FTS-NUCLEAR REGULATORY COMMISSION

Moderator: Chip Cameron
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8:00 am CT

Chip Cameron: Okay if we could have everybody take their seats we're going to get started.

Rob Lewis: So I've done a bit more of the content.

Chip Cameron: Well good morning everyone, not only in the room, but those of you who are on the phones or watching the webcast of this meeting.

I'm going to be back. My name's Chip Cameron and it's my pleasure to serve as facilitator for the meeting.

I'm going to be back in a few minutes to go over some meeting process issues. But we're going to start off with a welcome from Rob Lewis of the NRC staff.

And Rob is the director of the Division of Material Safety and State Agreements. Rob I'll just turn it over to you.

Rob Lewis: Thank you Chip. Good morning everyone. Welcome to the NRC's Headquarters building in Rockville. A special welcome to those of you traveling.

As Chip said I'm Rob Lewis. I'm the director of Material Safety and State Agreements here at the NRC.

And I'm also the US Representative to the Radiation Safety Standards Committee at the International Atomic Energy Agency.

That's the committee that has been giving advice to the IAEA as they've developed the document we're here to talk about.

NRC is very happy to host the forum today on - to host the Inter-agency Steering Committee on Radiation Standards Forum today to have a dialogue and exchange ideas on the IAEA's international basic safety standard for protection against ionizing radiation and the safety of radiation sources or BSS.

Hopefully that's the last time we have to say the whole title. We'll talk about the BSS for the rest of the day.

We appreciate everyone coming in on a Friday especially those who had to travel. We know that for those of you that did travel we might have impacted your weekend. We apologize for that.

I want to give a special thanks to Mr. Trevor Boal who has traveled, as far as I know who's traveled the farthest. He traveled all the way from Vienna, Austria. He works with the IAEA.

He's one of the principal authors of the BSS and where he places us in a very good position to have a very fruitful discussion today by just being here.

The BSS was last revised by IAEA in 1996 so it's been almost 15 years. The new updates reflect many advances in radiation protection over those years including the recommendations of the International Commission on Radiation Protection or ICRP's Publication 103 which was published in 2008.

The BSS covers many activities regulated by NRC within the United States but it also covers many other areas such as radon in homes, machine produced radiation such as x-rays, and other issues such as medical use of the radioactive materials and advice to physicians using such material.

The BSS is a foundational standard amongst all the IAEA safety standards and guides. Those are built from the BSS. So when it is revised it's very important.

Many countries will use the BSS as one of their basis for their domestic radiation standards. IAEA has issued the document in late January to all the member states of the IAEA for 120-day comment period. And that's what we're in right now.

Ultimately the United States is not obligated to adopt the BSS into our domestic regulations. We have within the NRC begun the process of looking at our radiation protection regulations which appear in 10C of our Part 20.

But we're several years away from any final rulemaking or even proposed rulemaking on that regulation.

But we do expect that the BSS that IAEA's producing this year will be one of the key references we look at as we change Part 20.

However any revision to our domestic regulations will go through our formal public comment and response requirements as dictated by the Administrative Procedures Act.

So we are very happy to host this forum again because we think it's a very important forum because we want to ensure that we give the most informed comments as the United States to the IAEA for them to consider as they move forward on this document.

We recognize that many in the US that we regulate and use radioactive materials or radiation producing devices do much - do more and more business internationally and is the key point in time for them to comment on this document as they will have to use the BSS if they - for their international activities if those countries were to adopt it into their regulations.

So please be very active and participate today. That's our appeal to you. We'll furiously be taking notes in the back of the room.

You're speaking up will help ensure that we give the best possible set of comments from the US to the IAEA to consider as they move forward on this key document. So thank you very much for attending again. Chip?

Chip Cameron: Okay thank you Rob. I just want to go over a few points of meeting process before we get started. I'd like to tell you about the format, give you an agenda overview and talk about some simple ground rules.

The format is pretty straightforward. We're going to have a - two presentations basically. And we're going to be going out to you for questions and comments on the presentations and the material in the BSS.

And our agenda, we're going to start with Dr. Donald Cool who is senior advisor for Radiation Safety and International Liaison at the Nuclear Regulatory Commission.

And Don is going to give you an overview of how the BSS standards are formulated, but more importantly perhaps because we're going to hear a lot about that, what the relationship is between what's done in member countries such as the United States.

And after Don's done we'll go out to you for clarifying questions process.

We're then going to go to Dr. Trevor Boal who is with us from the IAEA. And he's with the Radiation Protection Unit at the IAEA. And he's been working on the BSS for the last three or four years.

Trevor is going to give us an overview of the BSS and talk about the various chapters I guess is the right way to call it in the BSS.

And we'll take a break in the middle of Trevor's presentation for some questions. And then we'll have some questions at the end of that.

The real discussion and comment part starts after lunch in the afternoon where we're going to go through various exposure issues in the BSS.

And then we'll go out to those of you in the audience for comments or questions. And we also have people on the phone. And we'll be going out to them for questions and comments also.

In terms of ground rules, when I go ask, if anybody has anything in the audience, question or comment, just signal me and I'll bring you this cordless microphone.

And if you could just introduce yourself to us and then either ask your question or make your comment.

I would ask that only one person at a time speak most importantly so that we can give our full attention to whomever has the cordless mic at the moment, but also so that we can get a clean transcript.

(Eric) is our stenographer, court reporter in the back of the room. And he's going to be taking a transcript of everything that's said not only in the room but those of you on the phones.

And that will be your public record of the meeting and also the NRC's record of the meeting.

And I would just ask you since we do have a lot to cover to just try to be as crisp and economical as possible in your comments so that we can make sure that we can hear from everybody and cover all of the materials.

I'm going to go to the audience first when we go to question discussions. And then after that I'm going to go to the people on the phones.

We do have an operator who is going to be establishing the queue of people who want to talk on the phones. And we'll go out to the operator to help us with that part of it.

Woman: So then hopefully once...

Coordinator: Thank you. To ask a question on the phone please press Star 1on your touch-tone phone and un -mute your line to record your name clearly when prompted.

Chip Cameron: That wasn't planned but that was a great coincidence I guess. But anyway that was instructions for the people on the phone. Thank you operator.

And there may be issues that come up that don't fit squarely under the agenda items that we're on at the moment. And we'll put those over in the parking lot over there to make sure we come back to them.

The last discussion period at the end of the day is open discussion in the sense that if there are issues that haven't been covered during the previous agenda items we'll look forward to hearing from you on those particular issues.

And with that I think just a couple of housekeeping items. The restrooms if you don't know, they're right out at the back of the lobby.

For coffee during breaks or lunch you don't need an escort to go to the NRC cafeteria which is up on the main lobby level from here.

If you are going to go outside of the building however you will have to turn your badge in and sign back in before you come in.

We did receive some written comments already on these issues. And by - we I just want to emphasize again, I'm talking about ISCORS. These comments are for the benefit of ISCORS. And we will try to pass out anything that we have received already in the form of a written comment.

And with that I think I'll just go to Don for his overview. At the end of Don's presentation we'll go out and see if there's any clarifying question. Thank you.

Oh and one last thing. I'm going to be assisted by Elva Bowden Berry who's right here. Elva is one of the NRC employees that is in the NRC facilitation training program.

And so we're trying to groom a number of new facilitators. So Elva will be helping me. Don?

Don Cool: Thank you Chip and good morning to everyone. On behalf of the Inter-agency Steering Committee On Radiation Standards which I pronounced as ISCORS -- other people pronounce it other ways -- I'd like to welcome you to this forum and opportunity to talk about the draft of the International Basic Safety Standards.

I'm Don Cool. I serve as one of the co-chairs for the ISCORS Committee and with Mike Boyd of the Environmental Protection Agency, also Co-chair the Federal Guidance Subcommittee of that organization which is taking the lead in actually doing the coordination amongst the federal agencies in developing the US comments.

I really do appreciate each of you taking the time and effort to come down here today. If anybody was coming down the Northeast corridor I know that you've enjoyed the latest round of snow and wind and other things making it interesting to travel around.

Also welcome those who are on the phone lines. We will try to make sure that we remember to give you opportunities to provide your views and welcome all of those who may be watching on the Internet on our Web streaming.

The Web streaming is not a two-way flow of communication. So if you wanted to be making a comment then you would need to join the telephone bridger for us to be able to actually hear you.

So if we could go to the next slide. What I wanted to do this morning before we have Trevor provide a detailed review of the draft of the Basic Safety Standards was to give you a little bit of the context sort of in a couple of questions.

So what are the IAEA safety standards? How exactly are they developed? Exactly who is ISCORS, this magical lovely long acronym? And what is the purpose of today's meeting?

So I'm going to try and touch on some of those points fairly briefly, see if we can deal with some of those, make sure all of your questions are answered in that regard before we get into the actual technical details of the document.

So let's begin by looking at what the IAEA safety standards are. Go ahead and go to the next slide.

First the bit of context on this, international standards like anything else are developed within a larger context of information, scientific information, practical experience that goes into developing what becomes part of the safety standard series.

So those of you who are watching will be able to see this. Those of you who are on the phone and not able to see it are perhaps at a slight disadvantage.

There are several pieces of things which contribute to this. There are some technical basis materials developed by a group such as the United Nation's Scientific Committee on the Effects of Atomic Radiation known as UNSCEAR that look at the radiation risks, radiation doses that are seen in different places. They produce documents in review and a lot of the underlying technical basis.

Some of the same types of information here in the United States are developed and published by the National Academies Biological Effects of Ionizing Radiation Report Series which you may also be familiar with.

They provide input to some organizations that do recommendations. That's principally internationally the International Commission on Radiological Protection or ICRP.

One of the drivers to the current discussions is an update that the ICRP did of their basic recommendations for radiation protection which were published in late 2007 ICRP Publication 103.

All of those materials plus information that's developed through experience of various countries in regulating radiation, radiation protection, that's the experience globe appear.

Lots and lots of things that we learn, operating experience, what has happened in events, what's going on in various places all comes together to help inform the kinds of things that might actually become the safety standards.

And the IAEA, the International Atomic Energy Agency Standards are actually a set of documents in three levels.

The topmost level is a document which is referred to as the fundamentals, gives a fundamental safety objective to provide adequate protection. And then a series of principles, responsibility for safety, the role of government management, justification of exposures, optimizing exposures, limiting exposures, protecting future generations, preventing accidents, emergency preparedness.

I haven't tried to cover all of them but that gives you a flavor of the topics that are covered in the fundamentals, all very nice as large principles.

Those get translated into the what's really necessary to accomplish that in a well running program in a series of documents which are called the safety requirements. Those documents are formulated in a form of shell type statements similar to the way that you would see regulations in a country.

We will talk a little bit more about those as it relates to the international Basic Safety Standards. The Basic Safety Standards are one of the requirements document but not the only one.

There are requirements related to transportation. There are requirements related to nuclear safety. There are requirements related to waste safety.

So there are a series of requirements documents at that level sort of the international set of shelves, the things necessary in order to achieve the outcome of the fundamentals.

And below that are another series of documents which are the safety guides for those familiar with the US Nuclear Regulatory Commission System. This is somewhat similar to the regulatory guide.

They are should statements. There's some good practices, some best practices in various countries on how to try and accomplish what are required in the requirements level documents.

If we can go ahead to the next slide.

So who do these apply to? As Rob Lewis pointed out in his introduction, the IAEA safety standards are not binding on member states but they may be adopted by them.

Now with that general statement there are of course some certain specific things. The IAEA safety requirements are binding on things that the International Atomic Energy Agency does when they're providing technical assistance or otherwise.

Perhaps that's obvious but that's one of the things that it applies to. They are also binding on a member state. And a member state by the way is a country. So the United States is a member state, 153 member states of the International Atomic Energy Agency. I think it was something like that.

They're binding on a member state which is getting assistance from the IAEA, technical assistance and support from the IAEA in developing their regulatory infrastructure and programs.

Some countries like the United States provide assistance. We don't receive assistance. So again that doesn't obligate the US to in any way adopt these requirements.

So there are some situations in which they're binding. They are not particularly binding in the United States. But they do serve as a point of reference.

And obviously in the global economy and activities that are now ongoing these days, if you're doing business across national borders you are probably going to run into these requirements in other places.

And so that's part of the reason why we wanted to provide an opportunity for everyone to ask some questions about what's going on, see what's going on, provide some viewpoints that would help to inform what the US government would do in terms of actually providing comments back to IAEA in this process.

I'm going to say this a couple of times. What we're going to be doing here today is getting some thoughts and ideas and questions together on an international document.

This is not a US agency preceding. It's not a US agency document. This isn't an NRC document or an EPA document.

We don't have a formal docket. So this is not a administrative procedure act process with formal comment, comment docketing, comment resolution, responses to comments and all of those sorts of things.

Anything that might eventually move to being looked at in a US regulation or guidance document would have to go through that process. And those opportunities for public comment and public input would be provided then. So just to try and help differentiate where we are now in this process.

So let's look a little bit at how IAEA develops the standards. As with any good organization I suppose there's a nice structured process that has actually been developed over a number of years to try and be rigorous in looking at the information that's available in developing the process.

So they start as you might expect by developing a work plan. Anybody just can't have a bright idea and go start writing a document. They actually have to put together a formal what they call document preparation profile.

I know some who have looked at the IAEA Web sites who were trying to download this document we're saying what's that little thing that says DPP?

Well that's - that is Document Preparation Profile and that's a small little file that says what they were originally intending to do. That was not the draft that people are actually commenting on. It gets to be a little bit confusing.

It goes through a development process. Sometimes that's a very iterative process that goes around multiple times with a number of people involved.

It gets reviewed by one or more of the safety committees. Those are listed over on the right-hand side of the screen.

The acronyms nuclear safety, that's the NUSSC or NUSSC radiation safety, waste safety, or transportation safety -- four major topical committees.

In the case of a document like the Basic Safety Standards everyone had an opportunity to review because there are issues for all of those organizations and all of those topical areas within a document such as this.

After it's finally gone through that process and the committees are comfortable for a requirements document such as this it goes to a higher level committee actually called The Commission on Safety Standards or CSS which has to provide an additional review and finally endorsement. And then it actually has to be approved by the International Atomic Energy Agency's board of governors.

So there's a fairly long process with multiple steps in the process. The United States has individuals who serve as representatives on each of the safety committees and on the Commission of Safety Standards.

And of course the US as the member state gets to participate in the final approval process. We are a member of the IAEA's board of governors.

So if we can go to the next slide. So it's the classic question, so where are we or where's Waldo or where's the draft?

We are here. Because one of the steps in the process after the safety committees have become sufficiently comfortable with the draft is to send it out to all of the countries who are members of the IAEA to provide all of them an opportunity to provide comments and input and thoughts on the document before it completes the process.

So this is the IAEAs formal opportunity for all of the governments or all of the countries who are members of IAEA to provide comments.

So as I said the US as a member state of the IAEA has this opportunity to provide comments back to the agency as will all of the other countries.

The Basic Safety Standards is also a bit unique in that not only is it an International Atomic Energy Agency document, it also has a number of cosponsoring organizations. Trevor will talk a little bit more about that.

It includes the World Health Organization, the International Labor Organization, the Food & Agricultural Organization. I'm not going to try and give you a complete list.

But a number of major international organizations play an active role in the development process. And in fact the US government as members of those international organizations have the opportunity to look at it from each of those perspectives.

One of the things that the Inter-agency Steering Committee on Radiation Standards is going to be doing is coordinating the views of all the federal agencies including Health and Human Services, the Occupational Safety and Health Administration -- other units in the US government -- so that all of the views come together for a US government so you don't have different parts of the government just looking at discrete little pieces and getting separated from each other.

As Rob noted, the Basic Safety Standards were posted for the member state review at the end of February. And every country's comments are due back to the IAEA at the end of May.

So let's move on, try and look at the question. So who is ISCORS? ISCORS is as I said, an agency, set of agencies committees intended to foster early resolution, coordination on regulatory issues associated with radiation standards and guidance.

We do not have a mandate that in any way takes away from the mandates of each of the agencies.

Our job, our role is to coordinate the views and to put some things together. But each of the agencies still has all of its own legal authorities and other activities in putting things out.

But we serve as a coordination mechanism, a communication mechanism to help the agencies work together to achieve common goals.

The federal agencies that are formally a part of this include the Environmental Protection Agency, the Nuclear Regulatory Commission, the Department of Energy, the Department of Defense with several representatives from some of the branches of the armed services here today, Department of Health and Human Services represented by the Food and Drug Administration and by The Centers for Disease Control, the Occupational Safety and Health Administration, The Department of Labor, Homeland Security and the Department of Transportation.

We also have a number of folks that serve as observers including the Office of Management & Budget, Office of Science and Technology Policy which is actually a group that's directly associated with the Executive Office of the President of the United States, the Defense Nuclear Facility Safety Board.

And we have folks who are observers from the Radiation Control Programs of the states because each of the states in the United States have radiation control programs and very active programs and are responsible for significant segments of the overall plan of looking at and providing protection against various types of radiation exposure in the United States.

So all of them actively contribute and they're all looking at the process. So what is this meeting? Why are we here?

In certain situations because a document has far-reaching implications, we have in the past tried to provide opportunities to get additional input to these kinds of international documents. And there I give you a couple of the examples that have been in the past.

We've done this on a couple of occasions associated with some of the transportation standards.

Because of the necessity for there to be a - quite a high degree of alignment with standards for transportation because it just wouldn't work very well if you were to ship it out of the United States and it gets rejected at the border when it tries to go across into Canada or something else. So we've provided opportunities for people to provide comments and inputs in that area.

Likewise as the US government agencies, we're looking at the recommendations that the International Commission on Radiological Protection were developing over the last seven years.

We provided a couple of public opportunities to help inform the agency as comments were being provided to the ICRP.

