as far as we know,
17 that was never -- that never dried out.

18 So I think it may be hard to
19 answer some of the questions that exist. And
20 it may rely on some assumptions that there is
21 no indication that these pits did dry out. So
22 I guess it's at what level of confidence can

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1 you provide to answer questions about, you
2 know, just a pretty basic question about were
3 the pits covered the whole time. And, if not,
4 which ones were not covered and for what years
5 and what were in those pits?

6 I guess that's -- I'm not sure
7 this will resolve the issue, but at least
8 we'll know where the questions remain.

9 CHAIRMAN LEMEN: I would like to
10 give the Petitioners at least another
11 opportunity to go over this and make their
12 concerns known to NIOSH and to the Board so
13 that we can at least have an open discussion
14 on this at the Santa Fe meeting and get some
15 resolution because this has gone on for quite
16 a while. I don't want to keep it going on by
17 pushing off decisions.

18 MEMBER FIELD: And I don't -- this
19 is Dr. Field. I don't disagree. I want to
20 make sure that this time is used in the best
21 way it can be for the Petitioners and for the
22 folks gathering this material. If it's not

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1 the material that they're seeking, then it's
2 not very helpful. But we won't know that
3 until they look at it, I guess.

4 CHAIRMAN LEMEN: So I guess the
5 last question I have on this to the
6 Petitioners, is that an agreeable plan with
7 you. Karen.

8 MS. K. JOHNSON: This is Karen.
9 That is agreeable and I just want to thank
10 you. I actually agree with both of you. For
11 us, there is a lack of confidence and we
12 desperately need that confidence to be
13 comfortable with this.

14 CHAIRMAN LEMEN: All right. So I
15 will leave it, Stu, for you to spearhead this
16 with whoever you designate: Mark or whoever.
17 And we'll readdress this maybe by telephone
18 before the Santa Fe meeting but for sure at
19 the Santa Fe meeting.

20 MR. KATZ: Yes. This is Ted. I
21 don't think we have enough time for another
22 Work Group meeting before the Santa Fe

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1 meeting.

2 CHAIRMAN LEMEN: I wasn't
3 suggesting a Work Group meeting.

4 MR. KATZ: Yes.

5 CHAIRMAN LEMEN: I was just
6 suggesting maybe Stu could get back to me or
7 something like that and let me know what
8 happened.

9 MR. KATZ: Yes. But let me just
10 suggest this for a path forward. I mean Stu
11 or his folks can organize providing these
12 papers to the Petitioners and having that
13 discussion with them. I would ask that, when
14 they set that up, it would be nice for Ron
15 Buchanan to be able to have an opportunity to
16 join that since he's been --

17 DR. BUCHANAN: I would be very
18 happy to do that.

19 MR. KATZ: I would like for that
20 to happen and then at the conclusion of that
21 meeting it would nice to just have a little
22 brief email from Mark or whoever just sort of

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1 summing up that contact and so on. And then
2 at the Board meeting, they can run over that
3 as to what occurred with that discussion as
4 well and then Petitioners, during their time,
5 will have an opportunity to speak to that
6 again as well.

7 CHAIRMAN LEMEN: That sounds good
8 to me, Ted. This is Dick Lemen. So we will
9 put that item off the table right now with
10 that action plan in place.

11 And we'll move to the second item
12 on the radiation. And I think, Mark, you had
13 a presentation to make on that or were you
14 going to address that first?

15 MR. ROLFES: I can run through
16 really quickly those slides that I sent out
17 this morning. I apologize for not getting
18 those out earlier.

19 CHAIRMAN LEMEN: Well, maybe -- I
20 don't know. Does SC&A have something first or
21 would you like to proceed with Mark going
22 first and going after Mark?

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1 DR. BUCHANAN: This is Ron
2 Buchanan. There is one piece of the thorium
3 that we did not address or did not draw a
4 conclusion on and that was -- Mark spoke to
5 recycled thorium, and it wasn't an issue like
6 recycled uranium and such.

7 I would like to see some short
8 documentation of recycled or residue, thorium
9 residue, or something kind of laid out on what
10 Weldon Spring received, what that's referring
11 to at Weldon Spring, and how that would be
12 handled in the dose reconstruction because
13 this was a new term that had come up since the
14 TBD was written. So I would like to see
15 something come forward on that either just to
16 show that it is not of concern or was taken
17 care of by the air sampling that was in place
18 or something.

