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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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SESSION 2: TOWN HALL MEETING ON PROPOSED RULEMAKING, PACKING AND TRANSPORTATION OF RADIOACTIVE MATERIALS

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TUESDAY

JUNE 4, 2002

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CHICAGO, ILLINOIS

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The Town Hall Meeting on Proposed Rulemaking, Packaging and Transportation of Radioactive Materials Session met at The Hyatt Regency Hotel, Regency Ballroom B, 151 E. Wacker Drive, at 7:23 p.m., PETER BONNER presiding.

PRESENT:

PETER BONNER, Facilitator, ICF

FRED FERATE, Health Physicist, Dept. of Transportation

DAVID PSTRAK, Transp. Specialist, NRC Spent Fuel Office

PATRICIA HOLAHAN, Chief, NRC Rulemaking & Guidance Branch

CHARLES MILLER, Director, NRC Spent Fuel Project Office

NANCY OSGOOD, Senior Project Manager

PARTICIPANTS FROM THE PUBLIC PRESENT:

DIANE D'ARRIGO

I N D E X

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

(7:23 P.M.)

MR. BONNER: Okay. The second session is called to order. Okay. Let's keep this, you can keep this pretty informal, Diane. You've got some questions? Other questions and issues?

MS. D'ARRIGO: Yes. I'm Diane D'Arrigo, Nuclear Information and Resource Service. I had a few general basic background questions on this rule as I've tried to learn the transportation regulations of the country which I really wasn't all that interested in until you tried to sneak in BRC. And so, because I want to stop the exemption of radionuclide values from being adopted into this legislation or into this regulation, I am, and I'm also concerned about nuclear transport, but the, and, I guess I should, I wish that this wasn't getting recorded.

I'm concerned about the exemption values. There are a lot of other issues here, some of which I have concerns with. And our organization does also. But since this has been discussed before and now we're a little more informal, I wanted to get a more clear understanding on what the revision of the A1 and the A2 values is about. And then, which doesn't look like it's listed here, but to the extent that SCO and LSA

regulations exist and are being changed, I'd like to get an understanding of what those changes are.

MR. FERATE: So, is your question about LSA, SCO right now or --

MS. D'ARRIGO: Well, it's both. It's going to be all three of those questions. So, however, and it looks like they're inter-related. When you have A1 and A2 values, those are the things that are used then to make the distinctions between some of those others.

MR. FERATE: Okay. Let me try to, this is Fred, Fred Ferate. Let me try to say what I know about the A1, A2 values which is going to be pretty generic. As time goes by, in many areas of science, one accumulates additional data; and over the years, additional data has been accumulated on what are, I think, sometimes called the bio-kinetics of elimination of radioactive material that is ingested or inhaled, somehow incorporated into the body.

And the reason that this might affect the A1, A2 values is that the A1, A2 values are determined by looking at, I think, five different exposure scenarios, some of which are external exposure to gamma. Some is external exposure to beta. Some is internal exposure to alpha, beta or gamma by

ingestion. Some is internal exposure to alpha, beta or gamma by inhalation. And I believe the fifth category is exposure, actually it's external exposure by somebody immersed in a cloud of radioactive material.

So, scenarios 3 and 4 which were ingestion and inhalation involving incorporating radioactive material into the body and while it's in the body and radioactive decay goes on, then the person is receiving an internal dose. Bio-kinetic data indicate essentially how human beings eliminate radioactive material that is incorporated into the body, how fast, what organs it goes to, what the combination of radioactive decay in physiological elimination, how that affects the dose as a function of time.

So, more data accumulates all the time and more data has accumulated say since, I'm not sure about this now, and somebody can correct me if they know, I think that the 1970, get this right, the 1985 International IAEA Regulations, that the A1, A2 values there, I'm mixing things up, please excuse me. Let me back up. More and better elimination data is gathered over time as different people, different measurements come to light on people that perhaps were in an accident situation.

For every single person, it's different, so, you have to do some kind of an averaging. You have to try to ascribe this to maybe a standard person with a certain height and weight and so on, and deal with that as kind of representative of your population. So, that has changed over time, say from 1985 to 1996, those aren't the exact time periods because those are just the publication dates of the transport regs, but perhaps over a ten-year period, there is more accurate bio-kinetic data.

The other aspect is that the models have changed. It is felt that the models have been made more sophisticated and are, therefore, better in some sense that one uses to determine the dose that one would get from a given activity of material ingested or inhaled. And this is then where I was beginning to say somebody can correct me if I'm wrong, that I'm guessing that the 1985 International IAEA Regulations were based on an earlier set of models as represented in ICRP 26 and ICRP 30, I'm guessing.

The data for TS-R-1 for the 1996 IAEA Regulations are based on a newer set of models, a more sophisticated set of models represented in the ICRP Publication 60 and some others, I don't know the exact numbers but 60, 63, something like that. So, the

combination of more sophisticated modeling and hopefully more up-to-date bio-kinetic elimination data with the existence of that data and then going back and calculating A1 and A2 for each of the however many hundreds of radionuclides that are in the list, in many cases, in most cases, gave values, A1 and A2 values which are different from the ones that were in the 1985 regulations.

Now, how were those calculations done, I'm not sure exactly what was done first, what came afterwards. But they essentially were to determine the activity which under those scenarios would result in a given dose. And unfortunately, I don't know the numerical value of the doses or dose rates in some cases, I believe, but I do recall reading that the doses and dose rates which were used for the '96 A1, A2's are the same as the ones which were used for the 1985.

So, if the A1 and A2 values changed and most of them did, it does not mean that by changing these values, we're making transportation more safe or less safe than we were before. We're keeping the safety aspect at the same level by keeping the doses and dose rates at the same level. And the A1, A2 values are changing because we've changed, hopefully

gotten a more accurate model and we have certainly more up-to-date bio-kinetic data.

MS. D'ARRIGO: Okay.