So it seemed logical to us that in this case because the Basic Safety Standards also have far ranging implications for cross-boundary movement of materials and people in the global economy, lots of things move back and forth.

Sources move back and forth, people move back and forth, medical activities, all sorts of things happen to provide everyone an opportunity to help inform us of some of the issues that are out there in developing our points of view.

As I said what we're here today is to talk about an international document, not a US document. So as I said, this is not an agency comment process. We're not planning to try it and write up a docket.

On the other hand we are transcribing this. We are webcasting it and archiving all of this so we have the information available.

If as a result of this discussion you go back and you scratch your head a little and say I'd really like for them to think about whatever it is, particular issue, go ahead and send it to us.

You have the contact information for myself and Miss Monica or (Randy) who's been helping me in this effort.

Materials that we get we will put into our agency management system so they'll be publicly available. And we will make sure that they're circulated to all of the agencies so all of the folks in the Federal Inter-agency who are going to be looking at and developing the comments have the opportunity to see and be informed by your suggestions. So there is a mechanism in order to make sure that we capture and receive that sort of input.

We recognize that when you're looking at a document like this that there's going to be lots of viewpoints.

And it's not surprising that people will not always have exactly the same viewpoint. And we won't even have exactly the same viewpoint amongst the federal agencies.

So don't be surprised if not everything that's get said can possibly end up in a agreed upon inter-agency set of comments.

We eventually have to reach through a process and decide what positions would actually go back to the IAEA.

So we make no promises that this is in and that's in and everything else is in. But we will try to use the information to develop all of the materials.

In addition to that you're probably saying well so how does what is in the IAEA standards relate to what you're going to do in the US?

Very good question, a very logical question. This serves as another point of reference. There are certainly some reasons why having consistency with what's going on internationally and what other countries may be doing is an advantage for the people of the United States, for commerce, for trade, for consistency. And we want to look at it from that perspective.

The Basic Safety Standards is being updated to help reflect information that's been obtained over the last 15 years.

The IAEA has gotten a lot of information as a result of applying the previous set of standards that came out in 1996. And they're responding to the new recommendations of the ICRP that were published in 2007. The United States is also all looking at those recommendations.

We have started the process, the NRC has started the process. Other agencies have started the process of looking at our own regulations and guidance to see if there are issues in areas that might need to be adjusted in our own regulations. That's going to be a separate process from what we're trying to focus on today.

But this serves as another input. They're not disconnected. They're not inextricably linked either. Just try and to get the clear understanding of the relationship.

As US agencies such as the NRC continues to move forward with our discussion there's going to be our own stakeholder dialogue.

Four meetings are going to be taking place. Eventually there would be the formal notice and comment process that would work through anything that might be looked at to adjust the US regulations.

So this is certainly not the opportunity to tell the agencies and never again will we listen. No not at all. It's only the very beginning of an early step. And it's related to a document which is an interesting point of reference not even exactly the US documents.

The comments that are submitted by the Inter-Agency Steering Committee once we've been through this process we expect to be publicly available on the IAEA's Web site.

Obviously I can't give you a Web link today to tell you where to go to get their eventually. It's still several months down the road. We will have those available.

The IAEA will continue to work through that process I showed you a little bit earlier. The committees will review it and eventually it would get to the board of governors.

And so I would expect sort of one of the last questions say well Don and so when is that going to happen? Good question? A little too soon to tell.

I can tell you that the agency is in hopes to have a document which can be reviewed again that responds to all these comments during the safety committee meetings which will happen late this year.

But depending upon the number of comments and the issues it may be a document that begins moving on further in the process at that time or it may need some other discussions. And we'll just have to see how that process progresses.

With that I'm going to open it up Chip to see if there are questions from everyone on what we're doing here and the process so that we can spend the rest of the day focusing on the BSS. Thank you.

Chip Cameron: Thank you Don. Don before we go to the audience for questions and then the phones could you introduce Mike Boyd if you didn't already and also Marty Virgilio?

Don Cool: Why certainly. We actually have a number members of the ISCORS different agencies here. My co-chair for the Federal Guidance Subcommittee is Mr. Michael Boyd from EPA.

And wanted me to, I guess I'll introduce my boss, Mr. Martin Virgilio who is our Deputy Executive Director for Operations.

Chip Cameron: Great.

Don Cool: He's able to listen to some of these discussions today.

Chip Cameron: Thank you very much Don. And Don mentioned Monica or (Randy) right over here and Leah Spradley who's also working on that this.

And with that are there any clarifying questions for Don in terms of what I call all the moving parts on this? We're going to go to the audience first and then we'll go to the phones.

Anybody in the audience have a question?

Okay great. Operator are there anybody who has questions that are on the phones?

Coordinator: Yes sir. Lynn Howard Ehrle, go ahead with your question sir.

Lynn Howard Ehrle: Yes Dr. Cool, there's a process question. It relates to the organizational structure. It appears as though the comment process makes no provision for involving non-governmental organizations in a direct role in formulating this particular response to the document.

I would urge the Nuclear Regulatory Commission to move to involve NGOs. I am Senior Biomedical Policy Analyst for the Organic Consumers Association and I chair its 43 member International Science Oversight Board composed of scientists, physicians, and policy analysts from 11 countries.

We have 17 members on a Low-dose Radiation Policy Group who are expert, many of whom have been closed out with papers that have been presented to various journalists throughout the last few years.

And there is a concerted effort to prevent comments and presentation by persons who have criticisms of the IAEA and its agreement with the World Health Organization that was established in 1959 whereby the IAEA has taken over the investigatory role of accidents such as Chernobyl even though it has a statutory requirement to accelerate and enlarge the contribution of atomic energy to peace health and prosperity throughout the world unquote.

And it is that charge the places it in conflict of interest with the World Health Organization and other health-related agencies.

It cannot promulgate standards in this area and particularly also in the medical x-ray area as part of this document. So that it now is placed in the unique position of not only promoting nuclear energy throughout the world but of making efforts to correct some of the inequities as to investigate a nuclear accident.

Chip Cameron: Lynn? Lynn? Can you hear me Lynn? Lynn?

Lynn Howard Ehrle: In addition the NRC has an advising committee...

Chip Cameron: Can operator - can you make sure that Lynn hears me? Lynn can you hear me now?

Lynn Howard Ehrle: Yes I can.

Chip Cameron: Lynn let's get on to answer your fundamental process question. And I have put the conflict of interest issue up in the parking lot.

And I think you've gotten the point across there. But we'll ask you to elaborate on that when we get to the open session at the end of the day. So, okay.

Lynn Howard Ehrle: That'd be fine.

Chip Cameron: Thank you very much Lynn. And Don, the NGO question, how does that work?

Don Cool: Well first let me thank you for being able to listen in and provide the views. Part of the reason that we're doing what we're doing is because we want to provide you the opportunity that you're asking for. So this discussion is in fact I think exactly the kind of opportunity that you're asking.

There are a number of organizations that as international NGOs and otherwise have an opportunity for some discussion and input to some one of the international agencies that are cosponsors.

I can't give you specific details because there are lots of folks that interact with lots of the different units and their six cosponsors. But there are some opportunities.

In the end whether we sort of like it or agree with it or not the IAEA looking to the governments of the member states, so the final approval process happens with governmental representatives.

So we make some differentiation between more inclusive opportunities for everyone to be involved in providing comments including what we're doing here.

And then the final approval process that the IAEA might pursue which has to involve the actual governments of its member states.

In terms of the conflict of interest we will certainly take some note of that. I think that's a bit outside of what specifically we're looking at today.

But I - we'll work on making sure that the folks in the Department of State and others are aware of some of those concerns.

Thank you.

Chip Cameron: Okay. And I would just note that we do have a submission from (Len Early) who is the questioner on the phone that we have copies of here.

And Lynn I can assure you that as the NRC moves forward with its development of radiation protection standards here in our workshops that we're glad you're on the radar screen know and we'll contact you about those.

Operator any more questions from people on the phone?

Okay. Anybody I'll go - yes? And please introduce yourself.

(Cindy Faulkner): My name is (Cindy Faulkner). I'm with Beyond Nuclear (Rescission)'s Group in Tacoma Park, Maryland.

My question is and I apologize because I came to this process a little late knowing about this meeting and there's a huge document that I have not had time to read from the IAEA.

But I wanted to know sort of a timetable of when the NRC and/or ISCORS and all the other member organizations are looking at doing some sort of final thing and what the process would be?

And I assume some of the process has to be in the Federal Register. So if we could have sort of a timetable because I know the public comments for NRC and ISCORS most likely will be able to be promulgated through the Federal Register notices? And I assume you have to notice some of this? So...

Chip Cameron: Okay. Thank you (Cindy). Don is that clear?

Don Cool: For this document our timetable is dictated of course by the IAEA's comment invitation process where the US government as all the other countries are invited to provide comments. And they have to be provided by 31st of May.

US agencies will spend the next month and a little bit more working more or less individually trying to help develop their particular issues.

Then we'll work together in the ISCORS format to develop a consensus set of comments to go out.

Because this is not a federal agency document action of any one of the particular agencies, it was not an expectation that there would be an additional notice or comment process on comments that the US government would eventually try to assemble from all this information and provide back to International Atomic Energy Agency.

As the US moves forward or if the US moves forward with any looks at how we might look at our own regulations and guidance, those certainly would be part of notice and comment process probably at a number of steps in the process.

Chip Cameron: Okay thank you very much Don. We're going to take a short break if people want to get coffee or use the restroom.

And thank you (Len Early) and others on the phone and thank you operator. We'll be back. We're going to start sharp at 25 to 11:00 Eastern Standard Time. So we'll give you 15 minutes.

And you do not need an escort to go up to the lobby for coffee. Thank you.

If we could get everybody in. And operator, if we could make sure people on the phones can hear us at this point.

Before we go to Trevor Boal from the IAEA there was one question that Don got on the break about where they United States is relative to all of this in terms of our radiation protection standards. And let's just see what Don has to say about that. Don?

Don Cool: Yes thank you Chip. The question really was trying to make sure that they had an understanding of I guess the easiest way to say this, what generation of the recommendations and information are being used now in the US regulations and what's being looked at in this draft revision?

And so just to lay it out very clearly so that no one can - the US regulations right now 10C of Part 20 of the Nuclear Regulatory Commission are based -

included is an underlying base is the recommendations of the ICRP from 1977.

ICRP's recommendations came out. The NRC went through a rulemaking process. And our regulations were published in the early 90s.

In parallel with that, the ICRP was working on revising the recommendations which came out about the same time the NRC regulations were done.

And so some of the provisions in those recommendations are included and some of them are not.

Most of the rest of the world and the Basic Safety Standards that Trevor's going to be talking about that were published in 1996 are based on those somewhat more recent ICRP recommendations that were published in 1990.

ICRP has after another 15 years done another update of their recommendations consolidating information putting things together. So the IAEA is doing yet another update to theirs.

The NRC - and many of you are maybe aware of what's a parallel effort, the NRC staff is looking now at issues to try and increase alignment with the recommendations with one of the possibilities being that certain pieces of our regulations would actually leapfrog from 1977 recommendation basis all the way to the 2007 basis for the recommendation.

So there are some differences. There are some distinct differences between regulations in the United States and regulations in other countries of the world and the recommendations by ICRP.

So I just wanted to try and clarify a little bit for some people what the basis of some of the different things are because it has changed every 15 years or so.

And we in the NRC actually made a rather deliberate decision in 2000 or so to wait for the next set of the ICRP recommendations rather than going through the involvement processing and getting all of our stakeholders and working through all of the issues only to be done about the time new recommendations came out.

We've tried to actually do a lessons learned last time and wait for these to be completed so that we could include all of the considerations as we looked at it here in the United States.

Chip Cameron: Great. Thanks Don. That's very helpful. And thank you to whomever asked that question. So very good. And Trevor let's go to you now. And you can be comfortable here or be comfortable at the podium -- whichever you would like.

Trevor Boll from the IAEA. And we will take a break for questions at a point during Trevor's presentation.

Trevor Boal: I might sit for my presentation.

Chip Cameron: Wonderful.

Trevor Boal: Thank you. Thank you for the invitation to attend this meeting. It's my pleasure to be here. I'm going to cover - we can go to the next slide. The aim of the presentation is to provide a brief overview of draft (unintelligible).

I think in some parts the overview may be rather brief. To highlight areas where text of the current BSS has been revised or new text has been added.

I'm assuming you have some - or maybe others with the current BSS. And to highlight areas where there's been considerable discussion on the text has been developed.

There's been some areas I'm focusing on because we've had a lot of - or many hours of discussion on these key issues or these issues which I'll highlight.

The IAEA statute gives the agency the mandate to develop standards and Article 3 Page 6 of this statute says to establish or adopt in consultation with competent orders of the United Nations and the specialized agencies concerned standards and safety for protection of health.

And so through - in consultation with competent (organs) of the United Nation. And that reason we work with our cosponsors, the other UN organizations, World Health Organizations, the Food and Agriculture Organization, ILO are fully involved in the development of the BSS.

Next slide.

And to facilitate the involvement of the other UN organizations and other specialized agencies we have established a BSS secretariat in a resolution of our general conference from 2005 to set up the BSS secretariat to carry out a review of the current BSS.

And the secretariat there consists of the IAEA plus seven other international organizations. There's the five other cosponsors, the current BSS Food and Agriculture, International Labor Organization, Pan American Health, World

Health Organization, and Nuclear Energy Agency the (OECD). And for this revised BSS UNEP, the United Nations Environment Program and the European Commission are potential cosponsors that are also members of the secretariat.

And again there's another resolution of the general conference in 2006 for the secretary to cover the revision process. And we started the revision process in 2007.

And the objectives of that secretariat is set out in this slide to support some type (revision), try and ensure that the interests, views, and the responsibilities of each cosponsoring organizations are fully taken into account to provide our forum for the cosponsors to inform each other of developments that are - may need to be taken into account and to coordinate the approval process.

Don mentioned in his presentation the IAEA process for developing standards. And the final step is the approval by the IAEA board of governors.

But the BSS secretariat is another part of the process which overlays the IAEA process. So at each step through our process we have - getting the agreement with our cosponsors for various drafts.

And each of these co-sponsor organizations will have their own approval process. So the IAEA board of governors will approve revised BSS but my understanding is it will also go to the WHO, World Health Assembly, the ILO equivalent to the board of governors. These other organizations have their own approval processes as well.

In developing various trials we started the developing process in 2007 and the cosponsors have been fully involved.

So the charts are on occupational protection. We had our first drafting meeting on that part hosted by ILO. The International laboratory Organization is unique among the UN organizations in that there's a secretariat plus there's also employer representatives and representatives of the workers.

And they're fully involved in - all three parties of that organization involved in the review and revision process.

And for the protection of patients section WHR and PAHO, Pan-American Health Organization have been fully involved in the drafting meetings and have hosted some of the drafting meetings in relation to the chapter on medical exposures.

Co-sponsorship it leads to organization providing consistent advice and assistance within the states of various government agencies.

So for example, one member state World Health Organization may deal with Industry of Health, ILO deals with Industry of Labor, environment program, they deal with the Environment Protection Agencies.

And so by having the UN, - we all cosponsor the one document, we should be giving consistent advice to our different constituencies within each member state.

It also leads to expectation that cosponsoring organizations apply to cosponsors safety standards and they work assisting member states.

And they also states were exchanging information between the cosponsoring organizations.

And my final point on this slide is that each cosponsoring organization has been processed for seeking input.

And so some of the cosponsoring organizations are sending this draft out to their own member state as well for input or seeking comments.

The - sorry. The agency has about 153 member states as Don mentioned. World Health Organization has more than 190 member states and so there are additional member states who received it through the WHO.

Pan-American Health Organization may have some member states in the Caribbean Islands and in the Central America which may not be member states of the IAEA. So it extends the coverage of these standards to states which are not part of the agency.

And through the PAHO process some of these member states will have a - will be providing feedback on these standards or these drafts.

Don also mentioned the DPP. The DPP is approved by our standards committees. And as we've been developing the drops of the BSS we've have been getting feedback from these standards committees.

And the guidance from (Russ) and the other committees and from our secretariat in advising the BSS is to tying the BSS as the international benchmark for radiation safety standards across all fields, so across medical, across the protection of workers, protection of public.

We recognize the need for stability in that we are to justify any changes to the standard, maintain close (unintelligible) of ICRP.

So ICRP as Don said, the 1999 - the 1990 recommendations were taken up in the year 1996 standards. And now with the 2007 recommendations of ICRP we are adopting into our revised BSS.

To keep the cosponsors fully involved and involved through the BSS secretariat and we are having three to four meetings with the secretariat each year.

And as each draft has been since - been developed and sent to the - our committees for comment they've gone through the secretariat for their agreement to send the text to their committees, to seek and take now feedback from member states on the current BSS and to assist developing countries to participate.

During our review process we held a technical meeting where we invited developing countries who are not normally members of our committees to attend and make presentations on their experience in using the BSS.

And during our last year we held a meeting with developing countries in West Asia. We're holding a developing - sorry a meeting in April for countries within Central and South America to discuss this draft with the BSS.

Okay. The other guidance needed to maintain the paradigm. This is what Don mentioned. UNSCEAR publishes documents on the effects of atomic radiation. (ISIOP) makes recommendations for protection and these are taken up into the agencies standards.

We're also asked to maintain the comprehensive character of the BSS, have a way we'll treat framework, occupational and public exposure from all

practices whether that's from nuclear, power plants, mining, medical uses of radiation, industrial uses of radiation, transport to cover safety of sources to cover basis of safety of radioactive waste, medical exposures of patients, existing exposures including radon from dwellings or nuclides in building materials, remediation of contaminated sites to cover the basis for emergency preparedness. Remediation I've covered already and then a basis for safe transport of radioactive materials.