19 And so I'm wondering what we can
20 work out on that, Mark. If you could do
21 something short and concise on addressing the
22 thorium recycled material.

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1 MR. ROLFES: Yes, we can work on
2 that. I don't know that we'll be able to get
3 anything prior to the Santa Fe Board meeting.

4 I'm having trouble accessing some of the
5 documents in our site research database. I
6 would need to go back and check into it for
7 some of the information.

8 There were some bits and pieces of
9 information where they had analyzed the hazard
10 potential for recycled thorium in the
11 contaminants being processed. And I believe
12 this was done at Fernald in the '60s, some of
13 this investigative work.

14 And, as I had mentioned earlier,
15 the thorium that was processed at Weldon
16 Spring came from Fernald. But we haven't seen
17 anything that indicates that it's recycled
18 thorium per se.

19 I think the more important thing
20 would maybe be to look to see if we can find
21 any kind of information for the shipments of
22 thorium from Fernald to Weldon Spring and see

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1 if we can get any kind of information along
2 that line first.

3 DR. BUCHANAN: How long do you
4 think that might take you, Mark?

5 MR. ROLFES: I wouldn't be able to
6 give you a time estimate. It probably would
7 take, I'd say, a few weeks at the minimum to
8 go through some of the references and see if
9 we can identify what types of thorium were
10 sent.

11 MR. KATZ: This is Ted. I'm just
12 -- Can you hear me? Am I on mute?

13 MR. ROLFES: Yes.

14 MR. KATZ: I'm just a little bit
15 confused here about this. Ron or Mark, I
16 don't know where this is coming from. But, I
17 mean, presumably you looked at what source
18 terms were sent and processed at Weldon Spring
19 to do your evaluation in the first place. I'm
20 just a little confused as to what this is
21 about.

22 Now you're talking about a

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1 possibility of this other source term. Can
2 you explain this? I just don't really
3 understand what's going on here with recycled
4 thorium being shipped from Fernald if you
5 didn't address it already in the Evaluation
6 Report and so on.

7 DR. BUCHANAN: This is Ron
8 Buchanan of SC&A. In the past, it's always
9 been assumed that the thorium was in an ore
10 form. And then, these papers that the
11 Petitioner sent in used the terms "thorium
12 recycled material" and "thorium residue." So
13 my question is: what does this refer to? Is
14 this something different than what we have
15 been addressing all along?

16 Or is this a different terminology
17 being used for what was already being
18 processed? Or where does this term come from?

19 And was it different than the thorium that
20 was there and what we've worked up, you know,
21 looked at the dose reconstruction for?

22 This just came to light in these

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1 papers. This terminology came out in these
2 papers that the Petitioner recently sent us.

3 MR. KATZ: Okay. And these --

4 CHAIRMAN LEMEN: This is Dick
5 Lemen. I'm sorry. My phone went out.

6 MR. KATZ: Okay. And these papers
7 were papers that, Mark, your folks never saw
8 these papers before and didn't -- can you just
9 explain the other side of the story?

10 MR. ROLFES: I believe five
11 references were provided and I believe we had
12 seen maybe half of the references, two or
13 three of those previously. I'd have to go
14 back and look at the context just because
15 we've seen hundreds of records before.

16 Maybe, Monica, if you recall. I
17 know you had gone through and looked at some
18 of the records as well that were provided, and
19 if you have anything to add.

20 I don't recall the specific
21 terminology and I didn't go back and look at
22 this specific issue because I wasn't sure

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1 which aspect of thorium exposure was on the
2 agenda that we were going to be discussing.
3 So I would have to go back and look at the
4 context of the statement.

5 I don't know if, for example, you
6 know, it all depends, because sometimes when
7 you're referring to thorium residues it could
8 just be what's left over after they process
9 the thorium if it was put through the process.

10 I would have to go look at the context to
11 figure it out.

12 MR. KATZ: Okay.

13 MR. ROLFES: I mean, I couldn't
14 make a guess without seeing it.

15 MR. KATZ: I mean, I guess I'm
16 just asking the question. Ron did review
17 these papers that Tina provided, I think Tina
18 provided, and you know we sent those around to
19 everyone. And it's just sounding on this call
20 like there was no follow-up to Ron's review of
21 these papers. And so while we're thinking
22 about what we might do to explore the

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1 questions that are open, it sounds like
2 nothing was done to explore those in advance
3 of this meeting.