MR. FERATE: So, that's my explanation of why they changed. David Pstrak pointed out to me a few minutes ago that in one of the books that's outside, you may have picked up a copy and if you haven't, you can, it's the Environmental Assessment that was done by ICF for NRC. And in the back, they have a comparison table that you can look at and see how the A1 value from Safety Series 6 compares to the one from TS-R-1, and then, how the A2 value from Safety Series 6 compares to the one from TS-R-1.

MR. PSTRAK: That's correct.

MR. FERATE: For each of the approximately 300 radionuclides that are in that list.

MR. PSTRAK: So, this chart is available and, again, although Fred said it's Safety Series 6, it's tagged in here as coming out of Part 71 which currently is based on the '85 version of Safety Series 6. So, that's an accurate statement, what he just said. But the chart is here to walk you through what the actual change was as far as the number and then the percentage of change as well for both A1's and A2 values. And it's Appendix C of that document.

MS. D'ARRIGO: So, the justification for the change is the shift from ICRP 26 and 30 to 60 and 66 essentially?

MR. FERATE: 26 and 30 to ICRP 60, which again, is considered an advance, something --

MS. D'ARRIGO: Right. What's the bio --

MR. FERATE: More accurate knowledge.

MS. D'ARRIGO: What's the bio-kinetic data that they're relying on and who, so that it's ICRP not IAEA on this one? It's ICRP then who's decided what's better data?

MR. FERATE: I do not know the source. You'd have to go back and look at the documents. Let me point out that generally, well, for example, over in the IAEA and the transport meetings, what's the technical background of people who go to those meetings? Well, it's essentially people that work with transportation, and they have varying technical backgrounds. Some are engineers. Some are physicists. Some are biologists and who knows, you know, a variety of backgrounds.

And the point I'm trying to make here is that the ICRP reports, International --

MS. D'ARRIGO: Commission on Radiological Protection.

MR. FERATE: Oh, very good, thanks. Generally, those reports are made by doctors or people that work in medical research. People that, so they're familiar with --

MS. D'ARRIGO: Well, the problem is the same as with IAEA is that --

MR. FERATE: Well, familiar with --

MS. D'ARRIGO: We don't have any input or control or knowledge and we're supposed to trust what they have come up with. That's essentially part of the problem that we're having with it.

MR. FERATE: Well, I guess I'm in danger. No, I better not --

MS. D'ARRIGO: No, you're not in danger because you're just conveying what's going on. I'm not saying you defend them.

MR. FERATE: No, no, no, no. I'm not saying that, but generally, what I think they do is to search the literature for published research on this, and they filter those data and sift through it and try to come to some conclusions about the models.

MS. HOLAHAN: Yes, I just wanted to say as with ICRP 60 or 66 or 68, they, it is as Fred says is, oh, sorry, medical research, medical physicians, but it's also biologists and it's a gamut of folks that

are from credible organizations that, you know, meet, that --

MR. BONNER: You're speaking of the quality of the research?

MS. HOLAHAN: Pardon me?

MR. BONNER: You're speaking basically to the quality of the research?

MS. HOLAHAN: Right, yes. Is that they meet and they deliberate over long periods of time.

MS. D'ARRIGO: But these are the same ones and that's, I mean, I'm just trying to, since we're sort of informal here, I realize I don't have a major agenda but the crux, part of the crux of the problem is that they're not necessarily credible. And to blindly refer to ICRP --

MS. HOLAHAN: Well, I mean, I guess it depends on what you mean by credible.

MS. D'ARRIGO: Right.

MS. HOLAHAN: As they have come from prestigious universities.

MS. D'ARRIGO: Well, but I guess then, as when the National Academy of Sciences does a study, they have to say who is on their panel.

MS. HOLAHAN: Right.

MS. D'ARRIGO: And they have to say what

their charge is and they have to provide the documents that the panel is being provided. They have to say who is providing information. We don't have any of this from ICRP.

MS. HOLAHAN: Well, you actually do.

MR. FERATE: We could get the documents.

MS. HOLAHAN: Yes.

MR. FERATE: It's, the people that work on these committees are listed there and they're referenced, the bibliography that they refer to in, for example, constructing the model or commenting on the model is listed there, too, to my knowledge. So, the thing is getting those documents.

MR. BONNER: I think one of the issues is we don't have the information here with us.

MR. HOLAHAN: Right.

MR. BONNER: That shows whether the ICRP has gone through a consensus peer review process and the research. And if we had those documents, we may be able to show that. That's a good point.

MS. HOLAHAN: Right. And one of the things is that they took take peer reviewed literature.

MS. D'ARRIGO: Okay. So, then, I mean, for whatever we agree or disagree on what's credible,

we can agree on that ICRP put together their idea, their new lung model and change their reports. And so then, the numbers that resulted from that resulted in changing the A1, A2 values also, changing from the 70 Bequerels to whatever allowable concentrations would be for exemption. That's probably indirectly based on that going from ICRP to IAEA to this regulation, is that also correct? For the exempt quantities and concentrations?

MR. BONNER: Did you get that question?

MR. FERATE: I would say that some of the, there were, I don't know, on the order of 20 different scenarios used to calculate the BSS exemption values. And a subset of the majority of those plus, I don't know how many more, five, six, something like that, specifically transport scenarios were put together then to analyze the 20 radionuclides that were specifically analyzed for transport purposes that I talked about this morning.

Some of those scenarios, both pure BSS and some of the transport scenarios that were added, involve inhalation and ingestion. And therefore, the total dose that the person gets depends on how fast he or she excretes that radioactive material. So, again, we need the models and we need the bio-kinetic data to

calculate the exemption values just as we needed it to calculate the A1, A2 values.

The details of the calculation are somewhat different, the scenarios are different, that you're using. But both of them involve inhalation and ingestion as well as external exposure.

MS. HOLAHAN: Right.

MR. FERATE: And insofar as inhalation and ingestion are involved, you need to use some kind of a model to represent the lung, some kind of a model to represent your internal organs, you know, your intestines and so on, the blood system. And you need the bio-kinetic input data to be able to fit that to your model.