This slide contains a overview of the contents of draft 3.0. Like all standards we have a standard introduction. Chapter 2 is the general requirements for protection and safety.

And this chapter contains requirements which are applicable to all three exposure situations. Chapter 3 is a plant exposure. Chapter four, emergency exposure, Chapter 5 chemical exposure.

So Chapter 2 contains requirements which would be applicable to Chapter 3, 4 - or three exposure situations covered in Chapter 3, 4, and 5.

And there are four schedules covering exemption of clearance, categorization of sources, (unintelligible) in (unintelligible) exposed situations and criteria for use in emergency preparedness.

Our first part covers some general issues. This- the draft 3.0 of BSS has a new structure compared to the current BSS. There's a new format for the requirements document. For the first time we've included some requirements related to protection of the environment.

(Unintelligible) to make some general comments about - between safety and security.

The new structure slide, this structure of the revised BSS follows some new recommendations of ICRP 2007.

And in these new recommendations there are three exposure situations. So we've based three chapters. And within each situation there are three categories of exposure -- occupational exposure, public exposure, and medical exposure. And so the structure follows from these new measures by ICRP.

And the decision to follow this route was taken after a technical meeting on the revision of the BSS held in 2007 with over 130 participants from member states from the cosponsoring organizations and from other international organizations such as International Society of Radiologists, International Organization of Medical Physicists, the World Nuclear Federation for the nuclear medicine experts, Society for Radiation Technologists.

We - their - the technical meeting involves experts in all these areas. And I recommended that we should follow that new structure.

I'd also like to brief comment about the new format. The current - this draft 3.0 contains 52 I call overarching requirements.

These are rather - they contain a shelf statement with a discrete number written in plain language, clear short sentences.

And this is a decision from (FBSS) Commission on Safety Standards in 2008 to follow this new format for our safety requirements documents.

Underneath these overarching requirements are then conditions associated with that overarching requirements. They're an integral part of our safety requirements documents.

When we draft 3.0, they're originally on the (shelf) statements. In some of the other safety requirement documents they are written (a test to) statements or they may contain explanatory text.

In this BSS here these conditions associated with the overarching requirement are written as (shelf) statements.

And one of the aims of this new format was to improve user-friendliness of the safety requirements documents.

As I mentioned draft 3.0 contains 52 overarching requirements that maybe (leads) the users too many or too few. That's may be some area where you may wish to provide in your comments.

For the first time there are requirements relating to protection of the environment. And I'll urge you to read one paragraph 126 which sort of sets up some basis for current (revision) to protection environment.

And the requirements are contained in - are bits at the bottom there, number of paragraphs essentially that say appropriate that (unintelligible) may have a potential impact on the environment is rather a basic requirement at this stage.

The framework for protection environment is still being developed. Since this BSS will be in use for the next ten, 15 years it feels important to include something in this revision with BSS although how far we can go is - some

people don't going further than requires with an estimate of the potential impacts. It's still an evolving area.

Interface between safety and security. There are a number of paragraphs in the current draft relating to - in safety and security.

In Chapter 1 the reference to the documents being prepared in the nuclear security series. And it's a parallel series to the nuclear safety series.

And a number of paragraphs setting out the requirements in relation to security are being (unintelligible) between safety and security of sources.

I mentioned another paragraph in the text here, Paragraph 228 in relation to requirement on government. Paragraph 331 on licensees and their preparing their safety assessment.

Paragraph 350 (I mentioned) and that requirement on licensee.

And one of the issues been raised during the revision process was that we needed to expand the interface between safety and security in the draft BSS. Whether this was sufficient it's unclear but I guess it's one area where we would expect feedback on during the comment period.

Chapter - Section 1 is the introduction to the BSS. It's a standard chapter in all our safety requirement or safety standards series documents, includes a background setting up the objective, scope and the structure of the documents.

The background chapter has links to our safety fundamentals (ICRP 103), system protection and safety and some explanatory material.

Whether there's too much data or not enough data it would be an area where we receive comment. There's been considerable discussion developing that you will have - which we'd go in describing (ICR) for your system.

And Chapter 2, for the general requirements for protection and the safety and as I mentioned earlier, these requirements are applicable to all three exposure situations -- plant exposure, emergency, and existing.

First part of the chapter covers radiation protection principles. And these radiation protection principles justification, optimization.

And those limitation apply to all three exposure situations. It might be slightly different the way they are worded but they are still applicable. But I don't think any apply to planned exposure situations.

The next block of paragraphs within Section 2 cover the responsibilities of government and responsibilities of the regulatory body.

In the current BSS there are no requirements in these two areas. But in the preamble to the current draft data stated that these standards are based on the presumption that a national infrastructure is in place enabling the government to discharge its responsibilities for radiation protection and safety which included establishing legislation, establishing a regulatory body, the functions of the regulatory body and other national infrastructure which may be required to support users in using - when they use sources.

There are about 26 paragraphs in these two parts. Some mention that we have about ten to 15 safety requirements documents. And one of the other safety requirement document is GSR1, legal and governmental infrastructure.

But some of these paragraphs are common to both documents. Certainly they - those which are not common text they're consistent. But they've been included in the BSS to retain a comprehensive character of the BSS.

The next part of the Chapter 2 are the responsibilities of other parties. So there's a list of responsible parties including for example license fees.

Employers in the case of occupational exposure. And that's in the (current) assessment. This has been expanded to include, principal parties include radiological medical practitioners in the case of medical exposure.

And for emergency and existing exposures, the principal parties are the designated, the persons or organizations who are required to deal with those situations.

The list of principal parties has been expanded from the current two, the licensees and the employers to these other two groups.

There's another paragraph in there about the importance of education and training in qualified people in implementing the requirements and standards.

The next block of paragraphs in Chapter 2 are management requirements. In the current BSS there's two or three paragraphs on quality insurance. That's been - now been updated to paragraphs on management systems.

And there's a paragraph on safety culture which also has been extended up basis to take account of another publication in 2006 of management, GSR3 management systems for facilities and activities which is currently subject in much more detail. It is a basis for these two areas included in the BSS.

Chip it's about (half time). Would you like to have a short break?

Chip Cameron: Well Trevor why don't we see if anybody has any questions on the materials so far before you go into three, four and five. Is that okay?

Trevor Boal: That's fine.

Chip Cameron: All right. We're going to go to the audience first. Trevor has given you an overview here. Are there any questions on what he's talked about so far before we go into some of the details?

Okay (Cindy)?

(Cindy Faulkner): This is (Cindy) with Beyond Nuclear. I have a question. In the United States we recently had a tritium leaks from Vermont Yankee Power Reactor.

And I was wondering in this particular plan, I'm assuming it would be an emergency release but I'm not exactly sure where it would fit in.

And obviously how - I mean if the NRC would adopt the plan how would they account for that particular pathway? And it's not clear to me that there is an answer formulated.

Chip Cameron: And Trevor I don't know if you're - been following what's been going on with Vermont Yankee in the United States in terms of the leakage of tritium.

And this has been an issue at other plants. Question is, is where are those types of releases covered in the BSS?

Trevor Boal: Chapter 3 covers plant exposure situations which are (prefaces). So in Chapter 3 there's a section on general requirements, section on occupational, section on medical and section on public exposure.

And within their public exposure would cover - sorry within the general requirements there would be a section where a operator of a - or a practice would need to require an authorization to conduct that practice.

And as part of that that would require a safety assessment and that would require procedures in place for covering prevention of accidents, prevention of how to deal with situations where you may get releases.

Chapter - the third part protection of public includes requirements related to discharges and cover all the different monitoring of the environments and cover all different pathways, in other words, direct radiation or pathways through exposures into (possible) environments.

Chip Cameron: And thank you. Thank you Trevor. Let's see if Rob wants to add this. And if we need to go further into this we'll do it in - when we get to Section 3 as long as (Cindy)'s going to be here with us after lunch. But go ahead Rob.

Rob Lewis: Well first I think it's a very good question. And I think Trevor got it just right in the way that the BSS has divided up planned emergency and existing exposure situations.

That type of activity would be a planned exposure situation because in the US when the license was issued there would have been a safety analysis report submitted with the license application.

And that would have to cover any potential discharges and risk assessment including the probability of types of releases and the consequences of those releases.

Chip Cameron: Okay. That's great. And we'll - we have it in the parking lot. We'll go back when we get to Section 3. Thank you.

Anybody else have a question in the audience for Trevor on materials so far? Operator can we see if anybody on the phone has a question for Trevor?

Coordinator: Sir no phone - questions on the phone sir.

Chip Cameron: Okay. Thank you. Thank you operator. We're going to go back to people here in the room. Rob?

Rob Lewis: Yes. One thing that we in the NRC hope to discuss today -- and I think this is the right time -- is that the provisions in the BSS on protection of the environment those as Trevor mentioned appear in Paragraph 1.26 which is not in the requirements section of the BSS.

But they are adding in for the first time into the BSS on explicit consideration of environmental protection.

And in terms of the explanatory text in Paragraph 126 there's some key words in there that we hope people would weigh on here or later that essentially the guidance in paragraph 126 notes that the environment needs to be protected irrespective of any human connection to that environment.

And another way to think of that is when we have environmental protection evaluations in the US we always have the key factors is the potential dose to people that might be living and affected by that environment.

And the IAEA is saying is whether people are there not the environment needs to be protected and the amount of radiation, radioactive material going into the environment we need to be limited.

And that's a - that's kind of a shift in the fundamental radiation protection structure that's been in existence many years. And ICRP's covering this. So I was wondering if anybody had any thoughts on that provision?

Chip Cameron: Let's see if they do. As Rob mentioned this is a dramatic shift and it's in the BSS. There's nothing similar in the United States regulations on this.

Trevor do you want to add anything before on this environmental protection before we go to the see if there's any questions or discussion?

Trevor Boal: No I think not Rob.

Chip Cameron: Okay. Well let me check with the audience. Does everybody understand the implications of what Rob was talking about in terms of this particular provision?

Does anybody have any questions or comment on it while we're here?

Okay. And just introduce yourself to us Mike.

Mike Boyd: Yes this is Mike Boyd from EPA. I just wanted to point out relative to your last statement that while human health is almost always the driver under the

superfund legislation (Surpfla), there is a requirement for doing an ecological risk assessment.

And there are other requirements and statues for natural resource damage assessment. So there are instances where the effect on biota are a particular focus of our regulations. But in general it's almost always if not always so far the human health risks that drive the clean up decisions.

Chip Cameron: Thank you Mike. That's just another example of how the differences in the United States regulation are. (Amanda)?

(Amanda Anderson): (Amanda Anderson) from the Department of Energy. And we actually already have this worked into our own regulations.

We do require our sites to do assessments of the environment separate from human health and safety. And so we do see this as an improvement.

Chip Cameron: Thank you. Is it under an order, DOE order then?

(Amanda Anderson): Yes. Right now it's DOE order 5400.5 radiation protection in the public environment. And we do require them to look at biota separate of human health.

Chip Cameron: That covers - the order covers DOE facilities. That's what's applicable, okay. Thank you.

Anybody else on this issue? Let's go to (Henry). And (Henry) please introduce yourself to us.

(Henry Morton): I'm (Henry Morton), a consultant to the nuclear industry. I think my observation would be that look at long-term beginning especially in the growth of reactor era in the United States, in the early environmental impact assessments there was a lot of investigation, a lot of studies of the ecological impact goes to biota.

And out of that eventually came a sense and a guidance basically through the standard setting agencies that if you protect people you have adequately protected the environment.

That basically then diminished the attention for decades or so. But then in more recent decade we've had an increased attention through more microbiological investigations to return to this issue.

The - so the fundamental question I think now will be will the conclusions be different and will the microbiology then indicate that we should have standards for concentrations in the environment with respect to the biota?

The key question would be then, if so what? That will apply this to the nuclear power industry, nuclear reactors.

Then we would have - you would revisit for example Part 50 Appendix I, look to see whether there is additional restriction or guidance needed with respect to (unintelligible).

Chip Cameron: Thanks for that explanation (Henry).

Let's see if anybody on the phones wants to comment on this particular provision. Not a requirement as you'll see in the parens.

Operator does anybody on the phones want to say anything to us on this?

Coordinator: At the present time no. We did get some new parties. So I'd like to inform them once again to ask a question please press Star 1 on your touch-tone phone.

Chip Cameron: Okay thank you very much operator. And we'll keep going on to the phones throughout the day. Okay. Trevor let's go on at this point.

And then we'll...some time for clarifying questions before we break for lunch. And then we're going to get into in-depth on three, four, and five. Go ahead Trevor.

Trevor Boal: Thank you. So we move to Section 3 and expose a situation and the first part of the generic requirements.

The first part of the requirements are the scope. And at the first paragraph is on the list of practices covered by the standards.

So that's been expanded for clarity, includes medical uses nuclear - or sorry, nuclear power sources and research reactors, mining of radioactive material, uses of radiation for industry, security, et cetera.

Then the next paragraphs on sources within those practices. And there's a group of - there's another paragraph on natural sources of radiation.

The county essentially has the three first three bullet points of the public exposure from discharges or waste arising from practice involving natural sources, occupational exposure to radon required by or directly to work. And

that would cover radon exposures i.e., the mining of uranium or other mining procedures.

Occupational exposure to radon in an existing exposure situation where the average annual activity exceeds the reference level. (Obviously) this is 1000 becquerels per meter cubed.

And the final paragraph is new to this BSS, exposure to material other than number of sources whether it's in natural sources in food or feed or building materials.

Any relevant activity listed in the practices where the activity concentration of material of any radian (equalizing) uranium or (unintelligible) is greater than 1 becquerel per gram or for testing sorry, greater than 10 becquerels per gram.

So essentially saying that in some industries which use natural occurring radioactive material if the activity's greater than 1 becquerel per gram that will now fall within the scope of those standards.

So uranium mining has always been covered by the standards. But some of the other industries where norms are covered right now fall in with the scope of BSS.

And I think that the current BSS says that the membership body could nominate industries in the area of natural resources to include. They can't be if this more clear that those industries which are - where they are naturally occurring radiant parts would be in - uranium (unintelligible) series above 1 becquerel gram are now within the scope.

Whether they these - sorry the stringency of the require - or the implementation of (unintelligible) would depend on the concentrations. And regulatory body will still have the reply of (granted) approach. And that may exempt some of these industries from those standards I think the leverage control is not required.

And the next - sorry. The next part of the generic requirements cover notification and authorization. They cover - they assign requirements responsible to the standards of the licensee.

And then the overarching requirements set out responsibility on government regulatory in a number of areas in relation to extension and clearance, in relation to justification, optimization, protection and safety, dose limitation, requirement of setup, requirements of safety assessment and requirements of (motion) human imaging which I'll come to soon.

There are a number of other requirements in the licensee requirement in relation to monitoring, prevention and mitigation of accidents, investigation of accidents and providing feedback and the control of regulation generators.

But in regards from these overarching requirements there was some discussion about where to assign the responsibility, whether to assign the responsibilities to licensees or to government and regulatory body and whether it is still right - something with the right feedback.

Another one is overarching requirement graded approach. Graded approach applies to all exposure situations. So whether it belongs in Section 2 or Section 3 is still, you know, some discussion. At present it’s been included in Section 3. But there has been some discussion on where to put that requirement.

I just want to cover the next few slides, some areas where there was a lot of discussion in developing draft 3.0.

The first one is optimization of protection. A lot of - current BSS includes the use of does constraints as part of the optimization process.

I'm not quite sure why we had so much discussion on the use of dose constraints, right? It's a tool for optimization.

The dose constraints are not limits. They may be set or approved by the regulatory body, in essence the approach within draft 3.0.

And a lot of these are unchanged from the current (PSAs). What - the definition of constraint was reviewed and the definition is - has put out there a perspective and source rated value for individual does or risk used as a tool and optimization protection and safety of the source which serves as the boundary in defining the range of options in optimization.

And there's also a lot of discussion in the development of text about whether we should say these optimize or subjection optimization process.

So protection and safety is optimized and there's a regulatory requirement the enforcement of such requirements.

There was some item in saying that we say subject to optimization process. It gives no guarantee that the - we've received an optimized solution. So the current text is written radon protection is optimized.

So go down to the next slide, the group of paragraphs on radiation generators and radioactive sources, there are a number of new requirements have been added to the BSS Paragraph 354, 359.

That covered subjects issuing licensees sharing inventory records with regulatory body categorization of sealed sources and marking of sealed sources, identification and traceability of sources, storage of (unintelligible) sources and the disposal of sealed sources at the end of their useful life.

These paragraphs have been taken from the code of conduct on safety and security of sources which was issued by the agency in early 2000s.

And they've been included in the BSS now to strengthen the requirements relating to the control of sources.

There are a number of paragraphs in this section from the existing basis which were unchanged. But these paragraphs were added on the basis to strengthen the control.

The next part, the final part of the generic part of Chapter 3 about covering human imaging for purposes other than medical diagnosis.

This is some background that covers two types of exposures, those carried out by medical staff using conventional radiological equipment.

So for example it may be exposure to occupational, legal, or health insurance purposes without reference to clinical indications.

Let me talk about legal purposes. We may be talking about exposure of a person suspected of covering drugs where they have to go - undergo a

radiological procedure to determine whether there are drugs within the body.

Or it may be a procedure such as injuries to a child in say abuse.

Another type of nonmedical or purposes for none - imaging for purposes other than medical diagnosis are those carried out by nonmedical staff.

They may be for theft detection. So it's used in some countries in relation or we'll say in diamond mining, security screening.

There's been a lot of increased emphasis in the last decade in relation to security screening of passengers before flying or people visiting jails, again smuggling, and screening of cargo and certainly in relation to whether there are people inside the cargo containers.

So the requirements in these areas are under the justifications Paragraphs 318 to 320. There are a number of paragraphs relating to justification of such practices.

Human imaging for radiation performed through occupational legal and health insurance purposes if there are referenced to clinical indications shall normally be deemed not to be justified.