4 MR. ROLFES: Ted, this is Mark.
5 And I think what we originally had agreed to
6 look into those references for was to see if
7 there was any supporting evidence showing that
8 thorium-230 had been separated from the
9 uranium ore residues for the raffinates. And
10 I think that was the review that we had
11 conducted.

12 We didn't really go and look to
13 see if there was information, additional
14 information, about terminology referring to
15 thorium. I think we looked at those
16 references for a different reason.

17 MR. KATZ: Okay. I see.

18 MR. HINNEFELD: Ted, this is Stu.
19 I think part of the difficulty here is the
20 fact that this recycled is not really a
21 standard term. And people can use the term
22 "recycled" in a number of ways. And that's

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1 what the confusion is. We don't know in these
2 latest references that were provided by
3 Petitioners how they used the term "recycled."

4 For instance, when we talk about
5 recycled uranium, by and large in our program
6 and at Fernald when we talk about recycled
7 thorium, we're talking about materials that
8 have been irradiated in a reactor and then
9 reprocessed and repurified back to uranium or
10 back to thorium. And in that process, there
11 are some impurities that go along with it.
12 And that's what we in our program have been
13 talking about as recycled uranium or recycled
14 thorium.

15 But that's just sort of a term of
16 convenience for us. And that's not
17 necessarily like the only acceptable use of
18 recycled.

19 A common practice on the DOE's
20 side was something called scrap recovery where
21 they would take materials that are byproducts
22 of a production material like uranium shavings

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1 or something, from metal turnings or the ends
2 of cuttings that, when they're cutting uranium
3 to a particular size you get some odd length
4 pieces that need to be recovered. Or, maybe
5 people might use the term "recycled" for that.

6 So the question is does the term
7 "recycled" as used in these papers, at least
8 one of which was written in the '80s by
9 Batelle, really talking about material that
10 went into a reactor and was reprocessed or is
11 that just talking about some other sort of
12 reclamation process that they were doing? So
13 that's the basis for the confusion here.

14 MR. KATZ: Okay.

15 DR. BUCHANAN: Yes, you're
16 correct, Stu. That summarizes it good.
17 Thanks.

18 CHAIRMAN LEMEN: This is Dick
19 Lemen again. I got cut off. So I didn't hear
20 all of that conversation, but it sounds like
21 there is still a lot of work at least to be
22 done on this second issue. And I hear a

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1 commitment from Stu and the rest of you at
2 NIOSH that you're going to pursue that as
3 rapidly as you can and try and have something
4 at least to discuss on this second issue,
5 maybe at the Santa Fe meeting also. Is that -
6 - did I hear right? Or did I miss something?

7 MR. HINNEFELD: This is Stu
8 Hinnefeld, and I think it will be difficult
9 for us to have much to say at the Santa Fe
10 meeting on this. I'm afraid this might take a
11 little more research than we have days
12 available.

13 CHAIRMAN LEMEN: Can we get --

14 MR. HINNEFELD: We'll see what we
15 can do, but I don't know what we'll be able to
16 do by Santa Fe.

17 CHAIRMAN LEMEN: Okay. Can we get
18 some kind of commitment to the Petitioners to
19 you to set a little -- some type of time frame
20 that you could say in a month you'll have
21 something back? Or how would you like to
22 handle that?

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1 MR. HINNEFELD: I think the best I
2 can do is we will have to scope this, right?
3 Sitting here today, we don't really know what
4 the scope of the task that we're looking at
5 because we're not really sure where it's going
6 to go. We'll have to scope this. And once we
7 scope it, then we can have some idea of when
8 we can be done.

9 We will provide that after we've
10 had the opportunity to do that. We'll provide
11 a projected schedule.

12 CHAIRMAN LEMEN: I was really
13 hoping that we could get things resolved by
14 the Santa Fe meeting, because I thought we
15 were closer than this. But I guess I was
16 wrong on that, so we'll have to go by your
17 time frame.

18 MS. M. JOHNSON: Hello?

19 CHAIRMAN LEMEN: Hello.

20 MS. M. JOHNSON: This is Mary
21 Johnson, the Claimant on the Petition.

22 CHAIRMAN LEMEN: Yes.

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1 MS. M. JOHNSON: We are wondering,
2 when this comes to an end, how long does NIOSH
3 have to prove, in their words, that we are not
4 going to get this petition? We have waited
5 and waited and waited and they always need
6 more time.