MS. D'ARRIGO: So, earlier you said that if we didn't like the exemption numbers, that we needed to provide some numbers or documentation that might show that the risks are different or that we needed to provide some kind of data that would defend our position of not wanting to be exposed to those levels unregulated.

And so, knowing what I do about ICRP and IAEA, none of their models are taking into consideration the bystander effect which I understand is not only from alpha but also possibly now from beta

and gamma, which means it shows that we're not even directly hit, also we're showing health effects from the radiation. So, this would be a weakness in the modeling that is not being reflected in the assumptions that are being made to defend these numbers.

I am not going to be able to come up with what the numbers ought to be and what those effects are. In fact, it's going to take probably two more decades before the IAEA or the ICRP is able to pull that off. I don't even know that it's on their agenda right now. But I don't think that there is a dispute that there is a bystander effect. I've heard it talked about at the DOE Low Dose conferences, and so, here is something that's not being taken into effect.

We're also not having taken into effect here, it's my understanding that we're only looking at fatal cancers. We're not looking at incidents of cancer. Now, maybe in ICRP 60, they might have started to look at years of lost life, some kind of way, another way of looking at fatal cancers that makes it supposedly more realistic. But there are, I guess, there are greater risks than are reflected in what these reports are putting out and we shouldn't be erring on the side of those studies when we've got

more updated information and it's not factored in.

MR. FERATE: I think our position as regulators is that we are trying to take accepted science and apply that to develop rules in order to have a graded system of protection for human beings, for the public, and for workers when radioactive material is transported. We don't, I think we don't consider it our place because obviously, one could spend one's life on just one of these little, one of these items from a scientific viewpoint. For example, the bystander effect, I think it's --

MS. D'ARRIGO: That's not little.

MR. FERATE: I think it's kind of tentative right now but it's certainly far beyond my capability of understanding without spending years of studying it.

MS. D'ARRIGO: Then, you don't have a right to push a rule that's going to increase the amount of radioactivity when you don't know what that means, because what that's indicating is that radiation is more damaging than the models are predicting. And the models are not taking that and other things that are known, non-cancer health effects into consideration.

MR. FERATE: No, what I'm saying is that

we accept the science as it stands today. If the science changes, we'll accept that, too. But we have to --

MS. D'ARRIGO: Well, if you're accepting the science across the board, then, what good does it do for me to come in and try to discuss the science? You've already accepted what ICRP and IAEA are giving you. This is supposedly a process where the public is able to come in and say we don't like this because or we like this because. And I'm giving you a couple of reasons of why this is unacceptable. And I appreciate that you're telling me why it's not going to be taken into consideration because I know that it's not and that this is an exercise for all of us.

MR. FERATE: I would say to the extent that your ideas, and I think that some of your ideas are not logically defensible if we looked deeply enough at them. To the extent that that is true, we are likely not to place very much weight on that portion. But, so, we have to, we give a certain weight, I think, a good weight to what we think, what appears to be the scientific consensus at the time. I don't know what more to say.

MR. BONNER: I think Charlie wanted to bring in something.

MR. MILLER: Yes, I just wanted to say that, you know, I think --

MS. D'ARRIGO: Can you come closer? I can't even hear with the air.

MR. MILLER: Yes. Can you hear me now?

MS. D'ARRIGO: Yes.

MR. MILLER: Okay. You know, I think, Fred's made a valiant attempt to try to explain how the science is factored in. You've come back and said, well, we're not factoring, you know, all science into our thinking. What helps us is if you feel that there's areas of science that we're not factoring into our thinking, if you can specifically point to those scientific studies, that helps us because it gives us some place else to look. Or maybe we will find that we, we or the ICRP, whoever have evaluated those studies, and we might just have a disagreement on the conclusions drawn from those studies.

But it only helps us if we can get some specific, you know, in addition to the views of the public, when we get into the hard science discussions, we need to evaluate that based on its merits in scientific debate. I mean, that's how all science is done, where the specialists in each area debate the science based upon the studies that are done and draw

conclusions. And peer reviews sometimes support certain conclusions and sometimes they don't.

And in every scientific study, in every scientific endeavor, there are going to be studies that show one thing and studies that show another thing, and there are going to be scientists who are experts who disagree with the conclusions. But in promulgating regulations, what we have to try to do is look for where there's a consensus. And if we see where there's a consensus or a majority of the consensus scientifically, we try to, you know, we try to evaluate that and put into our evaluations for what the regulation should say and what should be in them.

MS. D'ARRIGO: So, do you look into what the conflicts of interests might be of the prestigious scientists that are putting this together? I'm not naming names at this point, but without --

MR. MILLER: Do you feel there are conflicts? I mean, can you cite some specific examples?

MS. D'ARRIGO: In some instances, there have been. I mean, it depends what specifically we're talking about.

MR. MILLER: Yes.

MS. D'ARRIGO: But if we look at various

committees that have been set up to review specific questions and who's on it, I mean, it's, not knowing who we're trusting right now from ICRP, IAEA, and those committees that put together the basic science which is the bedrock of the changes that are being proposed, it's just not, it's not transparent to me that you are relying on the best science.

I don't think that it can be, I don't think that there should be such blind acceptance of what the radiation bureaucracy is putting out.

MR. MILLER: Well, I guess, help me, if we could dialogue on this a little bit. You keep referring to the radiation bureaucracy.

MS. D'ARRIGO: I'm not prepared tonight to go through --

MR. MILLER: Okay.

MS. D'ARRIGO: I mean, I can tell you that ICRP did not, they're not the ones that led the way ever in any improvements in radiation protection for the public that I am aware of. I mean, when it was discovered that X-rays could harm the fetus, it took a long time, it was an existing practice to stop giving X-rays to pregnant women before the ICRP took that on, or took that position, to not unnecessarily X-ray women. I mean, I'm not, I didn't come here

tonight prepared to battle the ICRP and IAEA, but if that's the kind of documentation that you need in these comments to take our comments seriously, then we will provide that. But I don't want to --

MR. MILLER: And that's helpful.