If an exceptional circumstances justification for such (unintelligible) consider the requirements for - of 360, 364 shall apply. And this requires that such a practice be justified and a number of other requirements in relation to the regulatory control. They should be controlled by regulator.

Paragraph 319 says that human imaging for theft detection purpose shall be deemed to be not justified.

That is the strengthening of the requirement in the current BSS. That BSS adds that if it is carried out that should not be considered as occupational public exposure so not considered occupational medical exposure but be considered as public exposure.

In Paragraph 320 which again refers to security or sorry, imaging for security or anti-smuggling purposes shall normally be deemed not to be justified if an exceptional circumstance is the justification such imaging is should be consider requirements of 360 or 363. And 365 to 367 shall apply.

So that again is that there should be a justification process. But will such (papers) should be justified by the government or regulatory body and if there'll be regulatory controls on the use of such for carrying out such practices.

Inside the paragraph 360 to 367 are new paragraphs just (sent) from the safety and regulatory control of non-medical imaging practices when making regulatory control justification decisions and optimization protection and safety explicit in the BSS.

The next group of paragraphs in the BSS cover occupational exposure. This - there's a copy of this, essentially it's unchanged.

They cover responsibilities for occupational protection, local rules, classification of work areas, monitoring of work areas, both assessment of employers, health surveillance, responsibility workers and some paragraphs in relation to pregnant workers.

The definition of occupational exposure has been changed, been modified. The current definition will be similar exposure work is incurred during the course of their work.

The current definition also include excluding any exposure from excluded sources or from sources which are exempt.

The definition of worker is a person who works and has recognized rights and chooses (based on) occupational protection.

There have been a number of paragraphs added in this section on the responsibilities of regulatory bodies.

Regulatory bodies shall establish and enforce requirements. The protection safety is optimized and doses exposed should comply with limits.

The regulatory bodies shall establish and enforce requirements of monitoring and recording of exposures in plant exposure situations.

Next paragraph, the requirements in this section on licensees and on workers in relation to occupational exposure are essentially unchanged.

There have been some rearrangements, consolidations editing of text. But these hard requirements of monitoring have been removed now being placed in a lower - in a safety guide rather than requirements they will document.

And the requirements for official circumstances which replied to relaxation of the dose limits have been removed and are considered no longer necessary.

When the last BSS come into play - was it proved there may have been some practical way they may have relaxed the limit until they improve their procedures. But now it's considered there's - it's no longer required in the BSS.

The next section is on public exposure. Again it covers responsibilities for public exposure monitoring, discharges to the environment, waste management, some requirements in relation to visitors and a group of retirements on consumer products.

There are new requirements in this section in relation to placed on government or the regulatory body, establish and enforce requirements to ensure public exposure control, establish or approve source for added constraints for does and risk to be used in optimization and protection.

And one of the use of constraints is that public may be exposed from several different sources at the same time.

So a licensee would - I'm sorry several different facilities where the public may get their exposure from. And so the constraints are applied to each different source.

To establish or prove source related criteria such as limits for discharge for the demonstration of compliance with standards, mutual environmental monitoring programs are in place, results are recorded and made available, and in setting out response to regulatory body in relation to authorizing suppliers consumer products.

The next slide covers new requirements placed on licensees. In the monitoring area more specific climate on reporting of results and retrospective assessment of doses.

The requirements in the waste area, it's been expanded to include requirements to maintain an inventory of waste generated.

And I've already mentioned there's a new requirement in relation to environmental impact or impact on the environment.

The next section part of Chapter 3 covers medical exposures. A medical exposure is an exposure to a patient undergoing a medical procedure.

It also includes exposure of (carers) or competence from a patient who received a nuclear medicine procedure. And also includes those people participating in biomedical research activities.

There are a number of new terms. Current BSS only has medical practitioner. Revised BSS refers to referring medical practitioners and a radiological practitioner who carries out the - or is responsible for the procedure being carried out. In some cases it can be the same person.

The medical physicist definition has been updated and now uses the definition from the international organization of medical physicists.

And the medical radiation technologist definition is been updated and is from the International Society for Radiation for the Technologists.

The number requirements, new requirements in the BSS related to responsibilities of government. The requirements refer to consultation

between health authorities, professional bodies and regulatory bodies, appropriate authorization of all parties to share in their roles and responsibilities.

But DRL, DRLs are diagnostic reference levels are established.

So these constraints are established for (carers) and comforters and for volunteers in biomedical research and are guidelines and criterias established for the release of patients after radionuclide therapy.

And these areas can be either - just ensure that health authorities and regulatory bodies and professional bodies are all involved in the processes.

The next slide covers responsibility of the regulatory body. And they must ensure that the personnel carrying out such procedures are appropriately qualified, specialize in the appropriate area, have received education training and competence, meet competence requirements and radiation protection and as such, a list of people are maintained by licensee. Medical physicists, technologists, radiological practitioners are included on their up to date list maintained by the licensee.

There’s also a requirement, a medical disclosure part on the licensee for the patient to be informed as appropriate on the potential benefit of the procedure as well as the radiation risk. And it's a new requirement.

The next slide covers justification. The current BSS has a general requirement that medical exposures be justified.

I would think the current BSS published (ICSSP) has expanded its guidance on - or recommendations in relation to justification of a medical procedures.

And there are three levels of justification medical procedures. One is medical exposures are justified. The second level that particular procedure be justified. And the third level is that there be justification for each particular individual patient.

And these are reflected in the revised BSS. And there are three separate paragraphs covering each level of justification.

So the 13 requirement is as in the current BSS Level II requirement, the health authority or professional bodies justify each particular type of procedure and then a requirement on the radiological medical practitioner that it's justified for each patient. And it may involve use of relevant guidelines as before.

The next slide, justification. There's also a paragraph in the medical exposure area. It also covers health screening programs.

There's a requirement on asymptomatic individuals and a requirement in relation to biomedical research as in the current draft.

But the requirement asymptomatic, I think it's a new requirement for the BSS.

The next section, optimization of protection, this is by far the biggest part of this section. And essentially some of the data from the current BSS has been deleted or has been removed and will go into a safety guide, a safety guide to develop to - on how to implement the requirements. So some of this detail was considered too much for - or too detailed for the BSS.

All the same subjects in the current BSS have been retained. Some of the requirements which are updated, the design considerations -- there's a lot of

equipment - it has been - the scope of equipment has been expanded to include gamma cameras, image intensifiers and software.

Operational considerations, there was a major consolidation requirement. A lot of material was taken out to go into safety guys.

In relation to optimization and protection, the calibration of equipment, the current BSS (was the) responsibility of the licensee. And the revised draft 3.0 responsibility has been assigned to the medical physicist.

Medical (asymmetry) responsibility is now assigned to the medical physicist and the current BSS (unintelligible) under licensee.

And diagnostic reference levels have been strengthened to (linked) to the clinical (asymmetry) part of the chapter.

Optimization protection in relation to quality assurance, next slide, been updated to that the quality assurance be carried out on the (unintelligible) using the medical physicist, a time when quality control tips are made of acceptance missioning prior to use and periodically thereafter and after any major maintenance that could affect patient safety.

And then the requirement optimization in relation to pregnant and breast-feeding women and arrangements in place for protection (unintelligible) and procedures in place and to ask that the - if the woman is pregnant or not.

The next part of the BSS Section 4 covers emergency exposure situations. Since the current BSS was published there's been another requirements document GSR2 on emergency preparedness and response has been published by the agency.

For the current BSS there's been some restructure of text. And some parts have been deleted as they're covered by GSR2. And their reference is made to the other requirements document.

And there's a new - there's been a paragraph added to the BSS in relation to transition from emergency exposure situations to an existing exposure situation. And the current text has been updated to take account of the new ICRP recommendations.

The structure of this chapter follows the other period, the generic requirements in public exposure, protection of workers, and this transition paragraph.

So the generic requirements include the requirement that there be an emergency management system established by member states.

And this it's - there's a cross-reference to the requirements in GSR2 on the establishment of the (emergency) system or the emergency preparedness and response arrangement within the member state.

The section of public exposure has been updated to the new ICRP recommendations. The protection strategies include protective actions. And these must be justified and optimized.

The ICRP now use the term reference level instead of action level. Reference levels apply to residual dose and the BSS recommends a reference level in the range of 20 to 100 millisieverts.

After the reference levels have been established, develop generic criteria for particular protective and other actions. These actions may be say iodine

prophylaxis or evacuation, sheltering, relation to food, et cetera and then maybe default triggers for initiating different parts of the response plan.

And the requirements - in relation to the protective strategies and then the response to be taken to implementation of their arrangements.

The Annex in (unintelligible) the Annex board includes generic criteria number four in relation to prevention of acute effects.

It wasn't tabled in Annex 4 in relation to prevention of (unintelligible) events. That has been taken out and has not been included.

It was included in earlier drafts. It’s not included in draft 3.0. It’s in the safety guide which is under - is close to completion. And it's going through approval processes within the agency’s set of documents at present.

These paragraphs here are consistent with what's in this other safety guide on the generic criteria for these protective actions.

The next part of chapter on emergency preparedness after emergency exposure situation covers exposure of emergency workers.

The definition of emergency worker has been changed in the BSS and now covers any person having a defined role as a worker in an emergency and it might be exposed while having - while taking actions in response to the emergency.

The action on emergency workers includes a program for controlling doses. These should not sub bullets. They should be to the definition, they - the bullets - sub bullets to the exposure chapter.

But the requirements for occupational exposure in plant exposed situations apply. But there are specific cases where the maximum single year dose for occupational exposure may be exceeded during an emergency.

And they're set out within the paragraphs of this section on emergency - protection of emergency workers.

And the final part of this chapter covers transition from emergency exposure situation to existing exposure situation and that there must be arrangements made in advance for this transition.

The final section of the revised BSS covers existing exposure situations. A few comments before I cover the text. In the current BSS they refer to as chronic exposed situations. So we're now adopting the ICRP terminology existing exposure situation.

Current BSS uses action levels. An action level is where if you clear this level you would require to take action to reduce the exposure situation to below the action level.

The UBS, sorry, the new ICRP recommendations use a reference level as - and a reference level it’s undesirable to be exposed to a situation above represents what you saw required to optimize below the reference level. So it's a slight - so it's been a major change in approach to dealing with existing exposure situations.

And compared to the current BSS, the section on existing exposures has been expanded and completely rewritten.

So the scope of existing exposures, exposure to natural sources which includes radon, radon in dwellings or radon in workplaces, radionuclides in commodities, and exposure to air crew to (unintelligible) radiation is now specifically included within the BSS has been - (hasn't) been included now in the current piece.

And this chapter includes exposure to contamination of areas from residual radioactive material from past activities which were never regulated or regulated to different standards.

And it covers residual radioactive material from nuclear radiological emergency after the emergency has been declared ended.

So this is - carries on from the previous chapter where we saw these transition from emergency exposure situation to existing exposure situation.

Generic requirements for existing exposure situation, there are specific responsibilities assigned to government regulatory bodies and other relevant authorities.

It may not be the regulatory body for regulating practices who's the responsible body within member states. It may be another government agency.

And the requirement in relation to government and these other regulatory bodies or other authorities to identify (unintelligible) existing exposure situations, to establish a framework for protection and safety, to develop national strategies in relation to existing exposure situations, to establish appropriate reference levels between involved stakeholders.

Again this chapter's are broken into sections, one for public exposure and one for occupational exposure. Within the public exposure situation there's a general Section 3 paragraphs related to making a public justification of protective actions and optimization and protection.

And general recommends that the reference levels for public exposures be in the range of 1 to 20 millisieverts.

There's a large group of paragraphs in the section on remediation of areas contaminated by residual radioactive material.

There's currently a safety guide - sorry a requirements document WSR3 on remediation. And essentially all the text in this part of the document has been brought in from WSR3. And WSR3 will no longer - is superseded by this revised BSS.

And there's a paragraph on areas living in areas with residual contamination.

There - the section on indoor radon, radon in dwellings or radon and other public buildings with example, schools or hospitals.

Underlying requirements in relation to dissemination of information to the public. And if there is a significant radon levels found in a country that there should be national action plan.

The reference level established within general not exceed 300 becquerel per meter cubed. And there's a requirement then to optimize protection below this reference level.

There was a technical meeting in December of last year to - on radon that come from the technical meeting was to recommend that the reference level in the BSS should be - in general should not exceed 300 becquerel per meter cubed and that member states could decide on a lower level if they wished to adopt a lower level.

The next part of protection of public relation to commodities, for example food, water, construction materials.

That's recommended the reference level for these not exceed 1 millisieverts per year. And for a period it recommends that (unintelligible) the (codex) on materials mission values it considered by the regulatory body in relation to food.

Now the World Health Organization has also published guidelines for drinking water which should be considered.

Final look at the paragraphs in Section 5 relate to occupational exposure. And the first part says the requirements in public exposure apply for occupational exposure except for a number of situations.

One in remediation of contaminated areas that occupational exposure is controlled as per the requirements for planned exposure situations.

So it’s consider that the activity is planned and therefore the workers should be (unintelligible) should be under an occupational protection program.

In relation to radon in workplaces the technical meeting hosted by - held by the agency in December of last year recommended a reference level not to exceed 1000 becquerels per meter cubed.

So if the level is below 1000 becquerel per meter cubed, the requirements that had earlier in this chapter would apply. If it's above 1000 becquerel metered cubed in the requirements for planned exposed situation would apply for workers.

There's a requirement the protection should be optimized. And as I always said that the radon levels remained above the reference level after optimization that requires occupational exposure in Section 3 apply to workers in areas where levels - annual average levels exceed 1000 becquerel per meter cubed.

The final part of the occupational exposure in this chapter on existing exposure relates to exposure of cosmic rays in relation to air crew.

It's up to the relevant authority to determine whether assessment exposure is required and whether any requirements in the chapter on occupational exposure with Section 3 (unintelligible) apply, e.g. for pregnant air crew.

And then were requested by a number of organizations to include some paragraphs on humans in (space) based activities under the European (space) agency and the Canadian (space) agency requested that there be a paragraph in the BSS.

And so it - paragraph say it's up to the relevant authority whether - or to establish a framework for various protection appropriate for this situation.

All efforts must be made to optimize protection but the dose limitation requirements as set out do not apply to humans in (space) based activities.

Then there are four schedules. Schedule 1 covers exemption and clearance. The first part of the schedule is the criteria for exemption and clearance.

That's metric criteria. And they include tables for rating new clients. Exempt, the one table covers exemption of moderate quantities of material and a second table which covers levels for clearance and exemption of bulk quantities of material.

The current BSS includes only the table for moderate quantities. But since the current BSS was published, the agency has developed a safety guide RSG 1.7 which covered clearance and exemption of all quantities. And that has not brought into the BSS.

The artificial radionuclides are in Table I-2. And for natural radionuclides exemption failures clearance failures of 1 becquerel per gram as per in the middle of the paragraph on defining the scope for natural radionuclides and uranium thorium change.

Schedule 2 sets out categories for sealed sources used in common practices. The new schedule in the BSS is taken from a safety guide RSG 1.9 which was published several years ago. So it's updated since the current BSS.

And this categorization scheme is used in the code of conduct for safety and security of radioactive sources.

Schedule 3 sets out dose limits for workers and for public implant exposure situations. And that's been unchanged from the current BSS. They follow the IRCP recommendations.

As the schedule does include those coefficients for calculating exposure from radionuclides through ingestion or inhalation and the current BSS includes many, many pages of tables for these dose coefficients.

And we're currently investigating ways on I think the tables in the current - in the new BSS are the reference to the ICRP publications or include a CD-ROM in the back cover with these first coefficients.

These - those coefficients are currently being revised based on the 2007 recommendations from ICRP. And they may not be a revision of - those coefficients may not be completed by the time the BSS completions.

So if it's CD-ROM we can update the CD-ROM after the - as the ICRP develops or publishes the new sets of coefficients.

Schedule 4 covers generic criteria for emergency exposure situations. Table 4.1 is generic criteria for acute doses in which particular action is expected to be taken.

In Table 4.2 a guidance base resisting - for restricting exposure to emergency workers. these cover those situations where they are (unintelligible) on the annual dose limit.

The next slide is for the glossary. There's a glossary of terms in the BSS. The current draft includes those terms which are used in the BSS and list those which have been modified from the current IAEA glossary.

And the IAEA has a separate publication on this glossary which has been updated in parallel with the revision of BSS. So any comments on the definitions are also welcome.

I have not included this slide on the next steps but I'll just make a few comments before I finish.

In the documents we (intend) to member states by the IAEA member states, by the agency and we have a standard 120 day comment period.

It was posted - the draft 3.0 was posted on the agency's Web site near that 30th of January. The closing of that comment is 31st of May.

The agency issues a note (filed) to the Ministry of Foreign Affairs. And comments are normally posted back through the official channels so come - which come back through the Ministry of Foreign Affairs to the agencies.

Some of the other cosponsoring organizations are also seeking comment from their member states.

The agency as a - from the 31st of May the agency will then be considering these comments.

However radiation, nuclear safety, waste safety and transport safety committees meet in the last two weeks of June or the last three weeks of June.

I think transport one is about the second week of June and the radiation (second) committee meets the third week of June. And the waste safety and the nuclear safety (unintelligible) the last week of June.

We are hoping to be able to present a summary of comments to those committees during those meetings.

And if there are any issues identified prior to those meetings we may even seek some feedback on those three issues.

The intention is that we - the agency will (unintelligible) those comments by mid to late July. And we're planning to have a meeting of our cosponsors in August to review all the comments and revise the text for the BSS.

And the intention is that we would send another draft to the committees by mid-September. The committees meet in the last week of November and early December for approval of the document. And that is when we hope we can make this schedule.

The CSS meets in March next year. We may attempt to get to the CSS then and the board of governments in June of next year.

