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

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON SCIENTIFIC ISSUES

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MONDAY
JUNE 20, 2011

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The Work Group convened telephonically at 1:00 p.m., Eastern Daylight Time, Paul L. Ziemer, Acting Chair, presiding.

PRESENT:

PAUL L. ZIEMER, Acting Chair
R. WILLIAM FIELD, Member
JAMES E. LOCKEY, Member
WANDA I. MUNN, Member
JOHN W. POSTON,SR., Member
GENEVIEVE S. ROESSLER, Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
ISAF AL-NABULSI, DOE
IULIAN APOSTOAEI, ORAU Team
JENNY LIN, HHS
JOHN MAURO, SC&A
JOHN TRABALKA, ORAU Team
JIM NETON, DCAS
JOHN STIVER, SC&A

C-O-N-T-E-N-T-S

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

(1:01 p.m.)

MR. KATZ: So great. So Paul, you're on. It is now 1:00 p.m. by all my clocks, so why don't we see about, let's start with roll call beginning with the Board Members.

ACTING CHAIR ZIEMER: You can proceed with the roll call, Ted, if you want to and then we'll see if we have our group here.

MR. KATZ: Right. So beginning with the Board Members, and Paul has agreed to chair this session for this Work Group even though Dr. Richardson ordinarily chairs this Work Group.

ACTING CHAIR ZIEMER: And Wanda is here I heard.

MEMBER MUNN: Yes.

MEMBER POSTON: John Poston's here.

MEMBER ROESSLER: Gen Roessler's

here.

MEMBER LOCKEY: Jim Lockey's here.

ACTING CHAIR ZIEMER: And that's all the Board Members I believe that were on the Group, right, except for Dr. Richardson who's --

MEMBER ROESSLER: Dr. Lemen -

ACTING CHAIR ZIEMER: Dr. Lemen will not be here today.

MR. KATZ: He cannot make it, right. So that's the full roster of Board Members we expect. So let's move on to NIOSH-ORAU staff.

DR. NETON: Yes, this is Jim Neton in Cincinnati.

DR. APOSTOAEI: Hello, we have here Iulian Apostoaei and John Trabalka from SENES Oak Ridge.

ACTING CHAIR ZIEMER: Okay.

MR. KATZ: Very good. SC&A staff?

DR. MAURO: John Mauro here from SC&A. Hi, everyone.

ACTING CHAIR ZIEMER: Hi John.

MR. STIVER: John Stiver from SC&A.

MR. KATZ: Welcome to both of you. Agency officials or contractors to the Feds, HHS or other agencies?

MS. LIN: Jenny Lin, HHS.

DR. AL-NABULSI: Isaf Al-Nabulsi, DOE.

MR. KATZ: Welcome. And this is Ted Katz on the, Designated Federal Official for the Advisory Board.

And last but not least, any members of the public on the line who wish to identify themselves?

Okay, then. We can carry on.

ACTING CHAIR ZIEMER: Okay, I'll officially call the meeting to order. I assume we have the official recorder in place.

MR. KATZ: We do.

ACTING CHAIR ZIEMER: Yes, we're ready to proceed then and remind everyone when

you speak since the recorder may not know everyone's voice, to identify yourself as you make comments.

Our job today is to suggest some comments and perhaps some position paper to respond to the 42 CFR Part 81 docket on the proposed revision of the guidelines on non-radiogenic cancers.

Dr. Neton made a presentation on the NIOSH proposed revisions at our last full Board meeting.

And I want to make sure everyone has before them a copy of the docket itself, which is Federal Register Volume 76, Number 54, dated Monday, March 21. It is referenced as, the docket reference is RIN0920-AA39.

Are there any of the Work Group Members that do not have a copy of that? It was part of our packet at the last meeting so I assume you all have that.

What I thought we would do, and let me outline my thoughts on how to proceed

on this and then we can get some comments back.

The docket itself asks two main questions of commenters, although it doesn't limit comments to those questions.

But it seems to me that it would be of value for the Board as proposed through this Work Group, would respond to the two main questions which are enumerated on Page 15268 of the Federal Register of that particular reference. It's in the middle top among your public participation.

The first question is, "Does epidemiological and other scientific research support finding that CLL is caused by radiation, and what are the major limitations of the determination (whether affirmative or negative)?”

And the second question, which is a bit longer but let me go ahead and identify it. "If CLL were to be covered under EEOICPA, does the risk model proposed by the National

Institute for Occupational Safety and Health use the best available science and methodological approaches to express the dose-response relationship between radiation exposure and CLL?"

And I'm going to end the question at that point although there's some additional wording beyond that, but those are the two main questions.

