UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

***

RELEASE OF RADIOACTIVE MATERIAL WORKSHOP

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Crowne Plaza Atlanta PowesFerry

6345 Power Ferry Road, N.W.

Atlanta, GA

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The above-entitled workshop commenced, pursuant to notice, at 8:35 a.m.

PARTICIPANTS:

DONALD COOL, NRC

CHIP CAMERON, NRC

MIKE MATEA, ISRI

TONY LEMASTRA, AISI

ED REITLER, Westinghouse

RAY TURNER, David Joseph Company

NORMA ROGERS, Allied Signal

DALE RANDALL, State of Maine

ART PALMER, ATG

PAUL GENOA, NEI

TERRY SIVIK, AISI

GWENDOLYN BOWER, State Department

PARTICIPANTS: [Continued]

ALLEN KIER, NFS

RANDY CLARK, Westinghouse

JOELLE KEY, State of Tennessee

JOHN ETHERIDGE, Entergy

BILL HOUSE, Chem Nuclear Systems

JOHN KARNAK, EPA

PROCEEDINGS

[8:35 a.m.]

DR. COOL: There are three take-home messages here from this presentation. The first one is that NUREG-1640 is not a regulation, it is not a rule that needs to be set out very clearly. For the purposes of comparison, we needed to make an assumption in Chapter 2 so that we could compare it with the European Union's standard and so that we could compare with 1.86 and so on.

So that may have confused some people, thinking that we had assumed one millirem, but it was just for a comparison purpose and only that. The alternative has not been chosen or selected or decided upon or anything.

Rather, it's a tool to help decision-makers evaluate the alternatives and what it does is it relates the radioactivity on or in the material or a piece of equipment to a radiation dose.

This is a generally technically sophisticated audience and because we are all, in some aspects or another, laymen in the other person's field, please permit me to take a layman's approach on this.

NUREG-1640 is a tool to answer the question how much radiation could an individual get from cleared items. I told you the answer yesterday. Do you recall? The answer is it depends. What does it depend on? It depends on how the individual comes in contact with the radioactivity, what are his activities. And in that regard, NUREG-1640 examines 79 scenarios or activities, and that's what we talk about.

When we say scenarios, we're talking about how does the individual come in contact with the radioactivity. It also depends on the materials or equipment that the radioactivity is associated with and what we did, we've got a dose to an individual, we ask that question, we go into the next -- we talked about, in there, there's ferrous metals, copper, aluminum, concrete and equipment are analyzed.

Where does the radioactivity go? In metal processing, sometimes the radioactivity is, because of its elemental, its chemical and physical properties, can separate from the metal. So in NUREG-1640, we examined the metal product, the slag, bag house dust, and airborne. I don't know if we have that on this slide. If we don't, I'll sketch it out here.

So we followed it from the metal, again, slag, bag house dust, and airborne.

It also depends on what kind of radioactivity it is. For example, is it heavy uranium, U-238, or light uranium, lighter uranium, U-235, and so we looked at a radionuclide by radionuclide basis on this and, in fact, we looked at -- we analyzed 80 radionuclides.

Now, where did we get those radionuclides? We first examined the manifests of low level waste and looked -- and included the most common radionuclides from the manifests of low level waste.

We also compared our list with that of the EPA and also of the European Union, so that the list of radionuclides is inclusive of basically those three sources.

Lastly, how concentrated is the radioactivity? Now, this is the part that really makes this a tool for a decision-maker, because the concentration -- and I'll abbreviate it -- the concentration is in the NUREG report, reported as a per unit of radioactivity and, also, a per unit of mass or a per unit of area. So let me write that down. Okay. Per unit -- I'll abbreviate radioactivity and then it's also, for example, per gram or pound, or surface area, centimeters squared, you'd convert that to square foot, so on.

So if you have one beckerel of radioactivity associated with one gram of scrap, for example, then we calculated the dose that an individual would receive from a particular scenario.

Okay. As an example, we analyzed what could happen from a piece of scrap if it were cleared. We started at the gate of the facility, we tracked the scrap from transportation to the scrap yard, to a melter, and then we followed the metal, as well as the byproducts, as I mentioned earlier, to the products to processing, through consumer use, and finally to disposal in a landfill.

We took a count of all of the people who would come in contact with that scrap as it progressed through its various reasonable fates and analyzed the potential doses that they would get. We calculated the amount of radiation that those individuals could get on a, as I said, per unit mass, per unit area, based on a unit amount of radioactivity.

The results looked like this. If we calculated or if we plot the amount of dose that an individual could get or the amount of radiation exposure that a person could get and we take into account that some truck drivers may only spend half the time that other truck drivers spend in terms of transportation, there's a distribution for many of these, if not most of these parameters that go into these equations, and taking into account that variability for all of the parameters, then what you get is not as

clean number, but you get a distribution.

So this is the number of times that we would calculate a particular dose. Then, say, the transportation, the person who picks up the scrap from the gate, for example, all of those possibilities may come out to be a distribution of something like this on a per unit basis.

For example, then the consumer products, because of separation of the radionuclides and dilution through the processing and the small amounts, the consumer products may be down here. Slag worker may have a distribution like this, and other, we had 79 scenarios, recall.

And so by plotting or by looking at the distributions or, say, the means of all of these, we can tell which population or which activity, which scenario would result in the highest dose to an individual.

This group is called, in radiation protection, the critical group. The philosophy is if we set our standard so that the critical group is protected to that standard, then all of the other people who come into contact with that radioactivity would be protected to an equal or greater degree. They would get less radiation.