This is how we'd like to proceed as far as our next steps. So thank you.

Chip Cameron: Thank you Trevor. That was a real tour de force. There is a lot of work represented there obviously. And thanks for the addition of the schedule.

We're going to be going into in-depth on Sections 3, 4 and 5. And when we do our open session there may be people who want to talk about the schedules, particularly Schedule 1.

But anybody in the room have any preparatory or overarching issues or whatever you want to say? (Amanda)?

(Amanda): In particular on Schedule 1 hopefully we will go into a lot more detail this afternoon on that. I know from our own agency at the Department of Energy

we had looked at this schedule in the first draft and then a crosswalk between what was already existing. And it seemed like there was a lot of change.

We had asked for the technical explanation of that. We noticed there was change in follow-on drafts. But we still have some concerns and in particular because we do - what's currently in place has been considered all throughout our regulations.

And so, you know, we have concerns about how something like this may impact on us. And if it does we'd like to know well what's the justification? And is it really more protective of the public and the environment or is it just someone just felt like changing numbers?

And so we do want to know - we'd like to go into a little more detail this afternoon.

Chip Cameron: Okay. Thank you very much (Amanda). And Trevor do want to say anything about that now just for starters? You get the gist - the drift of (Amanda)'s concern, correct?

Trevor Boal: I think (probably) basically go into further discussion this afternoon. No, I understand this discussion happens unplanned emergency and existing.

So let me - we discuss the planned exposure part we should cover Schedule 1 within that discussion. Maybe we'll leave it till then.

Chip Cameron: Okay. And I think (Amanda) is interested in hearing about what's the rationale for those changes to when we get there. You don't have to...

Trevor Boal: Well I mean the criteria, I'm not quite sure what changes you're referring to. The start is the criteria for exemption is set out. There's a dose criteria of 10 millisieverts (unintelligible) equalize. With a low probability it can be slightly higher exposure.

Table I1 includes know about 800 radionuclides. The current BSS as a much smaller number. But the number - we were asked to include extra radionuclides and we've now expanded the list which is quite - so that's the exemption. But you may be more concerned about the clearance, clearance phase.

So they're using the path for clearance on bulk qualities are taken from the safety guide RSG 1.7. And we have not changed any of the values from RSG 1.7 into the BSS.

So we've just taken the table from RSG 1.7 which was published I think 2005, 2006 and brought them straight into the BSS. So I'm not quite sure when you say the change?

(Amanda): Well that - and that's where I guess there are questions. So (everything) on the first draft for - not for the additional radionuclides but ones that were already existing on some of these.

And I haven't been able to do a crosswalk yet the latest draft, but we noticed some of the existing values on a few different ones actually had changed.

Trevor Boal: Well I'm not aware of the changing any. So I'll have to...

(Amanda): Okay.

Trevor Boal: ...I'll talk to you.

Chip Cameron: Okay. And we'll get into a specific discussion of that and maybe we'll have some examples of where the - there's been changes.

Anybody else? Yes sir?

(Bruce Semanson): (Bruce Semanson). He used the term optimization a lot through the document. Optimization has a quite clear meaning in English in the dictionary and in computer work and in medicine.

And it's clearly not as you use it since there is really no way to optimize the exposure.

And mindful of the, as you say footnotes and as it's written in the glossary in this document, what you really mean is a balance between risk and benefit for the exposure.

But rather than trying to redefine the term optimization or relying on the reader to go to - to know that they need to go to the glossary to see what that means, it might be best to use a term which is clearer and more in line with its regular definition, for example balance.

Chip Cameron: Thank you (Bruce). Let's put that in the - let's put that in the parking lot for discussion of perhaps a more descriptive word for that.

Anybody else in the audience before we see if there is some comments from the phones?

Hey operator could we see if anybody on the phone has a question or a comment for us right now?

Coordinator: Yes sir. Diane D'Arrigo, go ahead with your question.

Diane D'Arrigo: This is Diane D'Arrigo from Nuclear Information and Regulatory Service. I wanted to continue to express our position to exempting or clearing - to clearing radioactive materials that are currently under control, from control.

And if someone in the US agencies could correct me, the only place that the tables, the exemption tables exist now are in the transport regs and in - is that correct?

Chip Cameron: Rob?

Rob Lewis: Sorry about that. This is Rob Lewis. The values in the transport regulation are not clearance. The values in the transport regulation in the US are values below which you're exempt for purposes of transportation as a hazardous material.

It does not mean that it's not regulated at the origin or destination. But other than that I think I would agree with the statement you made.

Chip Cameron: And Diane anything more on this?

Diane D'Arrigo: Yes. I just want to express public opposition to the US adopting these tables into our regulations.

Chip Cameron: Okay. Thank you very much Diane. And so noted here.

Coordinator: We have another question from Lynn Howard Ehrle again. Go ahead sir.

Lynn Howard Ehrle: In relation to the previous two comments I certainly support Ms. D'Arrigo's comments. On behalf of the International Science Oversight Board I certainly recognize what (Bruce) said as well relative to a linguistic problem.

This is true. And I recognized this early on when I began (unintelligible) teaching in that my (unintelligible) and radiologist in preparation of papers I was working on indicated that there is very great need for definition across the board.

It's very difficult for clinicians who are (unintelligible) let alone those in the field to understand what is being communicated.

There is an additional problem that I should note at the outset that underlies this document and the problems with it and also the nuclear regulatory positions that is (unintelligible) these documents.

That is that the IAEA has used recommendations from the 2007 ICRP documents as basis for this draft. That document has been rendered obsolete by events and activities and research over the past two years.

Recently obviously the assembled...have read about the recent activity and action by Vermont State Senate in not renewing the license for Vermont (unintelligible).

This was based upon some of the misinformation provided to the public. But this is going on across the board not just there.

And at the very time the IAEA has dipped into the medical radiation field and these standards. And here we have articles in the press that indicate tremendous (unintelligible), some of which have even caused death but certainly future cancer and non-cancer diseases.

What's going on here is criminal, make no mistake about it. These standards are set to protect the industry no matter whether it's in the radiology field or in the nuclear reactor field.

And as such they cannot be given any (unintelligible). And they certainly must be discarded by the nuclear regulatory clinician. And there is certainly good evidence to support a call for this kind of action. And I hope it will be taken seriously by the (unintelligible) and by our agency.

And furthermore there is no place in the process where public interest in (unintelligible) can be involved directly in this process. A comment period is a poor substitute for evolving the process of standard promulgation which is vital.

And when we are closed out from that process no comment period can take the place of that. So we'll get into this in more detail in the (afternoon).

Chip Cameron: Okay thank you Lynn. And I think when we get the appropriate point this afternoon I think people might be willing or be interested in hearing more of an explanation about on the point that you raised about ICRP 2007 being obsolete at this point. So we'll look forward to that.

Anybody else on the phones operator?

Coordinator: No sir, not at this time.

Chip Cameron: Okay. Well we're going to break for lunch here. It's - and we're going to come back at 1:15, okay? And we'll be back with you on the phone.

We're going for lunch now. You can go for lunch here in the audience to the cafeteria. But you can't get back down here without an escort.

And at about 1:10…

Woman: (Unintelligible).

Chip Cameron: …pardon me?

Woman: Around 1 o'clock.

Chip Cameron: Okay. Around 1 o'clock there'll be escorts available.

Woman: (Unintelligible).

Chip Cameron: So Leah, Monica -- whomever -- will be there to help get you back down. And bring a warm coat with you.

I guess we'll see if we get started. Is there - how many people do we have in the lobby?

You ready (Eric)? All right. We're going to get started with this afternoon's topics.

But before we go to Section 3 and then we're just going to go through these and when we get done with Section 3 we'll move to Section 4, Section 5, then open discussion.

We thought it might be useful because of the issues that (Bruce) raised about defining terms is for Don Cool to talk a little bit about the use of these terms, try to put that into context for you.

And Don do you want to do that? And we'll see if there's any questions and then we'll move to Section 3.

Don Cool: Yes. Thank you Chip. One of the things that I realized as we're having the discussion just before lunch is that there are a number of terms of art, the way that certain words have been used internationally.

They've been used in the ICRP recommendations. They've been used in the IAEA safety standards for a long enough period of time that those of us who have had some interactions in that community don't necessarily think about the fact that we don't use those terms or we don't use those terms that way here in the United States.

And so following-up on the point that was made, there are a couple of words that are - have a standard usage internationally which I think in part we have to recognize that they're there and then try to make sure that we understand the definition and usage so that we can perhaps see if we can get beyond the term and get to the underlying concept and any issues that may be there in the kinds of proposals that are being made.

And so I wrote down a couple of them and people may have some others. So let me quickly do these and then see if there are other questions.

But a couple of the words that Trevor uses, he was describing the provisions. One of them was constraint which is actually I think perhaps an underlying phrase for one of the biggest pieces of the new concepts in the new ICRP recommendations.

But when it all boils down to it, a constraint if you look at it from the way ICRP used it in the recommendations is simply a planning value in the process of doing your (ALARA) program using the US terminology.

ICRP would say it's a planning value to be used in the process of optimization. And it's what kinds of doses, total doses, individual doses - however you might, whatever materials you might have it in planning your particular activity, what are the kinds of things where you know you don't want to be?

And in the United States for example in the nuclear power industry you do all sorts of planning.

You do task specific planning. You do outage planning and all sorts of things. All of those values sort of defining the area where they don't want to be and within which they're trying to see how well they can do, all of those fit the definition of constraint the way ICRP laid it out.

But it's when you think about the word constraint it isn't intuitively obvious. But that's how the international community has been using the term.

Another word that got thrown around was reference level. And unfortunately the phrase reference level gets used a couple different ways internationally.

In ICRP's activities they talk about a reference level in the exact same way that they talk about a constraint.

They use the word reference level as they're talking about an emergency situation or an existing situation simply because you couldn't plan for it in advance.

So it still represents a kind of dose or a dose rate where you really don't want to be but there had to be some recognition that when you discovered the situation or the event happened you might or might not have the opportunity to make sure that you were below it. Instead you might have to use that as a target on the way to trying to do the best that you could for radiation protection.

But it's also used in the medical community as a benchmark for what constitutes a good level of practice that which is well accomplished in a particular kind of procedure for facilities to match themselves to to see whether or not they're doing protection that's comparable to protection that's being achieved elsewhere.

And so that has a slightly different connotation than the way ICRP used it in their recommendations.

The other couple things that I want to mention, one of them was optimization which we talked about just before lunch where it really is a whole process of trying to balance the set of things that are the risks and are the benefits and the costs and other activities which is not the mathematical findings, the minimum on any given situation.

And in fact as ICRP often talks about it -- I've had an opportunity to listen to some of the ICRP members talk about it -- is as much an operational sort of activity.

What are the things that we can do to improve it? Is that a reasonable thing to do? How much is this going to cost, a day to day constantly trying to improve things as the process of optimization.

And that's why Trevor in talking about one of the issues, one of the issues that I know the joint secretariat when the draft was being developed had was does this - does the requirement say to optimize? How can you ever possibly know that you're optimized because it'll always change?

Or is it you've made the things subject to a process of optimization meaning that you've analyzed it and you've tried to figure out what are the best things to do and you make sure you run through the process.

Each of those has issues. And so part of what - we would look for some feedback and expect many people will want to comment on as member states is what's the right way to represent it because there are issues. If you say a process to optimize it, well of course you could always run the process.

But does that mean you ever have to do anything, or you just ran it through the process, you said fine and then you go on versus if you say you optimize it which is something you could never actually measure? So that's what I believe Trevor was highlighting on that issue.

The other concept that tends to get some discussion is the question of justification. How do you justify an exposure?

And that happens at all sorts of levels, many of which the radiation protection things that we would talk about here are only one contributor.

And there's much broader questions of - in the medical community, the medical benefit or the procedure, the value of screening at a certain time in order to prevent and catch disease early, down to the national level question does a country want to have a nuclear power program?

And the radiation protection aspects of that really are only one contributor to a much larger dialogue.

So those are some of the things that I note that have been tossed out on the table which may have some very unique aspects.

And I hope that this little explanation's been helpful. And maybe some people want to ask some questions about that which will help further with the discussion this afternoon. Thanks Chip.

Chip Cameron: Okay. Thank you Don. Why don't we move into to Section 3? And there may be questions on not only optimization but all the terms that you used.

And I think we had an issue on the tritium leakage where that fits in. And I think we said that's in 3 also.

So is there anybody who has a question or comment on Section 3 planned exposure?

Yes sir? And please introduce yourself for us.

Craig Updyke: Sure, and I'll try to keep this brief. My name is Craig Updyke. I'm with the National Electrical Manufacturers Association and I'm manager for trade and commercial affairs at our trade association which is the trade association in the US representing many factors of electrical infrastructure equipment and medical diagnostic imaging and therapy equipment.

And at I believe the comments I'm making do fit into this section. And I'll try to keep it brief.

I have some written comments here which I'll possible - I'm happy to provide these in written form to the transcriber.

Certain types of products that we are commonly known in the US as light bulbs but in the industry, in our industry are referred to as lamps that require the use of a very small quantity of materials that emit ionizing radiation.

Minimal amounts of these materials are required in order to achieve the most efficient generation of light.

These substances are indispensable for the high performance of the products and are entirely safe as used at any time in the lifecycle of the product.

Single lamps, high intensity discharge lamps and certain compact fluorescent lamps are well below the IAEA regulatory limit values.

However bulk shipments of these products may exceed limit values even though the radiation levels are indistinguishable from background levels in the environment.

Transportation and distribution and use of these types of lamps do not present a potential health hazard.

Several scientific studies in the European Union and the United States have shown that these products are not dangerous goods if shipped in commercial packaging and should therefore should not be subject to requirements.

Positive compliance with the regulations including confusion among freight carriers who are handling products labeled radioactive and denials of shipments of those products greatly outweigh any additional measures of safety afforded by the IAEA marketing and documentation requirements that are applied to these products currently.

I'll try to go through the rest relatively quickly as well.

Four isotopes are applied in lamp technology. The most important of these are two, the rare noble gas krypton 85 and the natural occurring thorium 232.

Isotopes have been selected because they have a sufficient half-life and a suitable type of radiation with a good ability to ionize.

They emit alpha and beta radiation with high ionization inside the product and without penetrating the light bulb.

(Fear) of gamma radiation which may be able to penetrate the bulb is negligible. Therefore the radiation exposure to the consumer or anyone is handling that light bulb is very small.

Implied activity inside the lighting product ranges between a few and several thousand Becquerel.

Many lamp manufactures have enhanced their research and development for the reduction and in some cases a limitation of the radioactive substances in their products and have already made enormous progress.

However many current applications do not work without the required radionuclides.

The IAEA standards as they stand today not only concern US lamp companies but also affect other global let manufacturers and their customers.

And the regulations also concern distributors of lamps such as wholesalers, installers, retailers, manufacturers, and distributors of products containing these lamps, for example luminaries, or lighting fixtures.

In our view there's a clear disproportion between the regulatory requirements on one hand to protect the public and human health from danger and on the other hand the scientific facts demonstrating the safety of the mentioned lamps. We this disproportion needs to be corrected.

Now I should say before I go on this is an issue that has been brought up within the IAEA context within (transact) subcommittee and has been worked on for a number of years.

We believe the marketing requirements and related restrictions on marketing and use of these types of products are unwarranted since the products in question do not pose any of the risks that the package labeled radioactive misleadingly suggests.

In addition import licensing is a remarkable burden not only for lamp producers but also for their customers.

Presently lamp producers have to apply for licenses in more than 120 countries which usually also have different and unclear licensing regulations.

On the underside each and every customer (have a) lamp producers in the country should apply for licenses.

But a handling and application of lighting products by end users however, there are no special measures or necessary protections in the view of the radioactivity.

Resulting radiation exposure by handling them - consumers handling them is negligible and not considered to be dangerous.

For end users therefore, lighting products are not regarded as dangerous goods.

But the radiation exposure to the consumer by lighting products ranges well below the natural background level by more than a factor of 100. The lamps I'm speaking about are associated with an exposure of 10 microsievert per annum which corresponds to a dose rate of 0.0023 microsievert per hour.

However many influences on the human life cause much higher exposures. For example, an airline flight at an altitude of 10,000 meters or 33,000 feet causes levels of exposure 2000 times higher than that for these lamps about which I am speaking.

The lamp industry proposes to exempt these products from the requirements of the IAEA basic safety standards concerning authorization and reporting. This position is based on the fact that lamps with low levels of ionizing substances are safe as confirmed by numerous studies which I won't go into at this time, but I'm happy to provide information to anyone who's interested in getting those references.

Moreover in a study performed on behalf of my organization several years ago, the radioactivity of a fully loaded shipping pallet of packaged lamps could not be distinguished from background levels of radiation. So we submit that the low public and occupational radiation doses satisfy the principal criteria for exemption from the BSS.

We have a long proposal which I could provide to anyone who's interested in seeing it. I just will summarize that we would propose that the proved consumer products such as these lamps should be generally exempted from the requirements of the BSS if radioactive content inside is sealed and no direct content with the radioactive material is possible and independent studies, scientific studies demonstrate that there is no safety hazard.

Lamp industry consumer products should not be defined as exempted products requiring exemption granted by a regulatory body, but should be generally exempted from the BSS based on these legitimate criteria. We - furthermore we applaud the inclusion in Schedule 1 of the draft -- the current draft BSS.

So of the limit values for thorium-232 from the current TSR-1 (voucher).

NEMA welcomes the readiness of the U.S. and the IAEA experts to consider our position and proposals. Thank you very much for your indulgence.

Chip Cameron: Thank you, Craig. And that was largely on the Schedule 1, is that correct? Okay.

And Trevor or anybody on the panel, Rob, Don, any comment on any of that? I think Rob does, then we'll see if Trevor does. Rob?