And it seemed to me that it would be at least appropriate for the Board to address those either in terms of saying we agree with NIOSH's position, or if we have concerns about it to identify what those might be.

And then beyond those two if there are additional issues that we wish to address those could be enumerated.

And this would be directed as per the docket instructions to the NIOSH docket office so that they would go into the public record.

So let me ask first if there's sort of general agreement that that's how we should proceed.

MEMBER LOCKEY: That sounds good to me, Paul.

ACTING CHAIR ZIEMER: Yes, and who else has --

MEMBER LOCKEY: It's Jim Lockey.

MEMBER MUNN: And this is Wanda. That seems reasonable if you choose not to address the other lesser questions.

ACTING CHAIR ZIEMER: Well, I'm not saying not to address them. I'm just saying those are the two main ones that are identified in the docket. It would seem to me it would be useful.

MEMBER MUNN: Well, certainly there are two scientific issues here.

ACTING CHAIR ZIEMER: Yes.

MEMBER ROESSLER: And this is Gen. I agree that that's an appropriate procedure here.

MR. KATZ: Paul?

ACTING CHAIR ZIEMER: Yes.

MR. KATZ: This is Ted. And this is sort of a friendly amendment to your suggestion about providing your comments to the docket.

You are actually, this is part of the Board's charter, to advise the Secretary on these guidelines. So in fact, I believe and I think this is how we've done it in the past, the Board would send a letter to the Secretary, I mean that will be put in the docket by NIOSH as well, but --

ACTING CHAIR ZIEMER: Okay, I wasn't quite certain of the route, but either way the intent is to put it in the public record. So what you're saying is it would go to the Secretary and then by that route would feed back to NIOSH.

MR. KATZ: Right.

ACTING CHAIR ZIEMER: Yes, and it certainly wasn't my intent that we bypass the

Secretary. I was just looking at the instructions in the docket itself and that's where it said to submit them. But I understand that the point is we actually advise the Secretary, so that would be appropriate.

Let me also add an additional comment or a thought here. And the first thing is, the question is, "Does epidemiological and other research support the finding that CLL is caused by radiation?"

One of the concerns that I had was that for the most part, and although not completely, but most of our Board Members are not in a position technically to evaluate that research.

I certainly don't consider myself in a position to evaluate that epi research that's basis for this, and in fact have to rely on those who are experts.

Now we do have on the Board some epidemiological people. In fact, one of the

persons who's not able to participate with us was one of their NIOSH evaluators whose comments are in the docket.

So we already know that we have a high level of expertise amongst our Board and that person's expertise is reflected in some of the comments here.

And we have a couple of others on the Board who have epidemiological background.

But it seemed to me from my own personal point of view and I think a lot of, and I would sort of assume that the other nontechnical people might feel this way, that we very much have to rely on the evaluations made by those international experts that NIOSH has itself relied upon to evaluate the scientific literature.

So one of the things that I would expect perhaps to include in the comments would be the fact that we are not specifically as a Board evaluating the actual scientific literature on this, but we are evaluating the

process that NIOSH used to reach their conclusion.

That is I, for example, would be willing to accept the fact that the top experts in this field have reached a somewhat inconclusive but not, it's sort of a negative way of going about it in saying, we can't show that CLL is not radiogenic.

And therefore in keeping with the policy that says that we will, for claimant favorability, will make certain policy decisions that we would accept CLL on that basis. That it's appropriate in that NIOSH's approach for erring on the side of the claimant when the scientific knowledge is lacking.

And at least it's soon clear to me that there's no consensus that would rule out CLL as being radiogenic. There's not a full consensus that it is, but not a consensus that you can rule it out either.

MEMBER ROESSLER: Paul, I have a

comment.

ACTING CHAIR ZIEMER: I was thinking of it in those terms, so let's get some feedback on that.

Yes, Gen Roessler?

MEMBER ROESSLER: Yes, this is Gen. Before I make my comment on what you just said, I noticed I'm on the website, the NIOSH website, and it looks like Dr. Field is also on this committee. Now he is an epidemiologist.

I'm wondering if that listing is wrong or is he not on this group?

MEMBER FIELD: Gen. Gen, I'm on the phone. This is Bill Field.

MEMBER ROESSLER: Oh, okay. I didn't hear your name. Okay, so we can --

MEMBER FIELD: Yes, I was here at the very beginning.

MEMBER ROESSLER: Yes, okay. Then I guess then Paul --

ACTING CHAIR ZIEMER: Yes, I said

we have some Board Members who are in that position, but if we want to speak for the full Board we may --

MEMBER ROESSLER: Yes, I just wondered if Bill was on and he is. Then I guess I'll continue.

Before we started the phone call, I wrote down some thoughts which I think agree pretty well with what you just said.