7 Where is the preparation in this
8 and how long do we have to be patient? This
9 has just gotten ridiculous.

10 CHAIRMAN LEMEN: I hear your
11 concerns, ma'am. Stu, I was kind of hoping at
12 this meeting today we would be able to resolve
13 all these issues. But it appears that it's
14 not going to happen.

15 Ted, how do you usually handle
16 something like this when they're just putting
17 stuff off?

18 MR. KATZ: Well, in a matter like
19 this, when someone submits some papers that
20 had some ratings and issues that hadn't been
21 addressed before, I mean, that's the
22 consequence of a new issue coming to light is

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1 that they have to pull the string on it.

2 And there is really -- I
3 understand fully the frustration of that
4 involving more time. But, I mean, there are
5 two choices: ignore the new issue or to pull
6 the string and find out whether that issue has
7 any consequence or not.

8 But I don't think there's any way
9 for the program to answer a question that's
10 raised without looking into the documentation
11 related to that new question. So I don't
12 think you have much of an alternative unless
13 you're going to ignore the issue.

14 CHAIRMAN LEMEN: Well, I certainly
15 don't want to ignore the issue. And I guess
16 my question on this issue, one last time,
17 would be: was there anything else besides this
18 last issue that the Petitioners intend to ask?
19 Or is there any issue that might come up
20 again?

21 MR. KATZ: Dick, I think you
22 missed because you were cut off, I guess.

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1 CHAIRMAN LEMEN: Yes.

2 MR. KATZ: Basically, we haven't
3 heard yet about the radon model. We're still
4 talking about thorium here.

5 CHAIRMAN LEMEN: I know. That's
6 what I'm talking about.

7 MR. KATZ: Okay.

8 CHAIRMAN LEMEN: I'm talking about
9 thorium.

10 MR. KATZ: Okay.

11 CHAIRMAN LEMEN: I hadn't gotten
12 to radon yet.

13 MR. KATZ: Okay.

14 CHAIRMAN LEMEN: So I am very
15 sympathetic with the Petitioners. And I guess
16 we'll bring this up at the Santa Fe meeting,
17 at least the questions that are still open,
18 and let the Board discuss that with NIOSH a
19 little bit more.

20 MS. K. JOHNSON: This is Karen
21 Johnson again. I just want to make a
22 statement that these documents we've

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1 introduced came from our FOIA request from
2 NIOSH. These aren't new. And they shouldn't
3 be new to NIOSH. So I just wanted to throw
4 that out there and make sure it's on record.

5 CHAIRMAN LEMEN: Okay.

6 MR. KATZ: Karen, I think what
7 you're hearing from the NIOSH folks and the
8 DCAS folks about this is that the terms that
9 are in some of those documents that you're
10 raising questions about a concern, I think to
11 them those terms were not of concern. And
12 that's why -- I assume they're aware that
13 these materials existed, but they didn't have
14 concerns about them, and now they're trying to
15 address questions that you're raising related
16 to those terms, which is why they have to go
17 and do more research.

18 CHAIRMAN LEMEN: Well, again, I
19 would like to know how long the research is
20 going to take and if we could get some
21 commitment from NIOSH. But I don't think
22 we're going to be able to.

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1 MR. KATZ: Right.

2 CHAIRMAN LEMEN: I understand the
3 Petitioners' frustration on this and the best
4 I can do at this time is to take it up with
5 the whole Board at the meeting in a couple of
6 weeks. I can't act by myself on this. I need
7 the Board's support. Okay?

8 Can you hear me?

9 MR. KATZ: Yes, Dick.

10 CHAIRMAN LEMEN: Is that all
11 right?

12 MR. KATZ: Of course.

13 CHAIRMAN LEMEN: Let's move on to
14 the second issue, with this first one still
15 unresolved. Mark, do you want to go ahead and
16 make your presentation?

17 MR. ROLFES: Yes. At the last
18 Board meeting, I guess -- I'll just go ahead
19 and go quickly through these slides that I
20 sent out this morning. They're available on
21 the K: drive or O: drive under the AB document
22 review folder for Weldon Spring. And most of

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1 this information came from the earlier
2 presentation that we initially presented to
3 the Advisory Board when the Special Exposure
4 Cohort petition was issued.

5 Just to go through the Weldon
6 Spring Plant Site History, the AEC contracted
7 with Mallinckrodt Chemical to refine uranium
8 at the Weldon Spring Plant between June 1957
9 and December of 1966.