And so with this tool, with these calculations, then we can identify how much radiation could be associated with a piece of scrap, how much radioactivity could be associated with this piece of scrap, and thus protect even the most exposed people to the amount of the regulation, the alternative.

That's what NUREG-1640 does. There is ongoing work to do other calculations. We're interested in not only protecting this critical group, but we're also interested in how much does the entire population get. That work is ongoing. There are contracts ongoing and as questions arise about other kinds of calculations you might be interested in, hopefully we've captured those in ongoing technical analysis.

But in brief, that's what NUREG-1640 is about and that's what it does and that's how it will be used as a tool to assess regulatory alternatives.

MR. TURNER: Ray Turner, David Joseph Company. Mr. Meck, I just had a question about, in your study, what type furnace was used to obtain your data. The reason for asking the question, for example, GTS Duratech has an induction furnace that reacts quite differently from an electric arc furnace or a blast furnace or a cupola or other types of furnaces.

The reason I'm asking that is you're talking about where the different radionuclides migrate to, whether it's in the slag or the bag house dust or stay inherent in the metal. In an induction furnace, for example, element phosphorous will stay in the metal throughout the cast. Well, it comes up, but it reverts back down in tube metal because an induction furnace, such as GTS Duratech, does not slag off like an electric arc.

In an electric arc furnace, the phosphorous floats up into the slag, but then at 2,847 degrees, if that slag is not removed, it reverts back into the steel. I was wondering if that was considered in your study.

MR. MECK: NUREG-1640 covers two kinds of furnaces, the electric arc furnace and the basic oxygen furnace. The reason for that is that at the outset, we had to make some assumptions and the assumption that we agreed on with EPA is that we would model industry as it exists today, the general commerce industry, and it was our understanding that the induction furnace was used for specialty melts, like Duratech uses, and we were looking at the broader, larger scale furnaces.

So we took into account those kinds of things.

MR. TURNER: Ray Turner, David Joseph Company, again. The induction furnace still does use the same types of scrap that an EAF or a BOF uses; maybe not the bail scrap, but as far as the cut scrap is concerned, it does use the same type of scrap.

MR. MECK: Right, right. We did not include the induction furnace, but we were aware of the different physical -- chemical and physical behaviors of the electric arc furnace and the basic oxygen furnace.

MS. ROGERS: Norma Rogers, Allied Signal. The statement here is for materials and equipment and yesterday, some mention was made of soil type or soil materials. I'm assuming that this only addresses metal.

MR. MECK: This addressed ferrous metals, copper, aluminum, concrete, and equipment. We did not include soils in that. That is a separate and ongoing study.

MR. MATEA: Mike Matia, from ISRI. When you looked at it, who -- what were the top two or three of the population in terms of the workers that were most critically exposed and what was

the radionuclides that were of the most concern?

MR. MECK: In general, the truck drivers who were initially carrying the materials away from the cleared -- the licensee, came out high. Sometimes the scrap yard workers came out as a critical group and sometimes it was, say, a slag worker, and it depends again on this partitioning of the radionuclide, depending. So it really depended upon the physical and chemical characteristics of each particular radionuclide.

The natural, the naturally occurring materials tended to go to the slag and it also depends on the pathways. It's a varied answer, so that's why I can't give you a precise about the radionuclides, a precise answer.

MR. LEMASTRA: Bob, Tony LaMostra, AISI. In looking at NUREG-1640, there were some questions of, I guess, essentially, accuracy of the knowledge of the public process.

Is the NRC -- realizing that it came out as a draft, is the NRC going to have it rewritten if we can point out some errors of fact?

MR. MECK: Yes. We're collecting those comments and we will be responsive to those comments. I can mention that we've gotten several comments of the nature that it was thought that the amount of scrap assumed was greater than the total amounts that the industry -- that the nuclear -- that the nuclear industry has.

Apparently, we didn't write it clear enough, that we assumed that there would be some dilution with non-cleared scrap, but the normal scrap, if you can dig into that a little bit, you'll see that there was an assumption that there was some normal scrap mixed in with the cleared scrap. So that would account for some of the mass imbalances that some of the commenters have come back with.

But we'll look into that further to make sure that that's correct.

But let me just talk a little bit about the data and the accuracy and the knowledge of the process. What our contractor did and also what EPA did was to actually interview representatives from the industry and, again, the assumption was to take the practice, as we understood it, that would be realistic for a realistic scenario for cleared material in the US, as industry exists today.

So those are based on, like I say, personal communications. Those are cited and

referenced in the NUREG report.

MR. LEMASTRA: Tony LaMostra, again. I understand how the information was gathered, because I was involved in one of the steel plants where they were visited, at least for the EPA thing. One of the problems, though, that -- it would be the same thing as taking a steel-maker and letting them go see a single nuclear power plant and come away or even one or two boiling water and one or two pressurized water reactors, and coming away with the idea that all reactors operate the same way, all reactors handle waste the same way, all reactors do it the same way.

And one of the obvious problems is that there's a monolith that's assumed for EAFs, or electric arc furnaces, and there's a monolith that's assumed for basic oxygen furnaces that within the industry does not exist.

Differences in product, differences in management philosophies will run furnaces differently, will operate differently, and some of those changes or effects can have a major influence on the partitioning.

MR. MECK: If I could cut to the chase on that and reflect back to an earlier comment. Yes, we are eager to get your comments. Yes, we will respond to those. We'll investigate further as the comments direct us, and I rather glossed over the variation from plant to plant, but wherever that purple diagram went, where we said that we have a distribution to recognize that there are differences in terms of partitioning and there are differences in terms of how plants are operated, we're trying to capture that in terms of changing what the ranges are of possibilities there.