My conclusion after reading through this very complicated material is that personally I don't disagree with the approach to add CLL, even though I'm not convinced that CLL is radiogenic. I think it's as you say, inconclusive.

But again as you said, making a change like this is consistent with NIOSH's procedure to err on the side of the claimant when the state of scientific knowledge is lacking.

So I think I'm just sort of saying yes, Paul, I agree with what you just said.

ACTING CHAIR ZIEMER: Right. It seemed to me, and again I'm relying on the experts, and most of those I recognize the names and they're the individuals, if somebody raised the question I would have said, ask that person, ask that person.

There's obviously sort of a split amongst the experts, but it's not conclusive but we approach it in a sense from a policy point of view.

So at least as I would personally approach it would be to say, for example, if we agreed with the fact that it appears from the experts that we cannot rule out CLL as being radiogenic that we therefore under the stated policy, that we proceed with the concept that we include it as a claimant-favorable approach where the science is lacking.

MEMBER MUNN: Paul, this is Wanda. I would not disagree with anything that you've said so far. It's very clear I think

from the outset this is another one of those cases that we've been faced with for the last decade of attempting to prove a negative, which of course is not going to happen.

I also agree with your comment with respect to our ability to analyze the original material and the literature that's out there.

However, the people on this particular Work Group in my humble opinion are certainly categorically capable of analyzing the comments that were made by the experts with respect to those reviews.

And that being the case, we understand, for example, what the reviewer means when he says that "the CLL induction weighs heavily towards the conclusion that CLL is similar to other hematological malignancies whose etiology involves structural changes at the chromosomal level".

We understand that and are able to evaluate that in a fairly objective way I

think.

I think what I heard you say, which is my personal view after absorbing as much as I could of this, that there still is no clear cut answer to, is CLL radiogenic?

I personally suspect that it probably is not, but there is no way to prove that and there is some evidence that it might be.

Therefore, as you've already stated, NIOSH in my view has no option other than to follow the course that they have laid out in this ruling.

ACTING CHAIR ZIEMER: Okay, other comments?

I'm trying to get a feel for whether there's a consensus towards the first question, and that's the question of including CLL on the list of radiogenic cancers within the framework of the manner in which it's outlined by NIOSH in terms of both the uncertainty of the conclusion as well as the

policy part of it that says that in the absence of sufficient scientific information that would conclude that it was not that we take the position that it is.

And then if the answer to that is yes then we can proceed to the model issue.

MEMBER MUNN: Yes, that it is under certain circumstances.

ACTING CHAIR ZIEMER: Bill Field, do you have any sort of comment on this in terms of the epidemiology at this point?

MEMBER FIELD: Yes, and I guess my view of this starts, what was the evidence to I guess initially determine that it was not?

And I think the primary basis for that conclusion was based on the atomic bomb survivors, and we know that CLL is a very rare cancer for the Japanese population.

So I guess part of it goes back to the generalizability of those in that population and very intense but short-term exposures producing CLL that could be

identified epidemiologically was the initial I guess premise that it's not radiogenic.

But I think there's been some studies, and from my perspective, I'm the author of one of the studies that had to do with radon and CLL and I took part in a conference that was organized by NIOSH where experts came from all over the country to review just the subjects.

Yes, I must say I don't think there's anything that clearly points to CLL until it clearly demonstrates that it is radiogenic. But I think there is subjective evidence to suggest that it may be.

I guess I have that view of it, but I think at this point the evidence from my perspective is stronger that it is radiogenic than the evidence that it's not. That's sort of my basis for belief.

But I think what the Agency says is that the Agency finds the evidence of radiogenicity offered by epidemiology to be

non-determinative, but no longer believes it's possible to state that the Probability of Causation equals zero. I guess I agree completely with that statement.

ACTING CHAIR ZIEMER: And if it's not zero that means there's a slight, there's some risk, and then you go from there to what is the risk model.

Let me get other comments on this first question then. Others reflect or agree with what Ted and Gen have stated? Because if we have agreement I'm going to shoot you all an email in about a couple minutes which has some suggested wording.

But I don't a wordsmith right here right now, I want to get sort of a general consensus.

MEMBER FIELD: Paul, this is Bill again. I haven't seen the review from the one reviewer that did not think there was evidence. Is that available somewhere?

ACTING CHAIR ZIEMER: Let's see,

I can catch Jim Neton on the line here. I think the reference is given. I'm looking in the footnotes right now.

DR. NETON: Paul, I can give you that reference. It's John Boice's review and it's, if you look on the regulatory docket 209 it's the fifth one down from the subject matter expert reviews, labeled "Boice, Reconsideration of Chronic Lymphocytic Leukemia."