10 In 1967, the AEC returned the land
11 to the Department of the Army. And there
12 really was no indication of any work being
13 done during 1967, process work.

14 The covered period, we've got the
15 operational period defined as 1957 through
16 1967 and the actual processing was closed down
17 by the AEC in 1966.

18 MS. TRIPLETT: I'm sorry. This is
19 one of the Petitioners. Can you speak up? I
20 can hardly hear you.

21 MR. ROLFES: I sure can.

22 MS. TRIPLETT: Thank you.

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1 MR. ROLFES: Let me know. Is this
2 a little bit better?

3 MR. KATZ: Much better.

4 MR. ROLFES: Okay.

5 MS. TRIPLETT: Yes, it is.

6 MR. ROLFES: All right. I
7 apologize. There were no AEC operations or
8 contractors from 1966 through 1975. And then
9 in 1975, monitoring and remediation began and
10 lasted up until 1984.

11 The operations at the Weldon
12 Spring Plant, the primary activity involved
13 the conversion of natural uranium ore
14 concentrates into other uranium products.
15 Let's see. They basically did some short-term
16 thorium campaigns in the late 1960s. And the
17 ore concentrates processed at Weldon Spring
18 Plant were a relatively small source of radon
19 because most of the radium in the ore
20 concentrates was removed at an offsite mill
21 prior to the materials being sent to the
22 Weldon Spring Plant.

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1 Basically, some of the assumptions
2 that we've put together in our radon exposure
3 model came from the reference of Meshkov 1986,
4 I believe it was. And they're laid out in the
5 next couple of slides here.

6 Basically, at the January 2011
7 Work Group meeting, NIOSH and SC&A agreed on
8 the bounding radon exposure conditions for
9 process workers. We had indicated that all
10 radon release during the processing of the ore
11 concentrates would be recirculated back into
12 the process areas. And we assumed that the
13 radon was steady state and that minimum
14 ventilation would be involved in the
15 buildings.

16 This approach establishes a
17 bounding intake to perform dose
18 reconstructions. Some of the bounding
19 conditions from the Meshkov 1986 reference
20 include the average annual uranium containing
21 material being processed in the buildings.
22 That was 12 million kilograms of uranium. The

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1 radon that was released was directly related
2 to the amount of uranium being processed each
3 year.

4 We assume that 70 percent of the
5 material being processed was uranium and that
6 the radium activity in the ore concentrates
7 which were processed was approximately one
8 percent, which we believe is a conservative
9 and upper end estimate of the radium content.

10 We've assumed equilibrium between
11 radium and radon. And within this Meshkov
12 reference, the radon release estimate for
13 Weldon Spring Plant for the materials being
14 processed at the site were in between 12
15 curies per year and 34 curies per year. NIOSH
16 chose the upper bound value of 34 curies per
17 year.

18 And I know there was a concern
19 previously expressed about whether surrogate
20 data had been used. And there was no
21 surrogate data that were used in this model.

22 And just the final slide is the

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1 history of some of our discussions on the
2 radon issue. And in January 2011, there was
3 an agreement reached that the scenario in
4 which all the radon released during processing
5 was recirculated into the facility would be a
6 bounding assumption. The maximum
7 concentration of radon based upon the release
8 estimate would be assigned for the intake.

9 And then in May 2011, there was
10 some discussion and clarification and that's
11 why these slides are being presented just to
12 sort of recap and summarize the proposed
13 model. If there are questions related to the
14 slides or any other questions? I'll hand it
15 back to you, Dr. Lemen.

16 CHAIRMAN LEMEN: All right. This
17 is Dick Lemen. Ron, is there anything from
18 SC&A on this?

19 DR. BUCHANAN: Okay. Yes. This
20 is Ron Buchanan, SC&A. We have looked over
21 this model and I've had several SC&A experts
22 in radon look at this.

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1 And just to summarize it real
2 simply, there was no radon measurements taken
3 at Weldon Spring during the operational
4 period. And so this is a radon model which
5 takes the throughput of uranium and then puts
6 in an enclosed room where there is no
7 ventilation. It lets it build up to maximum
8 and then assign that intake.

9 So that's obviously an overly
10 conservative model and assigns a higher dose
11 than anyone probably received. And SC&A
12 looked at the details, and the information
13 comes from Weldon Spring and facilities and
14 the throughput and such, and we do not have a
15 problem with the model.