Robert Lewis: I just have a clarifying comment. I guess Mr. Updyke what you're trying to show - the situation you have is that the lamps exceed the Table 1 values for krypton or thorium-232.

And you would propose that the BSS include a specific exemption saying that that regulation - or that standard would not apply to consumer products, provided they're sealed?

Craig Updyke: I don't want to take the position of speaking for other consumer product industries of course, but that is something that we would submit for discussion. We know that's something that has been debated at the IAEA previously about how to treat consumer products and that it's not a great willingness to generally exempt consumer products.

But certainly would be making the case on our behalf for these specific - these very specific products.

Chip Cameron: And Trevor, anything for the audience on this?

Trevor Boal: I'm aware that there's been discussions at the agency on these products, especially through the transport committee. And I know there's been a working group meeting in the last two or three months on a document which (was put into) transport committee and presumably for the ethics would influence, BSS will come into the process for reviewing the BSS as well.

So I'm aware there is a document under development in relation to these products.

Chip Cameron: Okay. Thank you. Anybody else on this particular - let's see if there's anything on Schedule 3. We are going to go back and make sure that we address (Amanda)'s questions on the Schedule.

How about anything on Schedule - or Section 3, excuse me. Well, let's go to the phones and see if anybody there has anything to add on Section 3 or since that was a comment on the Schedule, perhaps Diane has something on that.

Operator, can we see if there's any comments on this?

Coordinator: Certainly. To ask a question please press star 1. Just a moment.

Chip Cameron: Okay, well we'll tune back in with you...

Coordinator: No, I have a question for you.

Chip Cameron: Oh, good.

Coordinator: Just one moment, it's coming through.

Chip Cameron: All right, sorry. What's that - now go to the crab nebula? Is that where it's coming from? All right.

Man: Maybe somebody has a mute on their phone.

Coordinator: Okay, finally. Your first question comes from Diane D'Arrigo. Your line is open, ma'am.

Diane D'Arrigo: Oh, hi. It's Diane D'Arrigo. I wanted to express concern that consumer products or any radioactive materials that there should be some notification.

I mean in the situation that was just discussed, are the bulbs always going to be sealed? Can't the seals be broken?

I think that it's important that people know even if it's a small amount of radioactivity that it's present. I don't think people know in their smoke detectors that it's there.

And my main issue is not consumer products. But I do believe that things are being dispersed that are radioactive, that there needs to be labeling of some kind.

And so I have a concern with that. But the thing that I wanted to say to the IAEA is that once again that throughout the United States there's strong opposition to exempting -- and I'm not sure because I don't have all of your documents right here -- but whether you're calling it exemption or clearance.

But that we oppose these provisions in the IAEA and in the ICRP and will continue to press our government agencies not to adopt them and complain to them for their part in including them in the international regulations or recommendations.

Chip Cameron: Okay, thank you Diane. Operator, anybody else at this point?

Coordinator: No further questions at this time.

Chip Cameron: Okay, thank you operator. (Cindy), do you have something?

Coordinator: Sir, we just had another question come in. Would you like to take it?

Man: Who are you talking to?

Chip Cameron: Okay, go ahead. We'll go with you, operator.

Coordinator: Next question comes from Lynn Ehrle. Your line is open, sir.

Lynn Howard Ehrle: I'm on?

Chip Cameron: Yes, we hear you Lynn.

Lynn Howard Ehrle: Okay, thanks. Just one brief comment.

I certainly support the concerns that Diane expressed. And I would add to it that in view of the BEIR 7 report's conclusion that there's no safe dose of radiation right down to zero, it certainly would suggest that persons dealing with standards take that into account.

Because it certainly is implicit in that statement that there is a risk following that, albeit small. But as we all know, radiation is cumulative.

And so the combined effect of other radiation procedures that -- whether it's in occupations or general public -- have to be taken into consideration. Unfortunately, they are not.

Chip Cameron: Okay, thank you Lynn. We're going to go here for a question or comment and then I'm going to ask the panel that we have, Trevor and Don and Rob whether they have any comments on this. (Cindy)?

(Cindy Holkers): Sure. This is (Cindy Holkers) with (Deon Nuclear). And we really are going to have to insist that any product that contains a radioisotope of any sort be labeled as such, especially when you are having consumers go and choose a product.

It's, you know, if we're going to have a so-called free market society that assumes an informed consumer and a consumer cannot be informed if the content of what they're purchasing is unknown to them and if the health effects are not clear.

Man: All right. Thank you. Any commentary from the panel on what you heard from Diane and Lynn and (Cindy) or anything that Craig said?

Man: Well, I think we have understood the comments that have been made. And I do want to point out, Trevor correct me if I'm wrong but in terms of what's in the BSS, there is no marking and labeling requirements of devices.

I think that the comment that was made about the light bulbs was focused at the transport regulation, which when it was changed in 2000 or 2001, I don't remember the date, added a requirement to now have marking of small devices like light bulbs. So in 2000 the IAEA changed the transport requirements, not the BSS to add marking.

And the comment now is from an industry representative and the comments in opposition that have been voiced to that, we understand the comments. But to be clear those aren't comments on the BSS.

Man: Okay, so to clarify Craig's comments really were applicable to transport?

Man: Well, I took Craig's comment to mean that there in the BSS there could be an exemption for particular products. And we heard comments in opposition to that comment as well.

But the marking issue in and of itself is related to the transport regulation.

Chip Cameron: And (Cindy), your comment was broader in terms of labeling of products.

(Cindy Holkers): Mention, more concern than necessary based on a label. And I don't want that to go - I want consumers to be aware of what they're purchasing.

So if his comment was directed toward the consumer end of things, meaning individual consumers, then we would insist that those products be labeled as containing radioactive materials.

Chip Cameron: Thank you. Trevor?

Trevor Boal: The BSS does contain requirements relating to consumer products, on Paragraph 3137 to 3142. And it does include requirements relating to labeling, identifying of (unintelligible), specifically aimed at items like smoke detectors, etcetera.

So when you tell - I mean, you suppose a smoke detector should be labeled as it will contain a small amount of americium or whatever the (unintelligible) is included in it.

I'm unaware of all the issues relating around the lamps. And I'm not quite sure what the - whether the lamps are using all products or - all towards the lamps or there's any specific types of lamps where the radionuclides - where there's an issue which - working through this, looking at currently.

Chip Cameron: Are you finished, Trevor?

Trevor Boal: I am, yes.

Chip Cameron: Okay. Craig?

Craig Updyke: I'll just make two clarifying comments in response to what's been said. These products to which I'm referring are not really consumer products in the sense that we would go out to Home Depot here in the United States and purchase them.

These are - or you and I would purchase them. These are commercial and industrial types of products that you find in factories and outdoor lighting and other things.

So it's not something that you or I would necessarily go out and handle. And we certainly do not oppose and certainly support the comments that consumers should be aware of what they're purchasing and the individual package that's being sold to commercial and industrial or individual consumer should have a notice on it.

We are much more focused on the shipping packaging that is - that can contain hundreds of lamps that cannot be detected as a radioactive hazard and do not present a radioactive hazard in transportation. So going back to what (Mr. Lewis) mentioned.

So I hope that clarifies a couple issues.

Chip Cameron: Yes, that's good. Thank you.

Trevor Boal: Can I make one more comment on that?

Chip Cameron: Yes, go ahead Trevor.

Trevor Boal: I mean this issue is also taken a lot in the BSS. And I think one of the paragraphs was, we've heard the paragraph where the information is on the retail packaging -- I think the paragraph may have been - the text of that may have been changed.

And I know there is an issue about the transport, but that is dealt with in the transport regulations and not in the BSS. But there was - we had to make sure that the terminology used in the BSS was going to be consistent with the terminology used in the transport regulations as far as packaging and those parts, and we've worked to do that.

Chip Cameron: Okay. Is there anything more that we want to say or - on the leakage of tritium from nuclear power plants? That's covered by this section, correct?

I think that's what we said before. (Cindy) do you want to expand?

(Cindy Holkers): I want a clarification, actually. And I'm not sure that this question is for IAEA as much as it is for NRC and depending on what pieces of this they do and don't adopt.

I suppose with Vermont Yankee -- I don't know when it was licensed, but I'm assuming that under the original license this tritium leakage as of late is a planned release. And I'm wondering what health criteria or studies they based the release on at the time it was licensed.

And if we are looking at licenses for new reactors, what studies and criteria are we going to be basing those on and how are they different? Because over the lifespan of a reactor as we get more and more into the health and the science of what's going on and how radiation affects human beings, I'm not sure that we can have static licenses for nuclear reactors.

Because as we learn more and more, certain things may be more damaging and should be taken into account as the life of the reactor continues.

Chip Cameron: Okay. Can we have some NRC commentary on that? And can we also if we can try to relate that back to the BSS in some way?

We're going to go to Rob and then perhaps Don. Rob?

Robert Lewis: And I think an industry person had wanted to make a comment when we're done. But from the NRC point of view on the evolving issues of Vermont Yankee, neither Don or I are in the part of NRC that's working on that.

I'm not trying to dodge the question. I think you asked a good question. I understand the question.

I think our earlier answer was if at, you know, if we had in the U.S. the regulations that are structured like the BSS we would cover releases from a plant when we licensed a plant in the safety valuation - safety analysis report

that's submitted with the license application. And that's not to say what any particular limit would be for any nuclide.

That's part of the licensing application and the safety analysis report. And that's the structure essentially that we have today under NRC regs in Part 20 and (unintelligible) Part 50 for reactor licensing.

So that fundamental structure wouldn't change because of the way that the BSS is formatted. And I think our point was if releases from plants are part of a planned exposure situation that's the way BSS has been things.

And once you find a release and there's environmental contamination, then you have a planned exposure situation to clean it up. Now some releases like a prompt release - like Chernobyl would be an emergency exposure situation.

But the slowly leaking tritium into the ground water I don't think would be considered an emergency exposure situation because of the dose. It wouldn't meet the definition if you look at the definition of those.

So all that said though, we do not have a static licensing situation now. We have a system in the Nuclear Regulatory Commission to change our regulation as new information in learned.

And we have a system to require plants to upgrade where there's a safety issue. It's called a backfit.

And there's evaluations required. We have a committee in generic review of requirement - CRGR, right?

Chip Cameron: Review Generic Requirements.

Robert Lewis: Committee to Review Generic Requirements, which is chartered to do just that. Look at new information and new regulations and see if they should be applied retrospectively to plants that are already operating.

So hopefully that gives you a little bit of a response with the proviso that neither Don nor I have been involved in the Vermont Yankee or the other reactor tritium leaks. But I'm trying to be as responsive as I can from the generic point of view.

Chip Cameron: And just to make sure, and maybe Don you can address this -- just to make sure that people understand this and, you know, I can be the ignoramus as the facilitator. Your planned releases, the limits in Part 20, what Appendix B or is that Table B?

Robert Lewis: Yes, that'd be...

Chip Cameron: But if there's a big spike of tritium that turns up in a monitoring well above those limits, that falls under the emergency.

Robert Lewis: No.

Chip Cameron: No, no, no, no.

Robert Lewis: No. Let me try to...

Chip Cameron: Go ahead.

Robert Lewis: Let me try to add a little bit more clarity, because it is complicated. No matter how you sort of slice up this particular issue.

Planned means that you're talking about an activity like running a nuclear power plant that you planned to do. And so in your planning you should be planning to try and control all the materials.

Now one of the things that has to be looked at and is looked at in the licensing of the facility is potential for releases and effluents. There may be circumstances, and I think some of the tritium in ground water is one of these, where the conduct of the activities did result in the release.

It wasn't one of the things that was planned. They didn't plan to release the tritium.

But it happened in the context of activities that they were ongoing and doing which puts it into this exposure category of the IAEA. So I believe from the standpoint of the IAEA's regulations and from our regulations, something like this which is ongoing occurring as part of the normal activities, I'll say normal...

Chip Cameron: Operations.

Robert Lewis: Operations of the facility all must be dealt with in the context of the planning. So the agency is now requiring industry to look at and deal with the question of these releases which have not been previously anticipated and analyzed and do something about them.

Contrast that with emergency, which I think is probably best sort of put in a definition where something has happened which takes you really outside of the normal parameters of expected operational activities. And where you've

got to go in and do something immediately in order to try and regain control of the activity, in order to try and provide appropriate protection.

Chip Cameron: And the doses are higher.

Robert Lewis: And the doses usually are higher so you need to take immediate actions. Things may need to happen fairly promptly when you find something like the tritium in the ground water wells.

But I think it's probably best to keep a distinction between something that happens right now because of a completely unexpected something broke and you need to take some actions in the facility to regain control of the facility and deal with the exposures. And something from the conduct of activities which you do need to react to, understand, respond, inspect, correct and modify as part of the ongoing licensing inspection enforcement of the facility.

I hope that helps a little bit.

Chip Cameron: Okay. Thanks. We're going to go to Henry Morton and then I want to check in with Diane and Lynn and then we'll go to emergency exposures, Section 4 and I'm going to turn the microphone over to my colleague, (Alva). Henry?

Henry Morton: Henry Morton. I'm not familiar with this particular case, so the first key question is was the route of discharge through an effluent treatment system? Or was it a leakage through - from piping through an unexpected direction?

I think the way - instantly the way the issue seems to me is this. If it was through an effluent pipe or system -- airborne, liquid -- then it would be subject to Part 50 Appendix I, which regulates the radioactivity in the effluent as an operation or a planned release.

If it were not but rather was an unexpected leakage through a building into the ground or something like that, then it would seem to me that perhaps this becomes subject to the timeliness rule under Part 20 Subpart E which would then in effect begin to subject the question of this radioactive material in the ground subject to perhaps decommission and timeliness rule.

And then of course the next question is, was it found inside the restricted area or out in the public area beyond the - in the publicly accessible area? That is the way it would seem to me.

But then in either case it seems to me to be subject to probably one of those two regulations.

Chip Cameron: Okay. Thanks, Henry and Don, you want to say something on that? And can you tell us if this is going to be something that would be going into the interagency debate on what the country's position, i.e. U.S. position is going to be on the BSS just so we can see if we're connecting the dots here or whether there's no dots to be connected?

Don Cool: Yes, thank you Chip. That's actually exactly what I wanted to do.

Because there are a lot of the details of the event around some of the findings of tritium at various nuclear power plants which are really beyond the scope of these discussions here. And there are ongoing investigations to try and find the causes, sources, do corrective actions and otherwise which we don't have the right knowledge to hold a really informed discussion on here.

But what I take away from this is that the interagency needs to look at - carefully at the question of whether there are the provisions in the Basic

Safety Standards have a mechanism for clearly providing the right kind of assessment before an activity is licensed and the right kind of monitoring and inspections - to cause the right kind of inspections and monitoring as activities are being conducted in a situation like this where it may not be on the apriory identified list of effluent pathways but which as a result of activities a release may have - may in fact occur at some point in time.

In order to make sure as a matter of our comments whether or not a comment needs to be made that this is not properly dealt with. And if it's not properly dealt with to perhaps identify a mechanism that would help make sure that it was dealt with.

And then we can reflect back as to whether there is something within the U.S. regulatory structure that's doing it. We can suggest to them or otherwise.

So I take that as something that the interagency should look at in developing the comments is to ask those questions and do that cross check.

Chip Cameron: Great. That's a good connection. Thank you (Cindy) for bringing that up.

Operator, can we see if Lynn Ehrle or Diane D'Arrigo have anything that they want to add to the discussion in tritium? And I think then we're going to go - or anything else in Section 3 and then we'll go to Section 4.

Coordinator: Yes. Diane could you press star 1 again on our touch tone phone please? She took herself out of the queue.

Chip Cameron: Okay. And is Lynn - does Lynn Ehrle want to say anything on this issue?

Coordinator: That's star 1 on your touch tone phone. One moment sir.

Chip Cameron: All right, thank you.

Coordinator: Go ahead, Lynn.

Lynn Howard Ehrle: Thank you. Are we still discussing the issues - other issues related not just to tritium but to this Section 1 on standards generally? Is that - has that been - I mean, because you're stating we're now going to go to Section 4 and of course there's Section 2 and 3 that have some specifics in it as well.

But I'm - in relation to the tritium issue, I've been studying radiation health effects at low dose for over 40 years. And in my readings I was amazed to find that in Canada they justified releases of tritium into the Ottawa River as de minimis and then went on to explain that it dissipates in the water.

And it was an amazing kind of a revelation to me except it supports the general notion that has been promulgated that the solution to pollution is dilution. Well, follow that line of reasoning and see where it gets you.

And so here we have releases that apparently from the prior discussion were unplanned, because they didn't know that tritium would be released from the normal process in the reactor. There may be other releases such as xenon and krypton that are released that cannot be contained.

And then this leads to a discussion of what was found in the (Kick) study in Germany where they found elevated levels of childhood leukemia around all reactors and they could not of course identify any confounding factors because there weren't any.

The same thing happened at Chernobyl. All the releases related in for instance low birth weight and related in the radiological problems, radiation sickness and other issues that were hidden by the government and were denied that there were any problem because these releases were de minimum.

They were too low to have any health risk. Well this is absurd on its base, particularly in light of the no safe dose issue that was dealt with by BEIR 7.

So in that sense I don't know what you do with this because obviously if there's some things that come out in the reactor that cause in the case of the German study elevated levels of childhood leukemia, and then there's a cover up of that because we've had commentaries from our international oversight board including my own that have been refused publication in environmental health perspectives and in science. And I was a AAA member.

And they're denying publication of clarifying statements and commentaries. This is all across the board.

And that's what we're running into. So here we have this issue and it relates to all of these safety principles as well in Section 1.

And it relates to the international - the ICRP standards. And I'm - Dr. Cool you mentioned that you wanted me to clarify the issue relative to the conflicts of interest and the issue with the document, the 2007 document.