MEMBER FIELD: And Jim, where would you find that, the actual review?

DR. NETON: It's actually his report and it's on the regulatory docket associated with this NPRM. And the regulatory docket can either be gotten directly off of a NIOSH website or our DCAS website.

MEMBER FIELD: Okay, because I think if we're going to change policy it'd be I think worthwhile to at least, or at least suggest a change, at least be worthwhile to consider what his thinking is not to believe

it's not zero.

DR. NETON: Sure. It's available.

MEMBER MUNN: Jim, didn't one of our either Work Groups or Subcommittees have all of those reports available at one time? I've read them.

DR. NETON: Well, they're all listed like I say in the regulatory docket online. I made sure we got them all there.

I don't think we actually reviewed these reports separately in a Work Group though because this was undergoing rule making and we were pretty circumspect about what we talked about.

MEMBER MUNN: Well, I found them somewhere. I remember reading.

DR. NETON: Yes, it was a John Boice review that the only one of all of them out of the five, that one review John Boice said definitely not.

There was another review that said it's difficult to tell, and the other three

basically agreed that it should not continue to be excluded.

MEMBER LOCKEY: Bill Field?

MEMBER FIELD: Yes.

MEMBER LOCKEY: Hi, Jim Lockey. Wasn't there a meta-analysis done, I'd have to go back and look what I read, but that said that there was an elevated rate, like for 38 studies or something and that included in the meta-analysis and there was like six percent increased risk?

MEMBER FIELD: That doesn't ring a bell. Does that ring a bell to you, Jim?

DR. NETON: No, I don't recall a meta-analysis showing an increase risk for CLL. The only real positive association I think I've seen is the one with the Czech uranium miner study that came out a few years back that identified a significant excess relative risk.

There's been a number of studies that have since the rule was published early

on, identified excess relative risk but they were not statistically significant.

But I agree with Bill Field that the weight of the evidence seems to be shifting a little bit. You start compiling enough studies that show us excess relative risk even though it's not significant, you start to question the assignment of zero probability.

MEMBER FIELD: Right, Jim. And the paper you're talking about that's Rericha and Dale Sandler I think was on that paper and some others. And I think NCI was very critical?

DR. NETON: Yes.

MEMBER FIELD: I talked to Dale about that. NCI was very critical in identification of CLL in their registry, was it clearly CLL they were seeing.

One of the problems with doing these mortality, where these studies that most of these that are done look at mortality as an

end point and a lot of these don't show up on death certificates.

So what was different about that study that was performed that Jim just discussed, that was a paper that didn't look at mortality as an outcome. It looked at incidence through an incidence registry.

MEMBER LOCKEY: Yes, this is Jim Lockey. The study I was thinking about was non-ionizing radiation. I'm sorry, I got it confused. Okay.

ACTING CHAIR ZIEMER: Well, yes, any further -- so Dr. Boice's arguments also I guess went to mechanism as well the causation. I think he talked about chemical studies as well. Isn't that correct?

DR. NETON: That's correct.

MEMBER FIELD: This is Bill Field. And I think for mechanistic arguments it's very difficult because we're not really sure what the target organ is.

So I think it's very difficult to

really be able to predict what the mechanistic pathways are or what the causal pathways are from a biological viewpoint.

ACTING CHAIR ZIEMER: Okay, any further comments on the first question of inclusion of CLL in the list?

All right, if not let's talk for a moment about the second one which has to do with mechanism. There's several parts to this.

One is as NIOSH pointed out, CLL is now classified as a form of non-Hodgkin's lymphoma and that seems to be important in terms of thinking how to model it.

So NIOSH proposes a risk model that is in essence similar to the use of lymphoma and multiple myeloma risk models. They have a latency period which is based on some bit of scientific evidence, and it appeared to me at least from what I could read about this that they have selected a pretty conservative midpoint value for the latency

period, 10-year. Originally they had selected 15 and it's now 10. They have a fairly large uncertainty spread in the midpoint of five years.

And then they're using an approach where they determine the weighted dose to the B lymphocytes based on the dose to a given site and the probability that a B-cell precursor will occupy that particular site. So that's the way they have modeled it.

It seemed to me that one could argue that that is a model that in a sense uses the best available science from what we know about both this particular type of cancer as well as what the way you might go about doing the dose reconstruction.

And Jim outlined this pretty well of using the weighted doses, in his presentation at our meeting. So let me get comments on that.

Is the model appropriate and scientifically defensible?

MEMBER MUNN: This is Wanda.

ACTING CHAIR ZIEMER: Any comments?

MEMBER MUNN: Yes. I believe so, and one could always argue the level of uncertainty and I think you could bring arguments there either way on it.