16 We brought it before the work
17 group because in the past there had been
18 problems, issues, with using a strictly
19 modeled radon intake as opposed to having any
20 benchmark measurements of radon.

21 And this was different from some
22 of the other models brought forth to the

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1 Advisory Board in that this does not take into
2 any consideration or take any allowance for
3 decay or ventilation. So there is stagnation
4 and that sort of thing, separation,
5 stratification, in the layers of radon.

6 And so this is an overly
7 conservative model which we don't have a
8 problem with. It's just if the Advisory Board
9 will accept a radon model based on calculation
10 as opposed to any benchmark measurements being
11 made.

12 CHAIRMAN LEMEN: Is that all you
13 had, Ron?

14 DR. BUCHANAN: Yes. Thank you.

15 CHAIRMAN LEMEN: Dr. Field, do you
16 want to comment on that? Hello? Dr. Field?

17 MEMBER FIELD: The mute got me
18 again. Yes, just had a couple questions.
19 More clarifications than I guess anything
20 else.

21 For some of the assumptions, the
22 70 percent of the materials assumed uranium.

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1 I was just wondering where that came from.

2 MR. ROLFES: This is actually out
3 of the Meshkov reference as well, I believe.

4 Monica, could you confirm that? I
5 believe that was one of the assumptions, and
6 that's a pretty bounding assumption I want to
7 say because most uranium content is -- that's
8 a pretty good ore concentrate to have 70
9 percent uranium in it. Let me see if I can
10 pull that reference out.

11 MR. MORRIS: This is Robert
12 Morris. Mark, do you think I can help that?

13 MR. ROLFES: Yes, please go ahead.

14 MR. MORRIS: Yes. You know, the
15 uranium would have been mixed in with some
16 kind of oxide and so those are consistent
17 assumptions with some kind of part of the
18 module as oxygen.

19 MEMBER FIELD: I see. So when
20 you're talking about 70 percent you're talking
21 it could be 100 percent uranium oxide, the
22 yellowcake?

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1 MR. MORRIS: Sure. Yes. But radon
2 would come from uranium atoms.

3 MEMBER FIELD: Right. So the 30
4 percent then is just the other -- it's the
5 compound that's associated with uranium,
6 right?

7 MR. MORRIS: I think that's -- if
8 I recall, it's been a long time since I looked
9 at that one, but I'm pretty sure that's how we
10 did it.

11 MEMBER FIELD: Okay. I'm just
12 trying to figure out. If you think about
13 yellowcake, you think about higher percent.
14 But I see what you're saying with the
15 compound. So you just looking at the, almost
16 the elemental content.

17 MR. MORRIS: Right.

18 MEMBER FIELD: Okay. And then
19 Meshkov, I remember looking at this about a
20 year ago or so. And I sent an email in just a
21 short while ago. They assumed -- I thought it
22 was 30 percent equilibrium, but then Mark said

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1 it was 50 percent.

2 MR. ROLFES: Yes.

3 MEMBER FIELD: What I heard it
4 sounded like there was 100 percent equilibrium
5 that you just discussed today.

6 MR. SMITH: This is Billy Smith.
7 The equilibrium that Mark was talking about
8 was that the equilibrium was between uranium
9 and radon was 100 percent. So we had full
10 equilibrium.

11 MEMBER FIELD: I see.

12 MR. SMITH: All of the radon in
13 the uranium was released in the refining
14 process.

15 MEMBER FIELD: And the equation
16 you used for the tables is based on working
17 levels or is it based on radon gas?

18 MR. SMITH: It's based on working
19 levels.

20 MEMBER FIELD: Working levels.

21 MR. SMITH: Now the paper that you
22 probably read has -- hold on just one second,

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1 please.

2 MEMBER FIELD: Yes.

3 MS. HARRISON-MAPLES: IREP

4 operates on working levels.

5 MEMBER FIELD: That's what I

6 thought.

7 MS. HARRISON-MAPLES: Yes.

8 MEMBER FIELD: What I was

9 wondering was what was the equilibrium ratio

10 between the radon and the decay products

11 assumed in the room.

12 MS. HARRISON-MAPLES: Yes.

13 MEMBER FIELD: I assume that's 100

14 percent?

15 MR. ROLFES: That was 50 percent.

16 MEMBER FIELD: Fifty percent.

17 MR. ROLFES: From the EPA document

18 that I had sent to you. I think I sent it.