And if there's new information about, well, the range should be this way or that way or should be stretched out this way, we'd be very eager and happy to get that.

We would like it to be -- it would be more helpful to us to have it as some sort of a cited source, so that somebody else could refer back to it. But we'd be happy to do that.

MR. LEMASTRA: Tony LaMostra, again. In light of that, I would recommend that the consultants use terminology that's common to the metal-making industry, because there were terms used in there that are just not common and it makes it difficult for the industry to really review the report and to come up with meaningful comments, if they really can't understand what's being said.

So in that respect, I --

MR. MECK: That's very helpful and I believe that we have your phone number from the roster here.

MS. STINSON: Let me just ask, Bob. Is there a specific comment period and if it has a deadline, has it been extended? I' trying to remember.

MR. MECK: The document is still a draft and the thought was that we would keep that open as a draft through this public workshop period. We have not definitely set a close-down date on receipt of that. So your comments are still welcome and useful.

MS. STINSON: And the comment period for this process has been extended beyond November 15 in the original FRN. It's now December 22 and there will be a new Federal Register notice, I think, extending that officially.

Did you have something, Don?

MR. COOL: Yes. This is Don Cool with NRC. Let me just add a little bit to what Bob Meck was saying and encouraging about trying to get both the right information and the diversity of information available, because we have here a lot of people who have the knowledge and expertise, or your organizations have that knowledge, and let me just say it would be really useful to try and work with you.

And if I can be so bold as to suggest that as you look through the document now and having been in these discussions, to try and provide us that additional information, so that we can do as realistic an assessment as possible and get a better understanding of the variations that you have within the various metal manufacturing processes.

So the more information that you can give us, the better opportunity that we will have to try and put together something which is, in fact, realistic and accurate.

MS. STINSON: Okay. Do we have some more comments and questions? Mike, and then we'll come back.

MR. MATEA: Mike Matia, with ISRI. The most exposed worker, what was his annual exposure?

MR. MECK: Well, that hasn't been set and what NUREG-1640 allows us to do is to say

if it were set at one, this much radioactivity of this nuclide could be associated with each ton of scrap, for example. If it were set at ten, it would be ten times that much radioactivity could be associated with that ton of scrap.

So basically it's what mathematicians call its normalized or its per ton of scrap --

MS. STINSON: For the critical group, you mean.

MR. MECK: Yes, for the critical group.

MR. MATEA: Then let's say for the levels that are -- the clearance levels that are being considered by the European Union, are you able to say, at that level, the most critical group was exposed to X?

MR. MECK: What we did is the European Union used a criterion of one millirem per year to the critical group. We said if our standard were one millirem per year, how would the concentrations compare with those of the European Union, and they are almost invariably lower than the European Union's. We are more restrictive; using 1640, we would be more restrictive than the European Union, in general.

MR. REITLER: Ed Riteler, from Westinghouse. You mentioned that the analyses will be expanded to include soils.

MR. MECK: That's correct.

MR. REITLER: Will you also be including other specialty products, like calcium fluoride?

MR. MECK: We have, under contract, the opportunity to specify other materials, a limited number of other materials. We've already heard that some things like composite material, like roofing material and sludges and resins and other kinds of things like that could be candidates, calcium fluoride could be another one, but it's not specified at this time.

MR. RANDALL: Dale Randall, with the State of Maine. I was wondering, I know that the average member of the critical group is a new methodology. I also understand it's used in other NUREGs and other regulatory settings.

My question is, how much dispersion are you finding in your results for that critical

group?

MR. MECK: In the NUREG, we report the 5th percentile and 95th percentile as well, and the answer is it varies from radionuclide to radionuclide.

And as you might expect, when we have fewer parameters that go into the equation and those parameters are themselves less dispersed or they're better defined, we know what those parameters are, there aren't that many of them, then it's not dispersed very much.

On the other hand, where there is a lot of uncertainty of the parameters that go into the equation, then, of course, the uncertainty of the end result is greater. So you have to kind of go through the radionuclide by radionuclide to get an answer to that. So it varies.

MR. RANDALL: Is there a limit to the amount if dispersion you might accept with the average member in the critical group methodology?

MR. MECK: I think that's something that we have to take into account and make the Commission aware of. If we've got some very uncertain number, the Commission needs to be aware of that and how to deal with that. But that is something that we are certainly concerned about and that's why we calculated it in the way we did, so that we could quantify how much uncertainty there was.

MR. PALMER: Art Palmer, ATG. Bob, I was just curious. In the 1640 analysis, was any work done to run other materials through those matrices, through the exposure pathways?

What I'm saying is if we are able to develop a dose for transportation of scrap steel, was anything done with regard to transportation of refractory or building materials or other things that are already in commerce, so that we can compare those?

MR. MECK: They were not done specifically. What the experience was, and Ray Turner is probably going to cringe at this, but the contractors at the outset thought, well, we'll do steel and then we'll have everything for copper and aluminum. Well, we said you don't have enough information about the processes. The processes were really distinctly different. This is common knowledge to people in the industry.

But at the outset, we didn't have very much information. We were learning as we went and we're continuing to learn, and that's why we're looking forward to some comments from the industry.

But we do have the spreadsheets and we can get into the details of those and on a case by case basis, we do have the capability of making a case by case calculation. But what one has to be careful of when you're making these kinds of adaptations is that the scenario and the processes really reflect reality, what you could reasonably expect.

For example, when we got into the concrete recycling, there were some situations that were so different that we weren't expecting it. So the lesson learned is that when you're looking at a different material, it's worthwhile to research it and find out what reality is and to try to reflect that as best you can in the models and the scenarios. We may end up making a different scenario than we have already on the books.

That's a long way of saying no.