Is that germane now or do you want that later?

Chip Cameron: Why don't you address it now?

Lynn Howard Ehrle: Okay. It does relate to this issue because first of all ICRP has never acknowledged research on internal dose -- that which we eat in our food and breathe in the air. And these alpha and beta particles are much more deleterious than external dose by which the ICRP standards are based and which IAEA accepts without question. Because that's the foundation for this document.

And so here we have a standard based upon the A-bomb releases, a single external dose where they never acknowledged - they didn't even acknowledge prior exposure from x-ray to these victims. They just took the statistics from the dose from the - the gamma dose from the bomb.

And so there were other confounding factors that were eliminated from the research, the subsequent research that gave rise to the BEIR statements. And so these principles are difficult to square with ICRP's denial of internal dose.

They only based their model upon external. And by the way there's - they have the book, I'm sure. There's an excellent critique of the ICRP and its proposals and its modeling in the European Committee on Radiation Risk document, Health Effects of Ionizing Radiation Exposure at Low Doses for Radiation Protection Purposes, Regulators' Edition, Brussels 2003.

I'm looking at the document now. It's an excellent summation if anybody cares to go online and look up European - ECRR, European Committee on Radiation Risk. I'm sure they would send you a copy and at minimal cost to get the benefit of what 46 people that are on this committee have worked on in this document.

And it's very enlightening to go through that. But that's something that the ICRP is unwilling to do.

And of course the IAEA has its own statute which of course is designed to support atomic energy. And that's right in the - in Statute Part 2 of its statute.

And these requirements put it in conflict of interest with the NRC and the documents of ICRP even that say they want to protect the public health and safety. Well, you can see the conflict there.

That is an ethical issue and it's an issue that affects peoples' health and safety. And it goes right to the very heart of what is being caused by radiation at low dose.

Namely, non-cancer diseases where there may be single strand breaks in the DNA. Or in the case of double strand breaks which by the way are admitted in UNSCEAR 2000.

In fact UNSCEAR 2000 even covers up the Chernobyl accident and denies it. And I'm looking at the quote right now that says that, these reports, critics say that it's based on psycho-social causes, the major problem with health risk.

Meaning radiophobia, which those of us who are concerned about radiation they say well, we have an undue fear of radiation. Well, I don't have an undue fear.

I've been reading this stuff for over 40 years. And it certainly is not an undue fear because the science I believe is all on my side.

So this is another factor in this Section 1 that relates to the standards. And there are other books that have been published by the European Committee.

There's one called "Chernobyl 20 Years On." And they published this book on the health effects of the Chernobyl accident in 2006.

So here are documents that are available but they're denied. They won't even translate hundreds of studies by Russian scientists, three of whom are on my International Science Oversight Board.

The World Health Organization, the IAEA, the NCRP, the ICRP, they have these studies. But apparently they won't translate them and if they did they wouldn't distribute them.

Because they show much greater risk than what the Chernobyl Forum came up with in 2005. So I've read all this stuff.

And I'm beginning to get a little tired of seeing these conflicts of interest and these ethical problems because they do go to the very heart of the public health and safety. And it's affecting whole populations, not just individual people.

So here we have this issue dealing with that. So as far as Section 1, I think I've dealt with that.

What I have's comments on Section 2 if you want to get into that when you have time. There are a couple of points there.

Chip Cameron: Okay. Then those comments -- and we get the point...

Lynn Howard Ehrle: Yes.

Chip Cameron: ...here on that.

Man: And we appreciate him putting some of these materials on the record. Because this is being transcribed.

Chip Cameron: Yes.

Man: So we have the information available. And I suspect that the interagency will want some of the legal folks to also take a look at part of this as we continue to move forward.

Chip Cameron: Okay. And let's hear from Lynn on Section 2.

Man: Right. Because the general requirements cross cut all sections. So it would be good if there are any observations on that to take care of that now.

Chip Cameron: Okay. So we'll do that and then I want to go to Rob Lewis for some comments relative to Section 3. Lynn, why don't you go ahead and tell us about your Section 2 concerns?

Coordinator: Is Lynn on the phone, sir?

Chip Cameron: Is - can we get Lynn back on to talk about Section 2?

Coordinator: Press star 1 on your touch tone phone, Lynn. One moment. Go ahead, Lynn.

Lynn Howard Ehrle: On Section 216. The government shall ensure that the regulatory body is effectively independent in protection and safety related decisions of persons and organizations using or otherwise promoting the use of radiation and radioactive material so that it is free from any undue pressure from interested parties and any conflict of interest.

Now in the NRC's outline of its 15 member advisory committee on reactor safeguards, and I assume that committee has to deal with this document because of that primary concern, it is composed -- of these 15 members, 12 are engineers. And 10 are also - either work for nuclear industry or government agencies.

This is a violation of the Federal Advisory Committee Act that requires advisory boards to "be fairly balanced and will not be inappropriately influenced by the appointing authority or by any special interest." It is my contention and it's rather obvious that this is a stacked deck.

It's in complete and flagrant violation of FACA, which sets these regulations not just for NRC's advisory committee but for all agency committees. So it would seem to me that the NRC at least has to take cognizance of this.

And now since it's in the document by IAEA it would seem to me that they must respond to this in kind.

And then going on to 2.31, the document indicates provision of information and consultation with parties affected by its decisions and as appropriate, the public and other interested parties. I've been involved in similar discussions with other agencies, and in the comments sections, and it's my conclusion that this is really somewhat of a ruse to delay or not involve non-governmental organizations in the process itself.

And we find ourselves in this unenviable position of making comments that may or may not be taken seriously because we're not sitting at the table with people who promulgate the standards. The same is true at ICRP and NCRP.

It's - those organizations were set up by self-appointed medical physicists. And of course I go way back to look at the history.

And that's how they were formed. And there's no way they're going to put on non-governmental public interest persons on those committees that are set up.

So what we have is a revolving door, a closed loop where we can't get in. All we can do is make our concerns public in a comments section such as you're giving me an opportunity now.

But I would submit that you have to go beyond this and go to other issues that relate to the structure. Because this has to do with the very heart of how we deal with these critical life threatening issues.

And then going on with - well, this is in the third section so I won't - you're going to deal with that later. But it would seem to me that all of these advisory boards should make slots possible for representatives from non-governmental public interest organizations.

It calls for consultation which implies collaboration. And since they affect entire populations...

Chip Cameron: Okay, well thank you Lynn. We're...

Lynn Howard Ehrle: Yes.

Chip Cameron: And we're on Section 3 now also.

Lynn Howard Ehrle: Okay.

Chip Cameron: And Don Cool wants to say something relative to your remarks, your comments on Section 2. And we're going to come back to you for something that you have on Section 3 perhaps and then we're going to go to Rob Lewis and then I think we have to move to Section 4. Don?

Don Cool: Two things very quickly.

First just to note that it's probably appropriate for us to provide this piece of the transcript to our inspector general since a great deal of these comments were not related to the IAEA document that's the subject of today's meeting but rather relate to the conduct of activities of the federal agency. So I think we will do that.

And then secondly to actually reflect back a question and to see if my understanding is correct, because in quoting the IAEA standard I take it that you believe that the statement in the IAEA standard is appropriate. So I'm trying to make sure whether or not you've identified an issue which should be commented on on the IAEA standard or whether as a result of looking at the IAEA standard you have raised issues associated with U.S. agency conduct.

Chip Cameron: And Lynn do you understand what Don is asking you?

Coordinator: One second sir. Lynn, go ahead. We have you on the line.

Lynn Howard Ehrle: Hello?

Chip Cameron: Yes, we hear you, Lynn.

Lynn Howard Ehrle: Okay, good. No, to clarify I think that's - what I was quoting was from the draft and it relates specifically to the draft document.

Now the other issue of course does relate to the federal issue and to the NRC. No question about it.

But it flows from the document itself that you're dealing with in Part 1 and Part 2. These issues are specifically spelled out in the document and have to be dealt with by the NRC, because that's what your remit is in this particular instance.

So it would seem...

Chip Cameron: And I...

Lynn Howard Ehrle: ...to me that that's where - that's what I'm coming down on here are these specific provisions.

Chip Cameron: Okay. And I think you affirmed what Don said, that it's appropriate to have that statement in the Basic Safety Standards. And he also said that there would be a referral of your concern for the NRC.

So I think that that is clear and perhaps you could give us your Section 3 comments and then we're going to move on.

Lynn Howard Ehrle: That would be fine. The relative - the specific issue relates to 3.149 Part D.

The patient has been informed as appropriate of the potential benefit of the radiological procedure as well as the radiation risks. And it mentions prior to that, it mentions the Helsinki Accords.

Well, informed consent is mandated under the Nuremburg Code and Helsinki Accords. But it is not provided in radiological procedures.

Partly because technicians are not trained nor do medical physicists and radiologists instruct them in the necessity for this kind of informed consent. They have up here, and in fact in the paper that we published that demonstrated thousands of future deaths coming from pediatric CT scans, it was turned down by eight journals before number nine published it.

And one of those peer reviewers said that if the public was - if this document were to become public it might create too much public hysteria. Well, that's the fear these radiologists have, is that if you tell the people the truth and if you provide real informed consent as this document calls for then this shows the difficulty of bringing this into fruition.

And obviously I think the IAEA is out of its element dealing with medicinal areas. Because these deal with x-ray, again it goes to the very heart of the mission statement of IAEA.

And I don't see how or why they got into this here. But since they've opened it up, then I feel that it's our responsibility to at least note that there's a serious problem with this document at that point.

And this informed consent issue is a burning issue right now. It's been raised in journal articles, most recently in the Archives of Internal Medicine for editor Rita Redberg indicates that there may be a problem where the risk actually is greater than the benefit.

And she put that in her editorial (unintelligible) see it. It's the first time it's ever been raised in that way.

But that's - that issue is certainly critical in this document and has to be dealt with by the IAEA in a way that it can be implemented, which I don't think it can.

Going down to 3.174 it talks about any radioactive procedure that (unintelligible) fetus. It is my feeling that it's (unintelligible) any scientist that any exposure of radiation to the fetus should be avoided.

And any exposure is significant. In fact, it's pretty well (unintelligible) by a geneticist that in utero exposures are much greater risk than those exposures after birth.

And so you have a problem there. And there's very little research on fetal exposures.

It dates back to Alice Stewart's work that should have won her the Nobel in '57 and '58 where she found that a single x-ray to the fetus would cause a child to get cancer or leukemia before age 10, a 40% increase in these particular diseases. And so that was another issue in this document that should be dealt with by IAEA.

On 3.177 the section is, take practical measures to minimize the likelihood of unintended or accidental medical exposures arising from design flaws and operational failures of medical and radiological equipment. Again this points out how obsolete that 2007 paper was by ICRP and now it's being used by IAEA.

Because in this statement it ignores what just happened in the past month, where the New York Times has publicized the terrible damage being done to

individuals by overexposure from x-ray machinery and CT scans unbeknownst to the operator. Because there was very little oversight either by the institution or by regulatory agencies who are charged with monitoring this equipment.

And of course there are also government cover ups that date clear back to Hiroshima. I might point out to that Hiroshima as in Chernobyl, that there were issues - statements issued by the government, two doctors not to report radiation induced illnesses.

That went on for over three years at Chernobyl.

Chip Cameron: And Lynn are these all in the written comments that you gave us?

Lynn Howard Ehrle: Just briefly. I will be giving further comments at (unintelligible) on these. And in fact I'm revising the document right now and you'll get a copy of this and trust you will distribute it to all the members that are in the audience as well as your staff.

Chip Cameron: Okay, well that would be very helpful. Do you have any - do you have a last point on...

Lynn Howard Ehrle: Yes, the other one was...

Chip Cameron: ...Section 3?

Lynn Howard Ehrle: Yes, the last one was 3.183 which they say that the IAEA document calls for making available as required the following records -- in diagnostic radiology necessary information to allow retrospective doses of it including the number of exposures and the duration of fluoroscopic contamination. I

can't get the information for example from radiological labs that I've checked with.

And we go to Mayo Clinic, I am familiar with how they operate there. But they keep no record for example of additional mammograms that may be retaken.

And of course you multiply the dose which is .04 millisievert, you multiply the dose by the number of scans that they have to use in retakes. Some women get two or three retakes because they can't read them.

But there's no way that they keep a record. So you would think that the labs and radiologists, medical physicists would certainly be concerned about this since radiation shows as cumulative.

But there is no record kept to my knowledge, and I've asked many of the labs for this information. They just say that they don't have it.

So they're not keeping proper records. And here again is a standard that IAEA is familiar with.

And obviously they must have put this in here for a reason. But there doesn't seem to be the ability to carry it out.

And they also do not account for the fact that protracted exposures over time at low dose are now found to have a greater effect than an acute dose of the same exposure given at one time in one examination. So those are the other issues relative to Part 3.

Chip Cameron: Okay. Thank you. Thank you very much, Lynn. And we're going to go to Rob Lewis here in Rockville for another comment on Section 3. Rob?

Robert Lewis: Just to wrap up Section 3. Well, first those are some very thought provoking comments. And we'll look forward to the written version of those.

And I think we take those as constructively as not so much critical of the - of what's written in the current BSS draft but recognizing the difficulties of implementation of many of these issues at a national level.

We did get one written comment - is the - from the American College of Radiology. Is anybody from the ACR in the audience?

I say - I believe they went downtown to a Congressional hearing today. And they gave us this.

And so since the comment was on Chapter 3 I thought I would make mention of it for the record. The ACR submitted a written comment related to Section 3.149, 3.155, 3.156 and 3.158, the same comment on all those sections basically that the current text which refers to the referring medical practitioner they would like to replace with language, "the referring medical practitioner in consultation with the radiological medical practitioner" when appropriate.

So we will take that comment into consideration. The basis of the comment is that the referring practitioner isn't always the same person as the radiological practitioner.

And I think that that is true in the American medical system. So another implementation issue of how the - what's written in here may not be reflective of the domestic medical practices.

Chip Cameron: Okay. Thanks for putting that on the record, Rob.

We're going to take a short break here. Do you want to just do a stretch break or - let's just take a stand up, stretch, whatever break here and come back in about five minutes.

And then we're going to go to Section 4. And we're not going to lose track that we need to discuss Schedule 1 in terms of rationale. Thank you.

Woman: Okay, we're going to get started again everyone.

Man: (Unintelligible) Let's get started. We can take this back up in a little bit.

Woman: We're going to start again. We heard a little bit on emergency responses and so we're going to open it up for questions to anyone.

Audience have a question or comment on Section 4? Okay, operator we're going to go back to the phone lines. Is there anyone in the queue who wants to make a comment or have a question?

Coordinator: Once again to ask a question press star 1. Lynn, go ahead.

Lynn Howard Ehrle: The Section 4.7, reduce the risk of the (unintelligible) effects to the public and timely implementation is another phrase there that's used in response to an emergency. Is it my understanding, and perhaps you can clarify this Dr. Cool, is the zone of evacuation still a 10-mile radius?

Don Cool: I believe that is the case. There are actually a number of criteria that relate to when you would take certain actions at certain distances.

In the U.S. system for reactors and emergency preparedness there are a set of criteria and a set of things which I believe correspond to the triggers in order to take prompt actions in order to fulfill the statement.

So I believe that's the case. And I would ask back to you if there is a particular issue that you would like to raise around the wording of the IAEA standard that we need to consider in preparing some comments?

Lynn Howard Ehrle: Yes. In relation to the timely implementation and its response to the emergency, it would seem to me that based upon what happened at Three Mile Island -- and I had all the reports from the government that are a whole big stack of them -- the response did not really go to the heart of the problems downwind beyond any 10-mile limit.

And I think that there's also a problem here that might be addressed relative to the need for planning by relevant governmental agencies surrounding nuclear power plants. Because this certainly may come into play in the future.

And an evacuation process would - I think would be very difficult in some locations because of the high density of population. So I - that is not mentioned in the document.

I also wanted to ask, are you going to ask for final questions and comments later?

Chip Cameron: Yes, we will be.

Woman: Yes.

Chip Cameron: And...

Lynn Howard Ehrle: Because I just wanted to make one brief comment because I don't have any further comments on the other document - the parts of the document. So I could wrap mine up very quickly.

Woman: Okay. We are going to ask at the end if there are any final questions or comments. So if you want to hold it to there we'll go back to the phone lines and see if there's anyone else for a comment or a question on this particular section.

Operator, do we have anyone else?

Coordinator: There's no other questions at this time.

Woman: Okay. Are there any more questions in the audience?

Then we're going to move onto Section 5. (unintelligible) exposure.

Does anyone have any comment or question on Section 5 in the audience? Okay. Please introduce yourself.

Mike Boyd: Yes, Mike Boyd with EPA. And I want to address this to Trevor based on the slides you showed this morning about Section 4 and 5.

And in the emergency exposure situation we have the reference residual dose level given as 20 to 100 millisieverts. But then in Section 5 it's very interesting, we say that it - once a nuclear or radiological emergency, after the emergency has been declared ended it then becomes an existing exposure situation.

And the residual dose limits there are one to 20 millisieverts. And I think there's been a lot of confusion particularly among the lay public as well as some of us in the government about, you know, what residual dose means in the context of an emergency response.

And some people would say that, you know, 20 to 100 millisieverts would be the, you know, they interpret that as that being the appropriate, you know, residual dose level in all phases post-emergency. And I think it would be - all I'm advocating for is a very clear statement in the BSS that once the emergency has been declared ended that the residual dose levels could in fact be quite lower, so.

Woman: Thank you, Mike for your comment. Trevor would you like to comment on that?

Trevor Boal: In establishing these levels though, I think we've had the advice of ICRP and their recommendations. And their recommendations for the residual doses was 20 to 100.

The definition of residual dose is the dose expected to be received after protective (unintelligible) have been implemented. So it's - and then - so during the emergency phase the difference between your protective dose and the averted dose.