19 MEMBER FIELD: Right. Based on

20 home, right?

21 MR. ROLFES: Yes. Correct. For

22 indoor air.

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1 MR. SMITH: It's much lower than
2 that for outdoor materials or in materials in
3 buildings where the turnover rate is much
4 higher. So we went conservative. I assume
5 that the equilibrium back there was 50
6 percent.

7 MEMBER FIELD: Okay.

8 COURT REPORTER: This is the court
9 reporter. Who is this speaking, please?

10 MEMBER FIELD: I was just saying,
11 when you assume that it's all decay and there
12 was stagnation, that's why I assume you were
13 using 100 percent. That there's no played out
14 or nothing occurring.

15 MR. SMITH: No, that's not true.

16 MEMBER FIELD: Well, that's why I
17 just asked you for clarification on that.

18 MR. MORRIS: Dr. Field, this is
19 Robert Morris.

20 MEMBER FIELD: Yes.

21 MR. MORRIS: We have looked at our
22 model and I've just in the last day or so made

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1 sure that we had it right. And we assumed
2 that if all of the radon from the material of
3 interest escaped into the building, completely
4 mixed into the breathing air of the building,
5 and was available for workers to breathe 2,000
6 hours a year, we assumed 50 percent
7 equilibrium between radon and radon progeny.

8 MEMBER FIELD: Okay.

9 MR. MORRIS: And we assumed
10 variable ventilation rates, like you would see
11 in a home, for example. So that all of the
12 radon was removed from the ambient air
13 exhaust. None of it from the process. Local
14 exhaust ventilation, that would have been
15 associated with capture velocity, fume hoods
16 or unit process ventilation.

17 So when you take flow rates as low
18 as that, then you're not going to get low
19 equilibrium ratios like you would from a very
20 highly ventilated building. Does that make
21 sense?

22 MEMBER FIELD: I guess what I was

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1 just trying to figure out was the discussion -
2 - I understand completely why you use 50
3 percent, because generally in larger building
4 there are areas where there's work occurring
5 like this. You have much higher air exchange
6 rates than what you find in homes. So 50
7 percent, I agree would be bounding.

8 But I thought what I heard during
9 the presentation was that there was nothing
10 assumed as far as ventilation. That it was
11 assumed that it was a closed system. Maybe I
12 misheard that.

13 MR. MORRIS: We may have said that
14 a long time ago. In fact, I think we probably
15 did a long time ago.

16 MEMBER FIELD: Okay.

17 MR. MORRIS: As it's written, we
18 went through and made it more clear what our
19 assumptions. We do have one air change per
20 hour ventilation which is a minimal, sort of a
21 tight home, kind of ventilation rate. And
22 that would be very, very conservative for an

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1 industrial facility.

2 MEMBER FIELD: Right, I agree. And
3 then for the Meshkov, I have to look again,
4 but did they say what the emanation rate was
5 based on the material as far as moisture
6 content, that kind of thing? I'm just
7 curious. These are some of the details I just
8 hadn't checked up on.

9 MR. MORRIS: Do you mean how Mr.
10 Meshkov came up with the 34 --

11 MEMBER FIELD: Yes, I'm just
12 wondering because the emanation rate from the
13 material is going to depend on the content?
14 And if it's yellowcake, you already assume a
15 certain moisture content. I'm just wondering
16 that there's a lot of differences with
17 emanation rates from materials based on what
18 the moisture content is.

19 MR. MORRIS: I don't remember how
20 Mr. Meshkov came up with that.

21 MEMBER FIELD: Okay. I'll look
22 over that again. Just trying to clarify some

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1 of those issues.

2 MR. MORRIS: If you want, we can
3 sort of look over that, too, and give you a
4 written response, if you choose.

5 MEMBER FIELD: Yes. And that's
6 all I had, Dick.

7 CHAIRMAN LEMEN: Could I ask you,
8 Bill, one last question? And that is: what do
9 you feel about using a model such as this
10 without any actual measurements?

11 MEMBER FIELD: Well, if these
12 other questions make sense that I was asking
13 just for clarification, I think it is
14 bounding. You know, we went through this at
15 other sites. Is this -- are the assumptions
16 reasonable? And, yes, we had a lot of
17 discussion just centered around previous sites
18 like this.