MR. BONNER: But I think that's where we are.

MR. MILLER: And that's where we are and that's what's helpful to us.

MS. D'ARRIGO: And so, then, I want to know specifically what documents are being relied upon and what particular studies and some of these have been provided by DOT. But I mean, I'll have to, you know, I want to know what NRC is relying on here and what it's going to take to question why you think it's okay to increase exemption levels, for example. And then, you know, I think that also the A1, A2 values have been used as a justification for single-shell containers for plutonium.

So, that's another thing that we'll then hearken back to these committees. And if these committees have not, you know, are potentially not defensible, then that conclusion is not defensible. I know there's a lot of steps in between. I'm trying to get at the crux of where we're in disagreement.

MR. BONNER: So, I mean, just reflecting on the conversation, I believe what Diane is looking for is evidence from the ICRP studies and more documentation on that, or at least pointers to where she could get hold of it. Having said that and given that, Diane reserves the right to come back and say, hey, listen, I don't think you still looked at everything here.

MR. MILLER: That's correct.

MR. BONNER: Not only have you not still looked at everything here, but perhaps the credibility of some of the sources in the ICRP could be suspect. So, until, I think we're talking around not having the available data to really sit down and look at that, and then come to any kind of consensus or determination around it. So, until that data is available and --

MS. D'ARRIGO: It's available. I mean, it's just not --

MR. BONNER: No, but it's not here.

MS. D'ARRIGO: Right.

MR. MILLER: Yes, and I think from our perspective --

MR. BONNER: We're still going to continue to talk about it.

MR. MILLER: We're not going to resolve that since none of us have all the information each of us want to have here at the meeting tonight. And if that information is supplied --

MS. D'ARRIGO: Okay. And what I would like is I'd like to know what the physiological data is that they're relying on to make the changes in the models.

MR. MILLER: Okay.

MS. D'ARRIGO: And then, on A1 and A2. Then, the next thing I wanted to ask if it's possible is just for a simple summary. One of them is for special form and one of them is for normal materials. And then, it's used for making designations throughout the rest of the regulations, is that correct? Is there a, go ahead.

MR. FERATE: Yes. For example, the simplest is that if you have a quantity of a given radionuclide in normal form that is below the A2 value for that radionuclide, then, you're allowed to ship that in at most a type A package, you don't need to go to a type B package. And the same if it's in special form, then you would use the A1 value for the same determination. And similarly, if you had more than an A2 or an A1 value, then, that's an indication that you

would have to ship it in a type B package, in this country anyway.

It's also used to determine whether you can ship a radionuclide in what we call an accepted package. If you, for a solid form, solid material and normal form, if the quantity you have is less than 1/1000ths of an A2 value, then you can ship it in an excepted package. And the communication --

MS. D'ARRIGO: Is that acc or exc?

MR. FERATE: I'm sorry?

MS. D'ARRIGO: Accepted or excepted?

MR. FERATE: E-x-c-e --

MS. D'ARRIGO: Okay, excepted, okay.

MR. FERATE: However you spell that. Excepted, yes. And excepted packages have fewer communication requirements. You don't have to have, for most of them, you don't need a shipping paper. You don't need a label on the box.

MR. BONNER: The bottom line, Fred, is those connections are there.

MR. FERATE: Similarly, what you call a highway route control quantity where you necessarily have some routing requirements, I believe it's 3,000, if you have a quantity that's greater than 3,000 x A2 or greater than, is it 27,000 curies, then it would be

a highway route control quantity. I believe that there's, for example, in the definition of LSA1 and LSA2, there are multiples of the A2 value that determine what category it's in. And there are certain leakage requirements in type B packages that depend on the, I think it's on the A2 value. So, there are different trigger points in our regulations that hinge on the values.

MR. BONNER: The values are used for those trigger, to determine those trigger points.

MS. D'ARRIGO: So, is there currently in the SS6 exempt quantities?

MR. FERATE: No, there are not.

MS. D'ARRIGO: Are they somewhere else in the NRC regs or the DOT regs? Are there exempt quantities for transport purposes?

MR. FERATE: For transport specifically, in the present Title 49, I believe we have a tiny paragraph in the section on LSA that actually exempts from the transportation requirements materials that NRC intends CFR 71 exempt from something. And that's the small amounts of tritium or carbon 14 in liquid simulation vials.

MS. D'ARRIGO: Okay. So, is that correct then from NRC folks that there are no existing exempt

quantities for transport right now? This is a whole new category?

MR. PSTRAK: The exempt quantities that you see in the proposed rule?

MS. D'ARRIGO: Yes, in Table 2 or whatever it's called.

MR. PSTRAK: That is correct. Basically, the criteria is it's less than 70 Bequerels per gram.

MS. D'ARRIGO: That's a concentration though.

MR. PSTRAK: I'm sorry.

MS. D'ARRIGO: I wanted to know if there's exempt quantity precedent.

MR. PSTRAK: In DOT, excuse me, in NRC regs, no there is not.

MS. D'ARRIGO: Thanks.

MR. PSTRAK: And that reference that Fred was referring to was in 49 CFR of the LSA category is 173.427 paragraph D. Paragraph D.

MS. D'ARRIGO: Okay. So, what's the justification then? The logical justification for making a whole exempt quantities column if we don't even have that already? Why are we doing that now?

MR. FERATE: I would say, if I may take a stab at this, that from the overall point of view of

trying to direct your resources where they will do the most good, that it's kind of like the, not regulating radioactive materials that have an activity concentration that is lower than a certain amount. Yes, people will still get a dose from that radioactive material with the activity concentration lower than 70 Bequerels per gram, for example.

But it will be a very, very small dose, and do you want to be spending your money there when maybe it would be better spent designing a safer cask to ship your spent fuel in or designing a better type A package to ship radio-pharmaceuticals or something.