MS. STINSON: Final comment/question. Paul?

MR. GENOA: Paul Genoa, NEI. As we've commented already, Bob, we think that the approach you've taken is a sound approach and the scenarios seem to reflect a good way of getting your hands around what's a complicated issue, and we've supplied comments on some of the concerns we have.

Some of the things we like about the document, though, are some statements right up front that pretty much reflect that in this process of evaluation and looking at the typical member of the public, that their dose factor is essentially zero. That's sort of what you're -- you know, there are a few people who handle the material who would be exposed at some level that's measurable or calculable and even those, we're going to control the worst case to whatever this criteria is, if it's one millirem or ten or 21.

But the real take-home message is the typical member of the public is not really going to get exposed. You're going to be down into the rounding errors so far that I don't know if it's meaningful, which brings a little concern about the collective dose issue. There are recognized radiation protection experts and organizations that really would argue against doing collective doses in sub-fractions of millirem levels and sort of tally them up in a big mathematical exercise that tends to distort the confidence of what we're really saying. So the caution there.

And the final point, I think, is to get to what was just raised, not for the purposes of calculating your doses, but for the purposes of communicating the results to the public. I think it would be

extremely useful to pick one or two key examples.

We just did a truck driver driving scrap steel to your facility and they are going to be a critical component for certain isotopes, like cobalt. We know what the dose is. Let's calculate a brick, a guy who drives bricks every day and see what his exposure is, so just so we can compare a guy who drives bricks for a living, a guy who drives scrap steel, and a guy who drives drywall or paint cans. And you're going to see this huge range in dose.

I bet the guy driving bricks is really getting fried compared to what we're talking about. So I think it would be useful to communicate that to the public.

MR. MECK: I'd like to respond to just one part of that, and that was the concern for the collective dose or the cumulative effects of one alternative versus another. I think what we tend to do, because most of in this room are technically oriented, is to think that this is going to be some law of science or something, but really what this collective dose is is a relative tool to help decision-makers and it doesn't necessarily reflect the radiation exposure at all.

We have to be very careful, as a staff, to keep that principal in mind. We are also following the recommendations of the National Council for Radiation Protection and Measurement and saying that when you're looking at -- when you're analyzing collective dose and you've got large uncertainties, to make sure that you don't group those numbers with very large uncertainties with the ones with smaller uncertainties, but you keep these in perspective.

And all of this, ultimately, for a decision of a regulatory alternative, has -- it boils down to a judgment on the part of the decision-maker and we have to make sure that the information that goes to the decision-maker is portrayed in the right light and that this is a relative tool and not a physical law.

So it's in that light that we're doing that kind of work.

MS. STINSON: Mike, did you have one last one? Then we need to move on. We've inserted an item in here, so we don't want to get too far off.

MR. MATEA: What about a determination of what happens when you melt materials at certain release values, where do the radionuclides concentrate and at what concentration? Because I think that's been the bottom line of controversy of if you do release it and you try to put it into goods, what

goods can be then ultimately released to the public?

Is there an accumulation or should we only channel them to goods that will get to the general public, because the radionuclides concentrate?

MR. MECK: I need some clarification on your question, so don't go too far from a microphone. I can interpret what you said in a couple of ways. One is what we had talked about a little bit earlier with Ray Turner and Tony LaMostra about the processes and the physical chemistry and the separation and concentration in this product or this byproduct of the process. That's one aspect, one way I could interpret it.

The other is perhaps a build-up question, and I'm not sure of which -- if this continued, if clearance continued over a number of years, would there be a build-up. Which or both of those were you asking?

MR. MATEA: Let me put it another way. The concern is if you have something at a release value, don't send it to a conventional steel mill, because it gets melted and then sent to an automotive maker, then the automotive maker doesn't want known radioactivity to be in a side panel of a Ford Taurus, even though it may be extremely, extremely low, because over the life of that car, someone, quote, is going to be radiated.

How do you answer that in terms of sending cleared material into the general stream to be made into consumer products?

MR. MECK: I'm still not tracking well with you, but I will attempt an answer here. In our calculations, we take into account, say, the mean use and life of a car, for example, and calculate out what those doses are. So that if they turn out to be so low that staying on the second floor of a building versus the first floor of a building, the difference in cosmic radiation would be something equivalent. It's just really, really low.

So we have calculated that and this is part of the equation, this is part of the tool that a decision-maker will use, but they're outside of that tool. I mean, that's what a scientist or a technical person can do. They can say here's what will happen. But beyond that, what the Commission's job is is to make some policy decisions and say there are other considerations that have to be folded into the decision

for an alternative or how the rule should be made in the end.

And those factors are actually beyond what the NUREG-1640 or a technical person can do, and so they have to take those other factors into account in other ways.

MS. STINSON: Mike, just one last final clarification, and maybe this is something that actually you two can -- I mean, you're raising an important question that's in everybody's mind, but I don't want to take a whole lot more time.

MR. MATEA: How comfortable are we with the pathways that radionuclides will follow when they are melted?

MR. MECK: Well, that's exactly why we're eager to get comments from people who are more expert than we about what the processes are and did we capture this correctly. We did the best job that we could. We think that it's a pretty good shot at it, and if there are comments, we're eager to look at those comments and make adjustments as necessary.

But how confident are we? I think the goal is to be as confident as our harshest critics require.

MS. STINSON: So they were confident enough to put it on paper and distribute it as a draft and they're looking for comments, and increase their confidence by making suggestions for alteration.

Thank you, Bob. That was helpful. Again, hopefully by the break, we'll be having actual copies, if you all want to -- if you haven't seen a copy, it's a two-volume set and you can take them with you or we can send them to you.