19 I think this should be a bounding
20 estimate based on assuming a rather low
21 ventilation rate. It's something we want to
22 look over, because the slides don't go into

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1 detail, but I think the report does. There
2 are other documents that I've seen.

3 CHAIRMAN LEMEN: Okay. At this
4 time, do any of the Petitioners have any
5 comments? Karen?

6 (No response.)

7 Tina?

8 MS. TRIPLETT: No, I do not.

9 CHAIRMAN LEMEN: Okay. Does NIOSH
10 have any further comments at this time?

11 MR. ROLFES: I don't believe so.

12 CHAIRMAN LEMEN: Ron from SC&A,
13 any further comments?

14 DR. BUCHANAN: No.

15 CHAIRMAN LEMEN: I propose, as
16 Chair of this Working Group, that we bring
17 this up to the full Committee and see what
18 their feeling is on using this model. If
19 there are no dissensions from the Petitioners
20 at this time, I suggest, Ted, we put it on the
21 agenda as part of what the Weldon Spring
22 presentation will be at the Board meeting in a

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1 couple of weeks.

2 MR. KATZ: This is Ted. Weldon
3 Spring is on the agenda already.

4 CHAIRMAN LEMEN: I understand.
5 But I mean, with this comment, that we bring
6 it up to the Board.

7 MR. KATZ: Right. I mean, you'll
8 be leading up the discussion.

9 CHAIRMAN LEMEN: Correct.

10 MR. KATZ: I guess one suggestion
11 is: there are some useful clarifications about
12 the model in the discussion from Robert Morris
13 which sort of laid out the parameters more
14 clearly, and that might be useful to add to
15 the presentation, Mark.

16 CHAIRMAN LEMEN: I agree.

17 MR. KATZ: Yes, because the full
18 Board was very interested in hearing more
19 about the radon model. And I think the whole
20 discussion here this afternoon was helpful in
21 understanding how that model was designed.

22 CHAIRMAN LEMEN: So, Mark, could

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1 you put that in your presentation at the Board
2 meeting?

3 MR. ROLFES: Yes, we could
4 definitely -- there's a lot of information in
5 the slides that might not even be important.
6 I presume that I'm being asked to give this
7 presentation to the full Board. Is that what
8 I'm hearing?

9 CHAIRMAN LEMEN: Yes.

10 MR. ROLFES: Okay.

11 MR. HINNEFELD: This is Stu. We'll
12 provide that presentation or modified
13 presentation that actually focuses on the
14 radon model and the specifics of the radon
15 model.

16 CHAIRMAN LEMEN: That would be
17 good.

18 MR. HINNEFELD: Yes. And we will
19 present that at the Board meeting.

20 CHAIRMAN LEMEN: All right. Are
21 there any other questions on this radon issue
22 at this time?

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1 (No response.)

2 If not, I think we've completed
3 the agenda. And if there are no other
4 questions or comments from the Petitioners, I
5 would call this meeting to a close at this
6 time.

7 Ted?

8 MR. KATZ: Okay. Very good. And,
9 Dick, you're prepared to sort of lead off the
10 discussion of this at the Board meeting?

11 CHAIRMAN LEMEN: Yes, I am. And
12 I'm a little concerned about the first issues
13 that we talked about. But I'll talk to some
14 people about that. So that's all I have at
15 this time.

16 MR. KATZ: Sure. And we'll have a
17 little bit more follow-up on the first issue
18 after they've had a chance to talk with Tina
19 and the Johnsons.

20 CHAIRMAN LEMEN: Right. But I
21 would like to show the Petitioners that are on
22 the Board that as far as I'm concerned, we

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1 need to move this through and get a decision
2 made. Because I agree; it's been too long in
3 the making. And I'll do everything I can to
4 push that forward.

5 MS. K. JOHNSON: This is Karen.
6 We truly appreciate it, because we have, we've
7 been here since the beginning. So we
8 appreciate some closure at this point.

9 CHAIRMAN LEMEN: Well, I'll work
10 towards that, and I'll address this again to
11 the Petitioners, I guess, at the Board meeting
12 and to listen to NIOSH's presentation and hear
13 what we have to resolve some of the issues on
14 the first part of our agenda today.

15 With that, I'll close the meeting
16 and thank everybody for participating. And
17 we'll talk later.

18 Any final comments, Ted?

19 MR. KATZ: Nope. Thanks to
20 everyone.

21 (Whereupon, at 2:48 p.m., the
22 above-entitled matter was concluded.)

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