When you get to the existing exposures stage we're then talking about residual (unintelligible) the reference level being established somewhere between one and 20. And it's up to the member state to decide what level they would decide to establish.

And the BSS would just - the recommendation is it should be between one and 20. And it's rather hard - well, that's the level set and I think it's in Paragraph 5.8.

If you go then to the later paragraphs, if you're looking at commodities it's recommended at one for radon. So there it was set at about 300 becquerels per meter cubed which is a level somewhere around 10 millisieverts, I think the footnote says.

So they're in the range of - yes, it's Footnote 37, the 300 becquerel meter cubed would correspond to an annual effective dose of around 10 millisieverts. So we're setting reference levels somewhere between one and 20, but they are varying from situation to situation.

And that reference level's 300 - of 300 becquerel meter cubed is a maximum level you could set for radon. And a state may choose to use at a lower reference level for radon.

Mike Boyd: I'm really saying that I like what's in the BSS and I wanted to sort of reinforce that there has been a misperception that, you know, a level as high as 100 millisieverts per annum would be considered acceptable for 30, 50, 70 years of exposure which I think all of us agree is not the case. But after an emergency has been declared over that lower limits would then be appropriate.

And that's what the BSS says. I just wanted to sort of put a nail in the coffin to the misperception that those higher numbers would be appropriate for long-term exposures.

And I think the ICRP was a little ambiguous. And I'm hoping that the revisions to ICRP Publication 82 will be, you know, more explicit in that regard. Thanks.

Man: Thank you.

Woman: Do we have any more questions or comments? We're going to let…

((Crosstalk))

Man: Questions from the phone.

Woman: On the phone line, operator do we have any questions or comments for Section 5, existing exposures?

Coordinator: No questions on the phone.

Woman: We're going to go back to (Amanda)'s question from DOE, and she was talking about Schedule 1 and the rationale behind that. So let's go back to that.

I'll give the mic to you (Amanda).

(Amanda): If you go to Page 111, there's a note here and it gets a little bit at what - where our concern originated from. In the first draft of this I recall there being a note that there were people who wanted to take out or delete the exemption column and replace it just with the bulk quantities.

And if you do that it does change some of those numbers. And then in another iteration of the draft it seemed like the concern was addressed, but when you

tried to match up numbers there were still some radionuclides where we were using bulk quantities for exemption when they were different.

And in reading the note further there's a further concern because it basically here -- I think what I'm reading is there's still a lot of work to be done on the tables, on Tables 1 and 2 in that, you know, for these 800 new radionuclides -- or not new but of the 800, you know, you included some new ones. But we used the European Basic Safety Standards.

And so it seems like it's - those are now being inserted on the BSS. And, you know, we've got concerns about how this will evolve and what went into that, and maybe you can speak a little more on that.

Woman: (Amanda). Trevor would you like to comment? Okay.

Trevor Boal: The criteria for exemption is set out in Paragraph 5.102. And I think they're essentially unchanged from the current BSS.

And in the current BSS in Table 01 we have a list of around 300 radionuclides which were developed and published in a European Union document, the list of references (RP radius protection) 65. That's reference number 20.

The numbers in the current BSS for moderate quantities of material are derived from that document reference number 20 used in the criteria which are here presented in the table. The same criteria - or the criterias were taken from that European document as well.

Now since that European document was published there were an additional 100 or so new radionuclides which there was further modeling done which were then included in the transport regulations. And the transport community

there's, they may have difference scenarios decided they would adopt the values from the BSS even if the level was slightly different from their own modeling just to have one set of numbers rather than having two sets of numbers.

And so there was a uniformity between all the - the same numbers appear - sorry, the transport regs had a larger set of radionuclides than the BSS. But the criteria for deriving those numbers and the scenarios used for deriving those numbers for the extra radionuclides were the same.

There was a slight difference in the fact that the extra set of radionuclides, there may have been a slight update in the ICRP dose conversion coefficients. But since the transport regs and the papers were posted in the mid-1990s the group in the European community developed those first two sets of numbers, then produced the third paper expanding it up to 800 radionuclides.

But they've used the same dose criteria, they've used the same scenarios in deriving the numbers for the extra radionuclides. So essentially they've all been derived using the same - the dose criteria set out in the exemption numbers here, the same scenarios.

But there's a slight difference in the dose conversion factors. Because again you use the most recent ICRP factors.

And I can give you a copy of that paper if you want a copy of it. But so they're still based on 10 microsieverts per year, they're still based on the list of 20 scenarios which were in that original paper, RP65.

But people have asked that extra radionuclides be added in. They didn't ask for all 800, but since people were asking for extra ones we thought we'd put away 800 now and see what the (unintelligible).

The first draft 1.8 you referred to earlier did have Tables 01 and 02 in the same table. There was an extra column -- I think Column 3 was - took values from 01 and Column 4 in the first draft was the values from 02.

And we were asked by (Rusk) in some of the feedback we got on Draft 1.0 to separate the numbers from moderate quantities from the bulk quantities. And so we were asked to do them in two separate tables to avoid any confusion.

And initially we also got some feedback from some member states wanting to abolish the numbers for moderate quantities, to just work with the quantities - the bulk - the numbers for bulk quantities. But at its present state other member states didn't know we wished to continue having two sets of numbers for both moderate quantities and bulk quantities in the BSS.

The numbers for the bulk quantities are a smaller set of radionuclides. At present we've got no plans to increase that number in the modeling.

I'm not quite sure whether it's needed or whether the risk included in 02 is sufficient for the purposes of - that we used. Does that (unintelligible)?

(Amanda): That does shed some light on what - where that come from and answers some of the question. But a remaining question, because I see after the BSS is published Schedule 1 may need to be updated through an addendum.

And again it's going to use the European Basic Safety Standards directive. So who - where do you - how do you see that evolving?

Will it, as those - if it is updated in an addendum, who will be involved in that? And will it be something where, you know, it may be that the European Basic Safety Standards directive, you know, it's based on that, but is - will that also be open to review by other member states?

Trevor Boal: No, it will not be reviewed - updated as part of the European Union. It will be up - one of the outcomes from the latest ICRP recommendations was that the - there were new weighting factors, new conversion factors which are currently being developed based on the weighting factors in the new ICRP publication, (unintelligible) weighting factors and weighting factors for the different types of radiation.

When ICRP publishes them I know under the transport community are keen to reevaluate some of these numbers. Just if they're checked it does not mean that we will automatically take them up into a new - into an addendum.

There would be consultations with (Rusk, Transmask and Norskuler). Certainly (Rusk) and (Transk) on any evaluation and whether there is a need to change the numbers would have to be decided by the committees.

And that would involve also input then from the member states. It would not just be an automatic, the agency will do this.

It would have to be an agreement that would have to be - show the output from these calculations and say, is this sufficient to make a change or are we happy to keep the numbers but the changes would only be very, very small or minor. I think the numbers in these tables have been rounded to the nearest factor of 10.

So for any - they're either - if there's less than 0.3 (unintelligible) down or up at present 0.3 is rounded up. So there's a rounding going in these documents anyway.

So it's - we would not expect then to be much - a great change.

Woman: Do you want to comment, Don?

Don Cool: No, I'm cool. Let me just make the observation, in the United States we legally have to go through the formal notice and comment review process for changes to the numeric numbers.

And so part of what I think (Amanda)'s identifying and I think probably which we in the NRC would also be looking at was to have confidence that there would be a systematic opportunity to review things like some of these numeric values when they came up. And so we may well identify, put a marker in the comments as part of the process issues in addition to potential QA checks on the numeric values that are in here at the moment to make sure that there are the opportunities to do the same thing as dose coefficients are changed and otherwise so that we can all reach agreement.

Because legally here we will have to go through that process. And in fact part of the reason in the discussions that the agencies are having, for example what the NRC is looking at in terms of possible update of our regulations -- part of our timing is driven by the fact that we need to have those values and be able to publish them and go through public comment and review before putting them in place.

So this ends up being a fairly sensitive process issue for us as well as the QA check to validate the numeric values versus what's in place today.

Trevor Boal: I think the agency also is (unintelligible) re-consult through our committees. RSG 1.7, the numbers which have been brought into the BSS, and that took a long time to develop.

And again it went to member states for comment. I'm not sure whether - what process we'd have to follow for an addendum.

But again it may be a - whether an addendum needs member state consultation. It possibly will.

Or is it something I'd have to follow-up on? So again that document went - and those new numbers either went to the Board of Governors even though a safety guide is normally not reviewed by the Board of Governors, that one was sent through the Board of Governors and - who advised that they should be taken into account in the next revision of the BSS because it was considered such an important.

I'm not quite - we'd have to clarify which of - it would involve member state consultation.

Woman: Okay. Do we have any additional questions or comments? Audience?

Back to the phone line. Do we have any - do you want to (unintelligible)?

Trevor Boal: (Unintelligible)

Coordinator: To ask a question on the phone press star 1. At this time there are no questions.

(Cindy Holkers): This is (Cindy Holkers) again from (Deon Nuclear). Lynn Ehrle had referenced the (Kick) study which was a study done in Germany of childhood leukemias five kilometers from operating nuclear reactors.

The data was from 1980 to 2003 I believe. I think that it would be an interesting comparison to look at the data in that study versus what the ICRP recommendations were and the IAEA recommendations were for an effective dose in millisieverts to the public at the time.

Because apparently something, and the dose levels may have been changed in 1990 -- I'm not sure, I'll have to look at that. But at some point the standards were obviously not protective enough for children in Germany at that time.

And so it would be an interesting thing to follow that up. But I have something more pointed to say on the Schedule 1 issue.

As far as our organization is concerned, we don't think that any of these materials should be exempted out of hand. Because for childhood leukemia, and I want to get this language correct, ionizing radiation is the only established environmental risk factor for childhood leukemia. That's number one.

We know, and part of the reason I'm so interested in the tritium issue is that the low energy beta that comes from tritium is more damaging than x or gamma rays. And it causes not only DNA double strand breaks but complex DNA double strand breaks.

And that's the low energy beta. So you're talking about from 5.7 keV I believe it is to 18.3 if memory serves -- that could be wrong, but it's five to 18 approximately.

Further studies are also showing that incorporated radionuclides -- radionuclides taken into a system are four to five times more damaging in utero than exposure from external radiation such as your x-rays from medical procedures. So we're dealing here with something that's quite complex with something that can affect children who are developing or either in the womb or outside, just, you know, born from ages - the (Kick) study was ages I believe five and under that showed a greater than two times leukemia increase five kilometers from the reactors.

And, you know, we're also looking at not just individual dose which is important in some respects, but population dose as well. Because a lot of the work that I've looked at for genetics questions not only just individual changes and mutations but population wide mutations which can actually be over time much more damaging than anything that registers on the individual level.

So it is for these reasons and sort of, we're not absolutely sure what we're exposing ourselves to so to speak, that we really need to take a very precautious approach when dealing with these materials. And I don't think that any of them should be exempted.

Because 10, 20, 30 years down the road I'm not sure we're not going to have some horrible surprises.

Woman: Thank you (Cindy). Don, would you like to comment?

Don Cool: Yes, I want to go back briefly to the first of your two points. And I'm going to look at Mike Boyd to make sure that - because I'm actually going to speak for EPA at the moment -- or at least tee up the item for you.

Because in fact in the United States EPA has been looking at a reexamination of their radiation risk parameters in estimation and have gone through a process which in fact amongst other things has been specifically looking at the risk of some of the low energy x-ray and beta and a possible change to that RBE. So separate from the consideration of the IAEA, just to note in the record here that there is in fact in the U.S. an ongoing examination of that exact issue.

So I appreciate you just noting that. Thank you.

Mike, did I get it right?

Mike Boyd: (Unintelligible).

Man: Mic up.

Mike Boyd: Thank you. Yes, we had asked our Science Advisory Board about the RBE issue for low energy photons and beta emitters. And they have advised us to do a peer review examination.

And once the peer review process is complete then to move forward with whatever changes to the RBE were warranted then. But that's an ongoing process.

And I don't want to presuppose what the peer review process is going to conclude. But certainly the data is out there that shows that, as I think it's been known for a long time, that the low energy photons and beta emitters might have a higher than unitary RBE.

Woman: Any more comments? All right, then our panel is going to do a final wrap up.

Chip Cameron: I think now what we should do is go back to any other general issues. Because I know we had at least one individual on the phones who said they had a final...

Woman: Right.

Chip Cameron: ...point that they wished to raise. And I think now is probably appropriate.

Because I think we've gone through the basic tags and see if there's any final questions or cross-cutting issues that we haven't already managed to touch upon.

Woman: Are there any final questions from the audience and do we have any general comments? All right, then we're going to go to the phone line.

Operator, are there any individuals on the line who want to make general comments?

Coordinator: Yes. Lynn Ehrle, go ahead.

Lynn Howard Ehrle: I wish to express my appreciation to the NRC for establishing this forum. I think it's been instructive.

And it has given us an opportunity to present issues that I think heretofore have not been addressed adequately. And I certainly appreciate this opportunity.

For those in the audience who may have a copy of this draft -- and I don't know - Mr. Cameron, did the people get copies of my draft?

Woman: Yes, they did Mr. Ehrle.

Lynn Howard Ehrle: Okay. In that regard I must point out in my haste to finish the draft yesterday and on short notice that I neglected to put my contact information in there. I would appreciate any critical commentaries and critique of what - of my remarks and anything that was printed in the document.

I always look for issues that I can engage in and can improve on my own particular evidence that I have. And if there are those then my e-mail is my last name, E-H-R-L-E with bird after it, because you might say Ehrle. So it's Ehrlebird@organicconsumers, all one word, .org.

And I think I would close with one issue that I came upon in my readings that I'd leave you with. In March 1988 the government of (Borla), Russia decided to release information on radiation contamination against the wishes of the Central Soviet government.

This immediately caused a problem. The government of (Borla), Russia establishes in fact that in the radiation doses of 250 millisievert or more during the coming years, if these persons do not move it is following this that the Soviet Minister of Health decides to raise the maximum permissible dose of radiation from 250 to 350 millisieverts.

This is the typical of government response when they find out that these emissions are well beyond any so-called acceptable levels. And of course, there are no acceptable levels.

In fact, I would call your attention to PNAS in 2003, November issue in which a team of 15 cancer experts throughout the world came up with a conclusion

that, and I'll read it to you, "Good epidemiological evidence for increased cancer risk at a 10 to 50 millisievert acute dose and 50 to 100 millisievert protracted exposure." Many people were surprised by that because they've always said these low doses don't have any effect.

And indeed this document, which really hasn't been given much play either in the media or in medical journals in terms of the ones I've been reading and looking for references. So these kinds of issues demand attention because they do go to the very heart of the public health and safety.

So again I wish to express my appreciation to the NRC for establishing this forum. And would look forward to any further comments from any person where I might be able to sharpen my focus.

And I always appreciate critical commentaries on the statements that I make. I set that up with my students in high school and appreciate any comments that causes me to rethink the conclusions that I've drawn.

With that, I bid you adieu.

Woman: Thank you, Mr. Ehrle. We appreciate your participation.

Does the panel want to make any comments?

Chip Cameron: On behalf of the interagency steering committee on radiation standards, a number of folks here in the room, we do appreciate everyone really taking the opportunity to spend the day with us here. In due are the bit of cold temperatures this morning and provide us a number of very useful things to think about as we work to assemble some comments, some areas that need to be looked at a little bit further.

Some places where I do think there may well be a scope to try and prepare some comments that would go back to the IAEA as part of an ongoing process as we develop our comments. We appreciate everyone's participation.

As I said earlier for - if as you go home or as you sit at home and log off and then you get this, oh, I wish I had done this or that, we would certainly accept some of those bits of information. If you send it to us we will make sure that it is distributed around to the various agency representatives so that it can all be included in our ongoing consideration and development of the U.S. government's comments.

I'll briefly look to my federal guidance subcommittee co-chair, Mr. Boyd to see if he has any closing remarks he might wish to make? Mike is saying no.

Rob?

Robert Lewis: A comment in closing on behalf of the NRC and personally. I just want to thank everyone for participating today.

I know it's a significant investment of your time. And that's a very valuable commodity to us.

I think as many times as Don and I have gone through this document and earlier versions of it, I think it's fair to say that both of us heard things today that we hadn't thought about before. So that's a good thing.

And these open forums are our best tool we have to turn the best product over to IAEA so they can resolve comments. And even though there are some

disagreements today, I think it was pretty clear to me that everyone - well, first of all, thank you everyone for your professionalism.

But even though there was disagreements I think it's very clear that everyone in this room and on the phone had a common goal of ensuring that people are safe from radiation and the environment is safe from radiation. So in that, hopefully we find some common ground in moving forward.

And we will, as Don mentioned earlier and Trevor as well -- all of the comment resolution IAEA has promised will be done public through their Web site. So the same Web site that was in our federal register notice as a board will be updated with the updates and the comment resolutions that the IAEA gets on this document. Thank you.

Woman: Do you have anything to add?

Trevor Boal: I'd just like to thank you for the opportunity to be here and to engage in this meeting, get comments more than that of just my member states. We look forward to getting comments from U.S.A. as part of the member state process.

And as Rob has said, we try to be transparent as possible. All the resolution tables for the comments received during the (unintelligible) committee's Web site now.

And after we deal with member state comments again, the - how each comment was dealt with will be posted on the Web site and whether the text was changed. So - and the - as each draft, the revised draft goes to the committees they're on the committee Web sites and when it goes to the (unintelligible) Web sites.

So each draft that's developed is placed on our Web sites or with our committee members. But they're open to the - they're not just closed - they're not closed to community members, they're open to all the community.

So thank you for inviting me here.

Woman: And with that I think we can adjourn the meeting. Make sure that you signed in and thank you all for participating today. And thank you to the panel.

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