Let's move now to a bit of a discussion on the alternatives. We had a healthy discussion of alternative and I think a bit of exploration of what's really meant by what's in the issues paper, that array of alternatives, and some new ideas came out and we kind of digested that overnight, and, particularly, Bob Nelson has given this some thought and I think he's going to walk us through a description of them to not only calibrate with what the staff is thinking, but to make sure that we're calibrating with what you all are thinking, particularly for a couple of the suggestions that were made yesterday, and to see if we can't flesh them out a little bit more and think about what, for instance, a combination of unrestricted and restricted use would really mean and sort of the layered approach that Terry Civic suggested, or multi-tiered

regulatory approach that Terry suggested yesterday.

MR. NELSON: -- so you can all see this. My name is Bob Nelson with the NRC. We thought, after our discussion yesterday and also after our San Francisco meeting, reviewing what people had said, that maybe this concept of restricted use needed a little bit more discussion, a little bit more definition.

So I've tried to outline here a general model that may help us define this a little better.

At this point, I'm not really putting a hard definition on restricted use, but I'd like to try and get towards that maybe at the end of the discussion. Let me run through the model that I have here.

First of all, we have licensed operations, with some set of controls established regarding release of material, whatever those controls may be, whether it be Reg Guide 1.86, whether it be a new rule, revised guidance, whatever it is.

The orange path shows direct release from licensed operations. Now, let me discuss this first block. This may be a number of licensees; say, a facility undergoing decommissioning sends contaminated scrap metal to a licensed processor. That processor then decontaminates the material and releases it. So this may be two, three or four licensees. It's not necessarily just one.

But at some point, it leaves that realm and the orange path goes directly to release; and when I say release, I mean release from regulatory control, no longer a control on the material. It's either recycled, reused in its current form, or disposed of in an unregulated disposal facility.

So that's the unrestricted scenario.

In the restricted scenario, the material may go to an interim processor, and, in this case, I haven't shown -- and this is where the difference is. In the restricted use case, I haven't shown where the licensed portion stops, because I think that's part of the discussion in restricted use.

So the material goes from the original user to some processor, might be a recycler, might be a broker, whatever. It then goes to some authorized use and then after that authorized use, is released.

One of the questions I think that has come up that we haven't really defined is where the regulatory control ends. Clearly, it would end at this point, but does there need to be some regulatory control in this area, and I'm not sure that that was really well defined yesterday during our discussion.

Also, I'm going to put up another chart here, and this gets more -- I've tried to categorize the types of alternatives under this restricted release alternative. The first one I talked about was point of release; where does the regulatory control end. So that's the first kind of category I've thought about.

The second one, I think I heard this yesterday, was type of material. I think there was some sentiment that maybe some material or some radionuclides should only go into certain uses or have to go into certain uses. And then another type of alternative use might be type of use; that material can only go into bridges or, in the case of concrete, maybe road beds or something like that.

So maybe there's more, but this is what I thought I heard and I wanted to put both of these up here for more discussion. Does this cover the range of types of restricted use? Is this the type of process that was in your mind? If it wasn't, does this make sense?

What I'm trying to do is come to some common understanding, when we say restricted use, what we mean by restricted use, so that we're not all walking out of here thinking five different things. So with that, I'd like to open it up to some discussion.

MS. STINSON: I think what would be helpful is, A, to just answer the questions that Bob has posed and, again, we're not evaluating which one that you might prefer, but helping the NRC define maybe even some terminology. Some people use the term limited use and if we can come from this meeting with some agreement about what we really mean by restricted use, we can test it out in other meetings with other people, I think it will give a basis for analysis for the NRC from these point forward.

Some comments? Paul?

MR. MECK: Just one more point before I -- and I think this is important. I should have made it. That regardless of whether you're talking restricted use or unrestricted use, ultimately, you come to this block.

In a restricted use scenario, you're building in some additional steps, whether they be licensed or unlicensed, that could delay the ultimate release of the material. But at some point in time, the material is going to be released.

MS. STINSON: Paul?

MR. GENOA: Paul Genoa, NEI. Bob, I think you've done a good job of laying out conceptually a restricted use path and I wanted to just make sure that people are aware that you're not inventing this on the fly; that there's been a lot of thought about restricted use.

The European Community -- I have a document here, the Nuclear Energy Agency of the OECD, does a nice job on the recycling and reuse of scrap metals. They have evaluated all this and have laid out different flow paths for restricted use.

But what's clear in here and what we should stay focused on is the fact that a restricted use discussion is another rulemaking, it's another activity.

What we're here today is to talk about a clearance level, which is the first step. It's the point you're talking about down here. Either in the beginning or after the restricted use, there has to come a point where there is no longer control on the material. It's cleared, and that's really where we've got to get to.

MR. MECK: I think that was the point I was making down here, that this point is the same as this point.

MR. GENOA: Exactly.

MR. MECK: Maybe I should have shown the arrows coming together at the same place. But in my concept of this, and my concept may be wrong, but in my concept of this, this point and that point are exactly the same.

MR. GENOA: And I agree with you and I believe that we should focus all of our energy on those two points and not waste a lot of time guessing which processes should be in the license are in and shouldn't and all those other parameters, because the reality is if it's still under license or control, we're not talking clearance.

So it's sort of another discussion and I guess if we have time today to talk about that, that's okay. But I'd like to focus on the clearance part of the debate.

MS. STINSON: Mike?

MR. MATEA: Unfortunately, hearing that clarification, in my discussions with what we might want to call the concerned public, I think they see it the opposite; that if there is discussions of

restricted use, if there's clarification and commitment to restricted use -- for example, if you were to release X nuclides and Y metal, then if they go to bridges, then not a big deal, but we don't want them going to automobiles -- then there's going to be more of an agreement to talk about release.