But the choice of five years certainly seems reasonable and should be claimant friendly.

ACTING CHAIR ZIEMER: Other comments?

MEMBER FIELD: Jim, this is Bill. I agree. I think it's very rational and certainly and sort of an outline given what we know.

MEMBER LOCKEY: Yes Paul, Jim Lockey. I agree with that. I mean there's uncertainties, but by the nature of what we're doing the benefit goes to the claimant so I would agree with the model.

MEMBER ROESSLER: This is Gen. I

do too. I'm going mostly on what I remember from Jim Neton's presentation to us not only this past time but before.

I think when you read this Federal Register material it's a little bit hard to wade through it and really figure out what the risk model is. But I base mine on what Jim had discussed with us at several meetings.

ACTING CHAIR ZIEMER: Well, it was a weighted dose. It's done similar to how you calculate the risk from organ doses when you're doing the weighted ICRP models.

Jim, you talked about that.

DR. NETON: Yes, and it's exactly that. It's analogous. It's a weighted dose because for internal exposures it's a non-uniform exposure, and then you have to calculate the weighted dose to which B lymphocytes are exposed over time.

If it was an external parallel beam exposure there would be no weighting involved of course, but our biggest challenge

in this business is the internal dose.

DR. MAURO: This is John Mauro. If I could just come in with a thought. As I was listening it seems that there's a line that's being blurred in my mind that the first part of your conversation went toward whether or not it's a go, no go, yes, we need to assume that CLL can be caused by radiation exposure.

Next question I thought I would hear more about is okay, given that we'll go down that road it becomes like a risk per rem and what's the risk coefficient? And that sort of blends in a funny sort of way with well, what tissue are we talking about?

So there's a blending of the risk per rem and the modeling of the rem. In other words, you have two, it's almost like three steps.

Yes, there's effect, we think there might be a bad effect. Two, what is the risk coefficient, the lifetime risk of a

cancer program, of that particular cancer program. And what are the rem, what are the dose and to what tissue?

I'm having a little trouble in the last two, they seem to be overlapping in my mind.

DR. NETON: John, this is Jim. The risk per rem is independent of the dose.

DR. MAURO: Yes.

DR. NETON: It's the standard risk model that we would use for multiple myeloma and lymphoma.

So that's a stand-alone risk model by itself, excess relative risk per sievert with the various adjustments applied.

DR. MAURO: Oh, so your risk coefficient is presuming that the radiosensitivity so to speak is the same as it would be for multiple myeloma?

DR. NETON: With some adjustments.

DR. MAURO: Okay, I didn't follow that.

DR. NETON: Right. And that's the risk model itself.

Now you do bring up another point though which is the dose reconstruction which is particularly unique to this chronic lymphocytic leukemia and frankly other lymphomas, which is what's the target organ? And those are very hard to separate.

The risk model is there but we included in the risk model discussion how we're going to do the dosimetry because it was frankly a fairly difficult issue to deal with and we wanted to make sure that people understood how we were approaching it. But it is a separate issue.

There's three issues here really. There's the, is it radiogenic? If it is, or should be considered radiogenic, if it is what is the risk coefficient or risk model that will be applied? And if you do have a risk model how are you going to calculate the dose of the target organ?

DR. MAURO: Right.

DR. NETON: Unfortunately, the way that the Federal Register notice came out, it really only appears to question, ask questions regarding the first two of those. But embedded in that is this dosimetry calculation as well. I hope that clarifies it.

ACTING CHAIR ZIEMER: And if it's a whole body external dose that's one thing. If it's an internal with specific organs are radiated that's a separate different thing in the calculation. But either way you're doing the weighted organ situation depending on whether it's a uniform to everything or a specific organ or several organs.

DR. NETON: Well, we wouldn't necessarily weight on a uniform whole body exposure.

ACTING CHAIR ZIEMER: No.

DR. NETON: There are some adjustments that can be made. They're trivial compared to the what we do for internal

though, you're right.

ACTING CHAIR ZIEMER: I have a draft of some proposed comments and they would follow from what we have talked about here. I didn't want to send them out in advance because I didn't want to necessarily bias thoughts that you might have had.

But they now have gone into cyberspace and depending on --

MEMBER ROESSLER: They have come through.

ACTING CHAIR ZIEMER: They are through? Boy, they came through faster than I can walk from my computer back to the table here.

MEMBER ROESSLER: Yes, well, I just got them.

ACTING CHAIR ZIEMER: Faster than a speeding bullet.

MEMBER ROESSLER: Yes.

MEMBER MUNN: They've even traveled all the way to Washington State.

ACTING CHAIR ZIEMER: Really? Isn't that astounding?

MEMBER MUNN: Yes.