MS. D'ARRIGO: Is there a scientific justification other than an economic one?

MR. FERATE: I think the, it's like the amount of the additional safety that you generate by regulating down to zero Bequerels from, say one of these exemption, consignment exemption levels is negligible. It's extremely small and perhaps your money would be spent better looking at things that, you know, have higher levels of --

MS. D'ARRIGO: How much money is it then? I guess, Dave asked that earlier. So, making it specific to this, how much are we spending regulating these levels and below?

MR. FERATE: That's a good question and I don't have the answer.

MS. D'ARRIGO: Then, how do you know that any money is being spent at all? Won't we spend more money now trying to verify these levels?

MR. FERATE: The only example I can give right now is that we did receive one comment with our ANPRN when we asked for comments a year and a half, two and a half years ago now. A fellow that works at NIST, apparently they either produce or receive small amounts of different radionuclides for research. And he claimed that some of those that they deal with are quantities which are lower than the consignment exemption quantities that are listed in TS-R-1.

So, that would help him, save him the money that would be spent tracking it because right now it's considered, you know, radioactive for purposes of transportation. And for example, he has to fill out a sheet of paper to send with each package that says this conforms to the requirements in 49 CFR for an accepted quantity of such and such. And he wouldn't have to put that in the box. He wouldn't have to do radiation measurements on the outside of the box to show that it satisfies the dose requirement.

They're small things but essentially it would make his operation a little bit more efficient for those radionuclides that would fall under the consignment exemption values in TS-R-1. So, that's one example that I have, and it's the only one right now.

MS. D'ARRIGO: Does NRC have any?

MR. PSTRAK: None that I'm aware of to offer here this evening.

MS. D'ARRIGO: So, the largest, the reason then that NRC is doing it is because IAEA and IKO and IMO and DOT want it?

MR. PSTRAK: It's a matter of consistency between the two regulating bodies. It's a, again, as we work together, the DOT and the NRC to have safe regulations in place, it's one of the aspects that is part of how we're working together to maintain consistency between the two regulators.

MS. D'ARRIGO: And you're trying to tell me that it's going to be safer if these radioactive materials are unregulated because they're such little amounts? So, it's okay now to not regulate concentrations and quantities which just happen to be the same as ones that are going to justify deliberate recycling and reuse in commerce and that that's safer?

MR. BONNER: Trish?

MR. MILLER: I don't think we've made any statements that it's going to be safer.

MS. D'ARRIGO: You're saying that this is improving safety.

MR. MILLER: Okay.

MS. D'ARRIGO: That the harmonizing is improving safety.

MR. MILLER: Well, the harmonizing is improving the consistency across the board of the regulations.

MS. D'ARRIGO: I'm talking about one of the aspects here, and I want to know if this broad statement that you're making on harmonization, making things safer, when we realize, we look at the numbers and we know that the amount of radioactivity that can now legally be released and recycled and dispersed without regulation is higher. And I mean, if you look at the numbers, most of the concentrations go up. For the quantities, we don't have exempt quantities now. We're going to have exempt quantities for every isotope.

Now, if people get caught with radioactive materials, it can be sent back. Once this thing is adopted, it's legal as long as it's within these

concentrations and quantities. And it's too bad, that's an amount that your child can be exposed to because IAEA and ICRP said it's better. And I'm trying to talk to each of you individually to say do you really believe that that's true.

I'm going to ask NRC. I want NRC to answer me because I haven't heard from them on this issue specifically.

MR. MILLER: Well, I think --

MS. D'ARRIGO: I'd like the recorder to say that there's a long pause.

MR. MILLER: The way that I would answer your question would be we have to make decisions all the time at the NRC with regard to what we consider to be adequate protection of public health and safety. And maybe the decisions that we make with regard to adequate protection aren't consistent with your views of what adequate protection is. And you have a right to your views and the basis for those views.

And what we try to do is gather information from people who have different views with regard to that and the basis for their views, and try to factor that in to our continuing regulatory decisions for the future.

MS. D'ARRIGO: I think you can pretty

safely assume, I don't know where you live or who you hang around with, but that the general public, that the average person if had a choice and had a choice to be exposed or not exposed to ionizing radiation would choose not to. I mean, unless there's a benefit.

I'm not talking about X-rays for medicine and all that stuff. I'm talking about the specific situation that we're talking about here with the exemption of materials that is going to result or could result in more radioactivity, radioactive material in unregulated situations. And I'm saying that I believe or I wouldn't do this job, I'm not here because I personally have a fear of radiation. I am here because I know that there are some concrete, well, let's forget what my position is. Let's just talk about the facts of what the rule would do.

What the rule would do is to allow for quantities and concentrations of radioactive materials that heretofore must be labeled and regulated under transport regs to be unregulated, to be exempted from regulation. That's what Table 2 does.

MR. FERATE: For transport, exempted from regulation during transport.

MS. D'ARRIGO: Right. From transport regs.

MS. HOLAHAN: And also, the 70 Bequerels per gram is there and --

MS. D'ARRIGO: Wait, and I'm not fighting over the ones that go less. I'm only talking about the ones that you increased, the 70 to 100 up to something like a million or ten million.

MS. HOLAHAN: Okay. Well, but I think what you've got is you've got a basis for dose and you've got one of the things about the 70 Bequerels per gram is that it's not uniform dose.

MS. D'ARRIGO: I don't want to have a fair and honest, equal access to my body for every of the 382 isotopes. Oh, my gosh, I'm not being able to be hit with enough radiation to give me the legal amount of dose. That's ridiculous.

MR. MILLER: Thank you. I mean, that's, we'll take that as a statement and look on it.

MS. D'ARRIGO: But I wanted to hear and I still didn't get an answer on my earlier question of whether or not you think it's safer and more protective to increase the exempt amounts and quantity, the quantities and concentrations that are exempt.

MS. HOLAHAN: Well, I think you did give an answer.

MR. MILLER: Pardon me?