But the concern is if we set up a release value without a restricted pathway, then you're releasing material without knowing that we can restrict it to where it goes.

If we -- if you can bring the discussion of the restricted use with the idea of release values, you might be able to attract the concerned public for discussion, because that's their concern, where does this stuff go.

MR. MECK: We may still be talking the same thing, but let me try to clarify what I said and maybe my understanding of what you said.

If we were to have a restricted use option, say, going to the bridge, someday that bridge is going to get torn down and it's going to enter the recycle, reuse, disposal scenario. That was my point; that when this authorized use ends, whether it's a bridge or a road bed or something else, that material will wind up in this box.

And in order to determine the appropriate authorized use for material, you need to consider the timeframe of the authorized use, so that you get to the same point at the end of the authorized use. That was my point. Not that there shouldn't be some designated use of material after it leaves, say, the original NRC licensee, but ultimately, unless you continue the licensing process all the way through here, you're going to have -- you're going to -- ultimately, that material is going to end up in the general commerce.

MS. STINSON: Let me just throw in one thing here. I think that what you're talking about is really two different -- whether the balance should be restricting use, restricting activities prior to release and you should approach it from that way, or you should approach it from setting a release level and then talk about, okay, what else -- where might you have to apply restrictions, and you're both -- you're coming at it from different angles, which is fine.

Let me just say it's hard to resist, but what we'd like to do is rather than advocating for an alternative, which we all ultimately want to get to, let's be sure we understand the alternatives. And I

think if I -- let me just interpret part of what Bob has said.

I think what Paul wants to do is advocate here that this orange line -- that we start from these point and work backwards, and what I think Mike is saying is let's move this direction through this process. I think that's right, and that's fine, but let's also be sure that before we get to that evaluative stage, that we really understand what it might mean to do Bob's -- wherever they went -- different sets of restrictions in each of this to understand what restricted use would really mean.

So if you can hold your comments on which alternative you prefer and let's define them, maybe that will help us build some bridges here ultimately.

One quick comment, and then we're going to take some other comments, Mike.

MR. MATEA: The reason for the comments is that I'm -- my assumption is the reason for these sessions is that to allow the NRC, when they do produce a proposed rulemaking, that it has a chance of succeeding, that it has a chance of being adopted, and the reason for the comments is that for it to have a chance of succeeding, that you need to look very carefully at where the opponents are and focus on their concerns, because you may develop a very good scientific, well based release criteria, but in the foray of public comment, it will go the way of BRC, because we don't address the concerns.

For example, if the rulemaking -- take a very specific universe -- were to say for this radionuclide, if it is decontaminated to X level and then released such that if it went into a bridge, that given the normal life span of that bridge, by the time that bridge got torn down and sent to the recycling facility, it would have half-lived down to nothing, practically.

So, therefore, you could possibly buy acceptance that, well, if it goes that way, by the time it half-lives down and it goes into the recycling stream, it's practically nothing. And that's how you will be able to possibly start to build an acceptance for the concept, because right now, out there, it's they want to release the stuff out into commerce and that is the perception and if we don't change that perception and get the steel manufacturers, the end users, the recyclers and the general public comfortable not just with the release science, but where this stuff is going to go and what happens while it's going there, then you're not going to have a rule, because it will die from public opposition.

MS. STINSON: Okay. Good advice. Terry and then Gwen.

MR. SIVIK: Terry Civic, AISI. I'm glad Mike spoke up. I guess he was countering Paul's comments, but I think we are in a process here and part of that process is looking at the entire scenario here, the various alternatives.

I only offer a question here and it relates to what Mike was saying. When we just have the word processors up there, without the word licensed processors, does that create a problem from the standpoint of not having that already defined as the alternative as opposed to not having any control after it leaves a facility?

MR. MECK: That's the reason I put point of release as my first category of restricted use type. I kept this general, so that you could put the license bar here, here or here. Okay. That's why I didn't put this here, because I was hearing those types of questions/comments yesterday and I didn't want to presuppose where the bar ought to go.

Back to Mike's comment about putting in a bridge and after so many half-lives, that's -- whether you call it picocuries per gram or number of half-lives, that's still a clearance level. There's some finite amount of material that's still going to be in that bridge.

So whether you establish a clearance level at X picocuries per gram or ten half-lives or 20 half-lives or 30 half-lives, that's still a clearance level and that's a release standard.

The point is that whatever you call that number, whether it's number of half-lives or picocuries per gram or DPM per 100 centimeters squared, that's a release level.

MS. STINSON: Gwen.

MS. BOWER: Gwendolyn Bowers, State Department. As Paul was saying earlier, in this discussion, if the items are under regulatory control, then there's not so much of a discussion as to its safety, because we're assuming that it's under licensed use, it's going to be regulated, it shouldn't be so problematic for the public.

But I think I can't feel comfortable with this discussion until we engage the question where that bar is, because it seems to me that there still is a question where that regulatory control ends and I don't think we can instill public confidence in that process until we reach some point or some placement of that bar.

MR. MECK: We'd certainly like your input on that. I mean, I didn't -- as I said, I didn't want to presuppose where that bar ought to go. Again, why I point that -- put that up there is alternative, what is point of release, where should the regulatory control end, and that's what we're looking for input on, on bullet number one.

MS. STINSON: Anything else, Gwen?

MS. BOWER: Well, I guess I just wanted to open it. I was looking for comments from those folks here. I mean, if they could offer something to clarify it a little bit for me, as well, that would be useful.