MEMBER POSTON: It's too hot in Texas for them, they're not here yet.

MEMBER MUNN: Things have always been a little slower there, John.

ACTING CHAIR ZIEMER: Yes, well, the Pony Express isn't quite as fast I guess.

Anyway, has that reached everybody? Or do you have your emails open?

MEMBER LOCKEY: Yes, I have mine.

MEMBER POSTON: Still lagging behind.

ACTING CHAIR ZIEMER: Now this was sent to everyone who was on the Ted Katz mail-out of the meeting announcement. So I think, Jim, did it -- I'm not sure. John Mauro and Jim, were you on that list?

DR. NETON: I got a copy, Paul.

ACTING CHAIR ZIEMER: Okay.

DR. MAURO: I'm not sitting at my

computer right now so I --

ACTING CHAIR ZIEMER: Oh, okay.

DR. MAURO: Please go ahead.

ACTING CHAIR ZIEMER: Okay.

MEMBER POSTON: Paul, this is Poston and I still don't have it.

MEMBER ROESSLER: Thank you, Paul, for sending it to the email addresses that are not CDC. I didn't warm up my CDC computer this morning.

ACTING CHAIR ZIEMER: Well, I sent it to where Ted does and he usually sends them to multiple addresses.

John Poston's on that list, right? Ted, are you there?

MR. KATZ: Yes, I'm here. And John's on that list.

MEMBER ROESSLER: He's on the list but it's using his CDC address.

MEMBER POSTON: Yes, so send it to j-poston@tamu.edu. That's where I am.

ACTING CHAIR ZIEMER: Okay, I'm

going to resend here, John, to you. Just one second here. Let me pull this back up.

Okay, now when I drafted this you see I addressed it the Docket Office. That would all change, okay?

Okay, so there's three sort of parts to this and let's just take a look. And you can polish this further but I want to sort of see if this is the sense of what we want to say.

Number one, Board offers, and of course this would go to the Board for approval. The Board offers the following comments on the question, "Does epidemiological and other scientific research support the finding that CLL is caused by radiation?"

First bullet, although most Members of the Board do not have expertise in epidemiological research, we are able as a Group to assess the approach used by NIOSH to answer this specific question. That approach

has been detailed in docket number NIOSH 209.

Through the use of recognized experts NIOSH has been able to demonstrate that the available epidemiological evidence is insufficient to rule out an association between ionizing radiation and CLL.

Second bullet, including CLL as radiogenic is appropriate in that it follows NIOSH's approach of erring on the side of the claimant when scientific knowledge is lacking.

So those are the comments on that first question. Are those appropriate and are there others that should be added?

MEMBER MUNN: This is Wanda. They appear appropriate to me. You need to spell out CLL the first time.

ACTING CHAIR ZIEMER: Yes.

MEMBER ROESSLER: And this is Gen. I would on the second bullet perhaps put something like "therefore, if it's appropriate to include CLL" and so on. The second bullet really follows from the first one.

ACTING CHAIR ZIEMER: Okay. Yes, we can do additional wordsmithing, but I want to make sure that the statements are conceptually correct and acceptable keeping in mind we need full Board approval. So I want to make sure that those who are not technical will feel comfortable.

I think this does not say that we have reviewed all the underlying scientific evidence. It basically says we believe that NIOSH took the right approach.

MEMBER LOCKEY: Paul?

ACTING CHAIR ZIEMER: Yes.

MEMBER LOCKEY: When I was looking at the language, "epidemiology evidence is insufficient to rule out", it's insufficient, rule out back to back.

I was just wondering if there's another way to reword that.

ACTING CHAIR ZIEMER: Well, I think the double negative is almost needed. It's not sufficient to rule it in.

MEMBER LOCKEY: I know that. I was just trying to, I can understand this double negative. I was just wondering what another way to say it that way and then I dropped it.

Let me look at it. If I come up with something I'll --

ACTING CHAIR ZIEMER: All right. Okay, I thought in a certain sense you were trying to prove the negative and you can't prove it so it's insufficient to disprove it.

Well, okay, shall I move on? Or are we sort of okay with this given that we'll allow between now and whenever, we'll allow additional time for people to, I know this is hitting you suddenly but it, sort of had a pre-discussion on it and I want to see if we've captured it correctly.

Shall I move on?

MEMBER MUNN: Let's move on.

ACTING CHAIR ZIEMER: Second item, this is really a statement that we agree

with the reason for doing it this way. The Board agrees with the NIOSH position set forth in the docket, and then I quote that, "given that the law requires the use of the upper 99 percent credibility level in making compensation decisions, the inclusion of CLL despite the limited evidence of radiogenicity it's considered appropriate by NIOSH."