MS. HOLAHAN: I think you did give an answer.

MR. MILLER: Yes. I think I gave an answer. Maybe, let me try again. I'll not sit here and say that it's safer, okay. In fact, --

MS. D'ARRIGO: I don't think they can hear you.

MR. MILLER: I didn't say that it was safer, okay. What I said was, we, the NRC, make regulatory decisions on what we considered to be adequate protection of public health and safety based upon scientific information that we gather from various sources. And your view and the NRC's view at any given time on what that is may differ, okay. And in this case, by having exempt quantities, there is going to be a slight reduction in the safety, but if we promulgate this regulation the way it's been drafted for transportation purposes, we've drawn a conclusion that we feel that it continues to provide adequate protection for public health and safety.

MS. D'ARRIGO: And is there any way that the money that's saved is guaranteed to be spent for greater protection in other arenas? Since we don't even know how much money is going to be saved from

exempting regulation over these low-end items. I'm hearing the argument that that money is going to be spent for better protection from high-level items. What's the mechanism for that shift of resource funding?

MR. MILLER: Well, you know, I guess I would state it differently from our perspective as a result of money saved. Are you referring to money saved on NRC's purposes, on the licensee's purposes or what? In other words, part of our charter in establishing public health and safety and part of the Commission's strategic planning is that we establish what's considered appropriate public health and safety goals, promulgate regulations that meet those goals, and also, at the same time, we do not, we are obligated not to put any undue burden on the regulated industry with regard to our regulations.

In other words, if the risk is really not there, further burdening them with regulations is something that the Commission wants to make sure that doesn't happen. Where the risk is there, we want to devote resources to do what we can to get appropriate regulations to reduce the risk.

MS. D'ARRIGO: Where does it say the risk is not there at those very low doses?

MR. MILLER: We have scientific evidence that concludes where we want to set the risk levels. And what I was saying earlier was where members of the public like yourself have different information that you'd like to bring to the table, please supply us with that information and the scientific basis for which your conclusions were drawn and we can evaluate that on its merits against the scientific basis that we've drawn from the information sources we have. And if it has merit, you know, we will appropriately consider it.

We don't, you know, there have been many things that the NRC has done over the years where we have not necessarily adopted exactly what the ICRP has done, for example. You know, you --

MS. D'ARRIGO: Let this be one of them.

MR. MILLER: Pardon me?

MS. D'ARRIGO: Let this be one of them.

MR. MILLER: Okay. Thank you for coming.

MR. BONNER: Okay. Any further issues, Diane?

MS. D'ARRIGO: Let me just check here.

MR. FERATE: Could I make one comment? To correct what I think is a misconception, it's a minor one but I'd like to make it anyway.

With respect to the activity concentration exemption values, you have said several times, and I think Dave said it earlier this afternoon that the majority of the exemption values went up. I think that's not true. I think the majority of them actually went down.

MS. D'ARRIGO: Well, that has to do with the interpretation of 70 Bequerels per gram being equivalent to 100 Bequerels per gram.

MR. FERATE: No, that has nothing to do with that. It has to do with the comparison of the 50 millirem average for those 20 commonly transported radionuclides as compared to the 23 millirem per year average using the exemption values. The fact that the --

MS. D'ARRIGO: So, you're talking about dose now, not, you're talking about, you're saying that the dose is --

MR. FERATE: Well, let's say it this way. Transporting them at the 70 Bequerels per gram level, those 20 radionuclides gave an average of millirem per year to a worker who is transporting --

MS. D'ARRIGO: Was it just those 20 or was that the whole 380?

MR. FERATE: Well, let me just take this

as my example because for this, there are numbers. For these 20 radionuclides, there are numbers. 70 Bequerels per gram then is in a way, corresponds to, let's say 50 millirem per year on average so that the only way the average can go down to 23 is if some kind of average activity concentration is also going down. And what really happened is that the majority, more than 50 percent of the activity concentrations went down rather than up.

MS. D'ARRIGO: I have the DOE's comparisons where they compared the amount that went up, the amount that they say stayed the same which means they were actually gone from 70 to --

MR. FERATE: 70 to 100, yes.

MS. D'ARRIGO: To 100, and they say those were the same and the number that went up.

MR. FERATE: Okay. So, you're counting the ones that were 70 --

MS. D'ARRIGO: Went from 70 to 100 as going up. And the ones that are going up --

MR. FERATE: So, I guess it's a matter of interpretation.

MS. D'ARRIGO: But even if you didn't, okay, so then, if you didn't take those, you're saying that the numbers that go down versus go up, if you

don't count the ones that go up only 30 Bequerels per gram, you're saying that that number is higher for --

MR. FERATE: I guess the situation is a little bit more complicated than I was trying to paint it because the amount by which it went down also influences that average. But the net result is that the total dose that would be gotten by the transportation worker transporting each of those 20 radionuclides, the average annual dose goes down which means that the new activity concentration exemption values are in some sense safer than the 70 Bequerels per gram that is across the board right now.

MS. D'ARRIGO: Well, my beef for those, I didn't bring my chart of the ones that go up and down and I haven't had time to compare, but it looked from first glance that the 20 that were picked were quite a few of them of the minority whose concentrations go down. Now, I don't know whether they cherry picked the 20 or why they picked those 20. And the way that I read or misread the DOT description of this is that 50 millirem was the average dose calculation for all of the 382 isotopes.

MR. FERATE: No, it was just calculated for these 20.

MS. D'ARRIGO: Okay. So, and then, an

average --

MR. BONNER: How far do you want to push this clarification, Fred? How much farther do you want to go?

MR. FERATE: Yes, I probably shouldn't have brought it up because now I'm more confused, too.

MS. D'ARRIGO: Well, the other point though that's a fairly simple point on this is that the concentrations change and the way the dose is calculated from concentrations have changed. And so, whether one argues that the dose is higher or lower, that is based on somebody's modeling and somebody's calculation and somebody's assumptions and a lot of assumptions. And they're not all laid out and they're not all necessarily valid. But maybe, you know, it's the best shot of somebody, whether that somebody worked for the nuclear industry and has a lot of stuff to ship, I don't know. But anyway --

MR. FERATE: I think, you know they're our best shot and they are approximations.