MS. STINSON: So what it sounds like people want to move into is discussing, for a restricted use scenario, at what point of release along that continuum do you draw the orange line, if it's orange designating release, as well as -- no? Is that right? What type of material and should you consider different types of uses.

MS. BOWER: Or where we draw that regulatory line. I don't want to confuse the -- I mean, obviously, we have one pathway which is direct release, one which is this limited or restricted use scenario, and where we feel or some thoughts as to where that regulatory process should end.

Well, obviously, I guess that also is dependent on the radionuclide that we're talking about, the amount that we're talking about, the amount that we're talking about, but how are we going to craft guidelines that address that.

I think that will speak to the public's concern.

MS. STINSON: Ray is next, and then who else is up? Who else wants to speak?

MR. TURNER: Ray Turner, David Joseph Company. Just a couple of things. I commented in the San Francisco meeting that in the case of bridge beams and bridge plates, a lot of that stuff is re-rolled without re-melting and can go into any myriad of operations.

Another thing, in the course of recycled and reuse, I'm going to make an assumption here that we're sending, in the case of metals, scrap metals to a facility that's going to melt that material down and still possibly have a restricted use. We need to know a lot more about the downstream -- Mike Matia, for example, made a reference to eventual concentrations of materials, where it's going to be concentrated.

If we assume, for example, the material is going to be melted down and placed in down-hole pipe for the oil industry, which is probably a good application for a lot of that material, because it's going to be in the ground for many, many years and won't be recycled for a lot of years.

However, in understanding how that oil-filled pipe is made, in some operations, about 30 to 35 percent of that steel after it's been melted and formed into ingots and then rolled into sheet and re-rolled into pipe, cut to shape, threaded, 30 to 35 percent of that material comes back into the recycling industry before it ever goes anywhere; not in the form of pipe, but in the form of home scrap, which that facility may not even be able to melt. A lot of that home scrap is sold off to other steel facilities, iron and steel facilities, and they melt it and make different products from those things.

Of the steel that was produced 24 years ago, the completion of that recycle chain, 48 percent of that material is being recycled, completion recycled this year. In the case of automobiles, I think it's about eight and a half years.

So we need to know a lot more about the downstream even in-house at the steel mill process and what returns back to the mill or what is sold off in the form of home scrap or pit scrap or cut pipe or whatever it may be to other mills, where it's going to be recycled into different products.

MS. STINSON: Frank, did you have something you wanted to throw in here? You can use that mic right there.

MR. CARDILE: Frank Cardile, NRC. I just wanted to quickly add, and it kind of comes out of Bob Meck's conversation, another thing that fits into this is the fact that as Bob Meck pointed out earlier, what's really controlling the dose that we would set or the limit on the dose is the scrap truck driver and the person perhaps working in the processing area at the start, not so much the end user.

So if you actually did go to an authorized use, like a bridge, by the time you got down to release, since we maybe controlling the dose to the worker, the processor or the scrap truck driver, that's another driver towards -- or it's another thing in the mix of what's controlling the dose at the very bottom.

MS. STINSON: Okay. In the back.

MR. KIER: Allen Kier, NFS. I have a question. I'm a little bit confused. Are we talking about developing a release criteria for materials and if -- and a restricted use level above a certain

release level, or are we talking about all materials going through a restricted use process?

What I'm concerned about is the viability of a restricted use pathway, just like in the B-25 boxes, where it was not economically viable based on quantity and amount of material.

I can understand the use of a threshold value above which you consider controlling and restricting release, but I don't think it's reasonable to consider all materials going a restricted release process, until -- that's my question. Which are we talking about?

MR. MECK: I think I've been hearing both. I think there's been at least one advocate -- I think what I've heard is that all material should go through some restriction until it's decayed away to some negligible value.

NRC is not advocating one scenario or the other. What we're trying to do is just get input on what you people think is the right approach or approaches that we need to consider.

MR. KIER: A quick follow-on. When you really stop to think about the cost-benefit analysis that the ALARA philosophy invokes, I mean, exposure is exposure, dose is dose, radiation is radiation. We are talking about levels of natural background between 100 millirem per year and the 1000 millirem for the general public.

How much, as a society, are we willing to pay to prevent or potentially prevent one millirem of additional exposure. That's an awful heavy economic burden when you stop and think about the variations that are already out there in society.

MS. STINSON: And that is one of our critical questions and a very good segue to the economic impacts discussion. What I don't want to do is get out ahead of our plans to talk -- if this makes sense to you all -- to talk about the environmental impacts and the economic impacts of these, and then do the evaluative portion of this discussion.

Maybe if this helps us understand what the distinctions in various scenarios could be, now we can talk a little bit about environmental impacts and economic impacts and then come back and you all can offer your advice, answer Bob's question, what are your views as to the approach NRC should take.

Does that make sense? Unless people want to offer more comments about the -- and give us more enlightenment about these scenarios and how to structure alternatives.

Paul, did you have something as well? Okay. Start with Art and then Paul, and maybe we'll move on.

MR. PALMER: Art Palmer, ATG. A couple comments. Just, first of all, in this, somewhere there needs to be the diamond decision box that is the does it meet unrestricted release criteria, and I think that's what you're trying to get to with that bottom box.

But whatever happens above that, it can go through as many do-loops as it wants, as you want, in the restricted process. It can go one, ten, 20 times through the -- from licensee to licensee to licensee. That's fine.

But at some point, you need that diamond box on the bottom and that's what I think we're really here to try to get to. That's what I'm critically interested in.

MR. MECK: In this model, again, because I didn't put the line in where regulatory control ends, this box, this controls box would be just above that line, in my concept of this. So if the regulatory control bar was here, then there would be a control box above that line.