Now that's NIOSH's own statement. And I'm proposing that we endorse that. Any concerns? I guess not.

Okay, third item. The Board offers the following comments on the question, "If CLL were to be covered by EEOICPA, does the risk model proposed by the National Institute of Occupational Safety and Health use the best available science and methodological approaches to express the dose-response relationship between radiation exposure and CLL?

First bullet, we agree that the use of the lymphoma and multiple myeloma risk

model as a starting point is appropriate given the fact that CLL is now classified as a form of non-Hodgkin's lymphoma.

Second point, the proposed risk model makes use of the available scientific literature concerning the latency period for CLL and selects a conservative, claimant-favorable value for the midpoint of the latency period.

Third, the proposed uncertainty band for the midpoint of the latency period is sufficiently large so as to fairly reflect the spread seen in available studies.

And finally, we concur with the approach of using the weighted radiation dose to the B lymphocytes based on the dose to a given site and the probability that a B-cell precursor for CLL will occupy that site.

MEMBER ROESSLER: This is Gen. I have a comment on the first bullet. Okay, the end part, "given the fact that CLL is now classified as a form of non-Hodgkin's

lymphoma", should we say who has now classified it?

ACTING CHAIR ZIEMER: It'd probably be good to do that.

MEMBER ROESSLER: I don't remember.

ACTING CHAIR ZIEMER: I'm thinking it was an international group. Jim, can you help us?

DR. NETON: Yes, I'm wondering if the World Health Organization?

MEMBER ROESSLER: Yes, WHO I think.

ACTING CHAIR ZIEMER: Classified by the World Health Organization.

MEMBER ROESSLER: I think that would add weight to that.

ACTING CHAIR ZIEMER: Good.

MEMBER MUNN: Was NCI in there?

DR. NETON: Yes, NCI also.

ACTING CHAIR ZIEMER: Then National Institute itself, or National Cancer

Institute, yes.

DR. NETON: I have to go back to the original document to get this specifically.

MS. LIN: Yes, you're correct. It's NCI and WHO. It's on Page 15271.

DR. NETON: Okay, thanks.

ACTING CHAIR ZIEMER: Okay, I'll add both of those to this. Good, thank you. Other comments?

MEMBER LOCKEY: Paul, Jim Lockey. Let me see what you think about this language in that "insufficient to rule out."

Available epidemiology evidence supports a possible and biologically plausible association, is that too strong? Epidemiology evidence supports a possible and biologically plausible association between ionizing radiation and CLL.

MEMBER ROESSLER: I don't think that's really what we're saying here. That's pretty strong.

MEMBER LOCKEY: How about this, "possible association" and take out the biological plausibility?

MEMBER ROESSLER: I think that's still too strong. I think the "insufficient to rule out" is really what we're going on.

MEMBER MUNN: And the classification by non-Hodgkin's lymphoma by WHO and NCI.

MEMBER LOCKEY: Okay.

ACTING CHAIR ZIEMER: We might be able to do both by saying there may be a possible, well let's see.

MEMBER LOCKEY: Well, there is some studies that says a possible association, elevated risk, right?

MEMBER ROESSLER: But then there are some that say there isn't.

MEMBER LOCKEY: And there's some that say there isn't, right.

DR. NETON: This is Jim. There are none that have a statistically significant

result except for --

(Simultaneous speaking.)

MEMBER LOCKEY: So you would say that was possible, right, Jim?

DR. NETON: Yes, I would say. Yes.

MEMBER FIELD: Yes, I think I'd pick the word "epidemiology" is used as suggested, suggestive association.

MEMBER LOCKEY: Suggested to me is stronger than possible.

MEMBER FIELD: Yes.

MEMBER MUNN: And it's still truly uncertain.

MEMBER LOCKEY: Or you could say "a possible but uncertain", how about that? "A possible but uncertain association", supports a possible but uncertain association?

MEMBER ROESSLER: Sounds better.

ACTING CHAIR ZIEMER: Possible but uncertain association.

MEMBER FIELD: I guess when I hear

that I think what's the uncertain part? Is it the confidence interval?

ACTING CHAIR ZIEMER: You mean just, how about just the possible? What if we said, "because some studies suggest the possible association, NIOSH has demonstrated that the available evidence is insufficient to rule out?" No, let's see. That's a little too wordy.

MEMBER ROESSLER: Perhaps we should just leave it and the Board Members might have other ideas. I think it says what we intend to it's just cumbersome.

MEMBER LOCKEY: It is cumbersome. And "insufficient to rule out," I'm not sure what that means. That's why I was, I know what possible means. That usually means 33 percent, something like that. But I don't know what insufficient to rule out means.