MS. D'ARRIGO: And the point that I raised earlier is if we're talking now at 50 and 23 millirem as an average dose, we're supposed to be having it be an average of or less than one millirem because that's the insignificant amount. What are we doing up at 23

and 50? And this is only an average which means that could be much, much higher.

MR. FERATE: Well, you know, I'd like you to also keep in mind that all of us get every year on the order of 200 or 300 millirem just from living. So, we have to, we should be comparing what we get from human made radioisotopes also with the dose that we get from the environment that we live in.

MR. BONNER: I think we're circling back to the issue of what's considered protective and what's not. And again, we're in the realm of not having some of the data in front of us to talk about whether it's the 20 or it's the 300 or those issues. And I think we're starting to go over the ground again.

MR. FERATE: Well, I interrupted and Diane was looking for another question she had there, so.

MR. BONNER: Okay.

MS. D'ARRIGO: I was going to ask for, it was stated earlier, at the earlier session that introduction of the criticality safety index is going to increase public confidence. So, I wanted to get a little of increase in my public confidence because I have read that and I don't need to have --

MR. FERATE: Good point.

MS. D'ARRIGO: A major amount of detail on it but I need to have a general understanding.

MR. PSTRAK: The split of the existing transport index definition is really part of what is going on here. Let me grab one more thing. And let me just walk through the little summary that we have here and then I'll further address what you're asking here.

This is issue number 5, the criticality safety index. For fissile material packages, TS-R-1 defines a new term, the criticality safety index, that applies in addition to the traditional package transport index known as just the TI. In current domestic regulations and on the previous IAEA regulations, the overall package TI was determined based upon the more limiting of the TI based on criticality considerations and a TI based on radiation level. As proposed, the TI and the CSI would both be put on labels for Fissile packages.

Currently, both DOT and NRC regulations define and rely on the TI to determine appropriate safety requirements during transport. As an example, the accumulation of packages in a conveyance may be limited based upon either criticality safety or radiation safety. NRC proposes to incorporate the

criticality safety index under Part 71; that will be determined in the same manner as the current Part 71 transport index based upon criticality considerations.

So, they're taking the existing definition, or basically within Part 71 and splitting it, saying we have a TI that is strictly a radiation exposure at a distance from the package and they're also assigning the criticality safety index or the CSI that would be applicable to fissile packages. Within DOT space, there's a further communication requirement where there will now be a new label that is required to be on a fissile package that would indicate what that CSI value is for that fissile package.

So, from an emergency responder's point of view, under current regulation, they come upon a package and there is no direct communication within the label that indicates that it does contain fissile material, the change would be, again within DOT space would be that the new label would require the CSI value to be in place. And again, an emergency responder would have that additional information as he makes his response to a package.

MS. D'ARRIGO: So, transport index used to include whatever the concern was for criticality, and now you're pulling that out and having a separate

number specifically for that?

MR. PSTRAK: That is correct. The existing definition in both DOT and NRC has a two-paragraph definition. The first portion is strictly for the radiation level. The second one says, and they're separated by an or statement, so one or the other would apply, that the dose rate based on a fissile package is going to be a function of the package. It's 50 divided by N under current regulation, getting into the whole idea of fissile controls, et cetera, et cetera.

We are proposing to remove, separate those two definitions, retain the current TI definition and have the criticality safety index definition that would be --

MS. D'ARRIGO: In addition?

MR. PSTRAK: In addition to, but only one or the other would be applicable to a given package. For non-fissile packages, the TI would be applied; for a fissile package, the CSI would be applied.

MS. D'ARRIGO: So, if there were other, so, what is the transport index then reflecting now?

MR. PSTRAK: The current transport index is as you, if I had a 55 gallon drum here and I put radioactive contents inside of it, I'm required to

take a dose rate on the package. And at one meter away, the contact reading is one set of information that I use, the one meter rating is the transport index. And that is really used from a trucking company's point of view to limit the total number of packages that is allowed on a vehicle. And that total value cannot exceed 50, so a total TI of 50.

MS. D'ARRIGO: So, if something now has some level of criticality, that it warrants a criticality safety index designation, then you would have to give that information?

MR. PSTRAK: Right. The new, within DOT space, within their proposed rule, they have a new labeling requirement. A label is a 4-inch by 4-inch diamond-shaped communication.

MS. D'ARRIGO: Right.

MR. PSTRAK: That is used on the outside of a package. And applying the CSI category, that label would say fissile and would have CSI indicating the criticality safety index value placed on that. So, you're really gaining, and not only is it radioactive, it has the tri-foil symbol on it but also the fact that it is a fissile material shipment.

MS. D'ARRIGO: And then because it's fissile, you would also have some kind of protections

at different distances? You wouldn't have that?

MR. PSTRAK: There would still be separation distances that require, again from a carrier's point of view to haul the material down the road. There would still be carrier requirements in place for separation. It would lock in some of the new proper shipping names. Fred, jump in here at any time because this is all in DOT space, but that the new proper shipping names would indicate if it's a fissile shipment or non-fissile shipment.

So, it's another communication. Another means of providing, not only on the shipping document but on the package itself very quickly, what information could be used by an emergency responder.

MS. D'ARRIGO: Was it generally, I'm sorry.

MR. PSTRAK: What information would be used by an emergency responder as they address maybe an accident scenario or even an inspector as he's looking at material as it's going down the road.

MS. D'ARRIGO: So, is it generally when something is fissile, it wouldn't have as much gamma rays or something that would be given off so you wouldn't have to worry as much about the transport index? Am I missing something there?

MR. PSTRAK: From an overall health physics point of view, that's probably a very accurate statement.

MS. D'ARRIGO: Okay.