MEMBER MUNN: Well, it means you don't have enough information to say absolutely it's, can you prove that negative?

ACTING CHAIR ZIEMER: And that may have actually been one of NIOSH's own statements. I'm looking to see.

Does that ring any bells, Jim?

MS. LIN: The statement that you have "insufficient to rule out" actually comes from one of the reviewer, and NIOSH quoted that. It doesn't necessarily mean that that's the language that NIOSH will use to describe CLL sufficient.

Page 15270, the second paragraph is, one reviewer concluded that "the available evidence is insufficient to rule out an association between ionizing radiation and CLL," end of quote.

ACTING CHAIR ZIEMER: All right, yes. See, it's right there in the docket.

MEMBER LOCKEY: That was one of the reviewers though. We could say "supports a possible but not firm association"?

MS. LIN: I think if I'm to take a sentence from this NPRM and say that that's

NIOSH's position I would say that it just doesn't, it can no longer say that the PoC is zero.

DR. MAURO: This is John Mauro. I have a thought on this. The term "insufficient to rule out" on the surface sounds fine. But then you realize that statement is true about an innumerable number of biological endpoints.

MEMBER LOCKEY: Absolutely, that's the problem. That's my problem with that statement. You could say that about anything.

Most anything, not everything but almost. I'm sorry, I shouldn't have been so dogmatic.

ACTING CHAIR ZIEMER: Okay, well, I'll tell you what. Let's work, we don't want to spend all our time wordsmithing this now.

Let me work on it and if others of you have some wording just send it to me and I'll take what you get and prepare a final thing to supply to the Board for their meeting

and then we'll have another crack at it.

Would that be agreeable?

In other words, we want to get rid of the "insufficient to rule out" and put in some terms that indicate that there could be an association.

That's the point, right?

MEMBER MUNN: Well, some of us are not so hot about completely abandoning the "insufficient to rule out." That means something in my mind and I think it would mean something in the mind of a nontechnical reader or a reviewer who was not completely steeped in the full depth of the literature. It simply means you don't have enough to say for sure that it's not true.

ACTING CHAIR ZIEMER: Well, I think we're sort of all agreeing with the concept, and the question is do we have it worded in a way that we're all comfortable with.

And let me just suggest that you

all give it some additional thought and send me suggested wording for that sentence. And then let me take a look at it so that we don't have to spend a half hour here today on a particular sentence. I think right now it's of agreeing conceptually.

MEMBER LOCKEY: Yes, I agree.

ACTING CHAIR ZIEMER: Okay. Now with that exception of that particular phrase, are there other points that need to be added to this document or any major heartaches with it?

MEMBER MUNN: No.

ACTING CHAIR ZIEMER: As I see it right now, what we're doing with what I have here is supporting NIOSH's position, and it's not providing new evidence. For example, it doesn't talk about major limitations of the determinations.

I think we're already aware of those and I don't know whether we need to discuss them. But I think it is important,

for example, if we're on record as saying yes, we agree that CLL should be added and we agree with the model that's going to be used. Those two things are very important.

MEMBER MUNN: It's brief. It addresses all of the questions that are asked in the docket. Looks fine.

MEMBER FIELD: Yes, I agree. I think you did an excellent job putting this together.

MEMBER LOCKEY: I do too.

MEMBER ROESSLER: And I agree too.

ACTING CHAIR ZIEMER: So shall we sort of, I'm wanting to take it by consent that we're in general agreement with the draft with the minor editorial changes plus finding some alternate wording for that first bullet if needed.

Is that where we stand? Anyone have heartache with that?

MEMBER MUNN: No.

MEMBER LOCKEY: No.

MEMBER ROESSLER: None here.

ACTING CHAIR ZIEMER: Okay, I'm going to, unless I hear objection I'll take it by consent that this will be the basic document.

We'll change it to a letter to the Secretary and I guess get some suggested wording on that first bullet and then we'll have it, provide a draft.

Ted, when would we need to get the draft to the Board? Obviously as soon as possible, but what's the drop-dead date?

MR. KATZ: Well, I mean it will be good to get it to the Board at least a week in advance of the meeting, but it's not extensive so I think that would be gracious plenty.

ACTING CHAIR ZIEMER: Okay. So let's ask all of you who have wording suggestions on that bullet or anything else that pops into your mind, if you could get that to me in the next week and then I'll develop a final document and we'll go from

there. How will that be?

MEMBER FIELD: That sounds great.

ACTING CHAIR ZIEMER: Okay? Any other final comments?

MEMBER MUNN: No, good job. Thank you.

ACTING CHAIR ZIEMER: If not we'll then adjourn the meeting. Thank you all very much.

(Whereupon, the above-entitled matter went off the record at 2:00 p.m.)