MR. PSTRAK: Again, cobalt 60 is not fissile, cobalt 60 puts out a lot of gammas so you would generally not be seeing a CSI on a package that has just cobalt 60 in it.

MS. D'ARRIGO: I guess what I'm trying to determine is when you go to CSI only and you no longer do whatever is in the transport index, what are you losing on that?

MR. PSTRAK: We're not necessarily going CSI only. We're adding CSI in and retaining the current radiation transport index which is strictly what is the dose at a meter away from the package.

MR. FERATE: Is it okay if I make a stab at that, Dave?

MR. PSTRAK: You may certainly do that.

MR. FERATE: The TI right now for a fissile material package, you have to make two determinations. One is what is the radiation level at one meter in, the maximum radiation level at one meter in millirem per hour. We'll call that radiation TI. And then you have to determine a criticality control

TI which is usually done on the basis of calculations primarily, but, and directed at finding out what's the maximum number of these packages you could put together and not have a criticality. And you derive what is called a criticality control TI from that.

And then, you compare the two numbers and you take the highest number and you say, okay, that's the TI for my fissile material package. And that's what you, up to now, have been writing on the label if it happens to be a yellow 2 or a yellow 3 label on the package. But the problem with that is that you lost half of the information now. You've kept the higher one but you didn't keep the lower one; and also, you're not sure without going to look at other aspects of the package whether you've got fissile material or not.

So, the point is let's keep both of the numbers and let's make it very clear when we have a fissile material in that package, we're going to put a fissile label on the package. So, now, you know when it's fissile and when it's not. And you know what the radiation TI is and you know what was previously called the criticality control TI is now designated the CSI, the criticality safety index, and you know what that is, too.

So, the idea is you have a much clearer idea of what you're dealing with. At least that's our hope.

MS. D'ARRIGO: Okay. My last one is on the change authority. Should we jump to that?

MR. PSTRAK: It's issue 15, Nancy.

MS. D'ARRIGO: Yes, it's either 13 or 15. It's the one that, where designs to do all-purpose containers can be made without prior approval.

MS. OSGOOD: Issue number 15 concerns Commission direction to conform Part 71 to a recent change to Part 72 regarding the authority for making minor design changes. Part 72 governs spent fuel storage facilities. The proposed provision would provide needed consistency in storage and transport change authorities. Change authority allows Part 72 licensees to make changes to their casks or operation without prior approval from the NRC. And the kinds of changes that they're authorized are specified in the regulations and are limited.

A factor here is that IAEA regulations call for changes to Type B transport package designs to be reviewed by the competent authority, not certificate holders. Designs changed by certificate holders without NRC review might not be accepted

internationally. Also, Part 71 and 72 package approval processes differ such that some Part 72 change requirements have no counterpart in Part 71. For example, Part 72 calls for all changes to be updated in the final safety analysis report, but there is no FSAR requirement for Part 71 packages.

To respond to these issues, NRC is proposing that two methods be provided for minor changes to Part 71 designs. First, continue the current Part 71 amendment process for minor design changes. These amendments require NRC staff review and amended certificates are accepted internationally. And this method maintains compatibility with IAEA.

However, second, NRC is proposing a new Subpart I to Part 71 that would permit certificate holders of dual purpose spent nuclear fuel casks intended for domestic use to make minor design changes. Also, Subpart I provides for 72.48 type changes, in other words the change authority, in a manner that is consistent with Part 71. The result of this regulation, this new Subpart I, is to authorize a new type of package that’s intended for spent fuel shipments only.

It’s for dual purpose casks only, casks that are authorized under 10 CFR Part 72 for storage

and under 10 CFR Part 71 for transport, and only those casks that would be transported domestically, not internationally.

MS. D'ARRIGO: What kind of changes?

MS. OSGOOD: The regulations are consistent with the change authority that's given to Part 50 licensees and Part 72 licensees. In other words, there are certain design changes that are authorized without prior NRC approval. And there is a review process that the licensee must go through to determine that the change is authorized by the regulation. And the types of reviews or the types of assessments that a licensee would be expected to do would be to show that this design change does not significantly affect the way the package would perform or how it meets the regulatory requirements.

So, there is a threshold that the licensee must use to show that that kind of design change is authorized under this design change authority.

MS. D'ARRIGO: So --, go ahead.

MS. OSGOOD: There has been a number of public meetings to discuss this kind of design change authority for Part 72. And the expectation would be that the Part 71 design change authority would be consistent with the Part 72 change authority. And

that is also consistent with the Commission's policy and regulations for changes to nuclear power plants authorized to be made by licensees.

MS. D'ARRIGO: I guess I'm asking, since I'm not totally proficient in Part 72 and 50 off the top of my head, would it be seals, would it be, I mean, is there an example of the kind of design change that has been approved for those other guys that could be used in transit now?

MS. OSGOOD: I can't give you a specific example.

MS. D'ARRIGO: Okay.

MS. OSGOOD: We've never had it in Part 71 before. It's a new provision. It would be a new way of doing business in Part 71 space.

MS. D'ARRIGO: Would there be notification of the NRC of the changes?

MS. OSGOOD: The Subpart I would be comprehensive in that it will require a whole infrastructure for these kinds of packages that are consistent with Part 72 requirements in that there would be a safety analysis report that would be required to be updated periodically. I believe every three years, but I'm not positive of that.

But basically, at the end, the design

changes would have to be documented, and those documentations and evaluations would be inspectable by NRC inspectors at a facility. But they wouldn't be required to notify NRC prior to making the change. They would be expected to do the evaluation, and then that evaluation could be inspected at their facility. But they are required every three years to provide what we call updated safety analysis report pages that would identify the changes in the design or the operations that they've made through using this design process.

MR. BONNER: Any other comments? Questions? Anything from the group?

MS. HOLAHAN: All right. Well, again, I thank you for your comments. And we look forward to receiving anything additional. Okay.

(Whereupon the meeting was adjourned at 8:40 p.m.)