If the regulatory control line was here, then there would be a control box above the line here, just as it is in this unrestricted use case.

MR. PALMER: But regardless of -- it immediately proceeds to the question, the yes/no question of does the material meet unrestricted release criteria. You can have as many steps prior to that as you want. The critical question is, does it meet unrestricted release criteria. Once that answer is yes -- it's a yes/no question. Once the answer is yes, it drops out of the regulatory regiment. If the answer is no, it must go back into the restricted use pool.

MR. MECK: That gets back to my point that these two points are the same and if the regulatory box is up here, then these two points are the same.

MR. PALMER: And as a follow-on to that, I understand that recycling is just a lower cost means of dispositioning material from decommissioning facilities. The only reason it exists is because the cost of disposal into low level rad waste landfills. If the low level rad waste landfill cost was lower, you wouldn't -- we wouldn't be looking at this because it wouldn't be economic, and I'm afraid that's what's going to happen with restricted use.

Two problems with restricted use. One, we have enough trouble tracking down radiography sources, radiator sources, radium needles, there's just a host of things that have been lost over the last 40 years. I cannot fathom how you would have enough inspectors either at the Federal or state level to track down bridge girders, where they actually went.

Secondly, the cost is just going to be fantastic. You're going to have dedicated facilities trying to compete with the guy that's cranking out a million miles of railroad track a year.

There's no way you're going to be able to economically put this restriction, this licensing, the tracking requirements.

And on the other hand, I can't see an architect specifying that for even money, I want to put radioactive girders in my skyscraper. I just don't see that decision being made.

So I have some, I guess, fundamental questions that way.

MS. STINSON: Okay. Thank you. Any other final? Okay, Paul.

MR. GENOA: Paul Genoa, NEI. I guess I'm coming at it from, answering your question, from a two-tiered approach; that, first, you have to assume that ultimately a decision has to be made that a material can be released or can't be released.

And above that, if it doesn't meet that criteria, does that mean it immediately has to go to a Barnwell or Envirocare like facility, even if it has one atom more than the release criteria.

And intellectually, it seems like, well, no, there might be other opportunities. Now, what I want to point out is they already exist. This structure up here, a nuclear power plant is at the top, licensed operation. The processor is GTS Duratech in the middle. I transfer scrap metal from my facility that is contaminated above a free release criteria that I already use, which happens to be non-detect no licensed material, which is trouble, problematic, but I can make that decision today, yes/no.

This material can go out, this material can't, I send it to GTS Duratech. They take a look at it, they decon it, clean it, do whatever they want to do to it. If they can get it clean under their criteria, out it goes. If they can't, it can go into a metal melt batch and that will end up in a reusable product for the DOE as a shield block and it will get reused in a secondary application.

When the DOE takes a look at that in the end, they probably will end up disposing of

it, because it will be volumetrically contaminated, it will be difficult to deal with. But it could potentially go through an infinite cycle of license controls.

And my point earlier was only that we don't have enough time to talk about an infinite number of permutations. The real question is at the end of the day, Mike, as you pointed out, at the end of the day, when all of the half-lives have gone through and there's just a trivial amount left, you reach a decision point. I'm saying that decision point is what we're here to talk about and it doesn't matter how many do-loops you go through, you ultimately get to the same place. At what point do I make a decision that is yes or no?

But I agree with you. Somehow we're not communicating this point, that what we're talking about is not up here where the radioactivity is high and dangerous, but we're talking about a point that is so low and trivial that there just isn't a risk to deal with.

MS. STINSON: Good. Thank you. We are going to move on in our discussion and I'm wondering if -- do we want to -- we're scheduled for a break shortly. Do you want to take a quick stretch break?

Why don't we take just a ten-minute break, give you a chance to stretch and we'll come back and talk about the environmental impacts. I have five till, return at five after.

[Recess.]

MR. CAMERON: This particular session is going to be Session No. 7 on your agenda, originally scheduled at 9:00 a.m. this morning, and it's what are the potential health and environmental impacts of various alternative approaches.

Bob Nelson is going to do a presentation for us and then we want to go out to you to, first of all, make sure that we answer any questions you have on the types of impacts that Bob is going to talk about, or their magnitude, but just as importantly, we want to then go to you to suggest other impacts that we might not have thought about or magnitudes of impacts that we hadn't thought about.

We're going to run to 11:45. Checkout time for the hotel is 12:00, so although they say, they've said there is a grace time until 1:00, you may want to check out before 12:00 anyway. So we'll stop at quarter to 12:00 with this session.

I'm going to turn it over to Bob Nelson now to run us through the health and environmental impacts.

MR. NELSON: Good morning, again. Yesterday, we discussed alternatives for controlling the release of solid materials. In this session, we'll discuss potential impacts of the various alternatives.

For those of you who may be following in the issues paper, this session relates to Issue 2, Item A.

What are the potential health and environmental impacts that should be considered? First and foremost, the basis for NRC's consideration of any action related to release of control of solid material is protection of public health and safety and the environment. NRC will evaluate the impacts of all alternatives being considered.

One of the attributes to be considered is the potential radiological impact. The first step is to assess the potential dose to an individual.

For each alternative, we consider the potential exposure from individual and multiple sources; for example, steel girders in housing or office construction, or metals used in common commercial goods.

We use a two-step process in examining how exposure occurs. First, we look at how people come into contact with the released material. This is called a scenario analysis.

Then we examine how the biological impact is delivered; for example, through inhalation, ingestion or direct exposure. This is called a pathway analysis.

One can look at this whole process as part of a flow of material from the licensed activity to the general affected environment. Much of this is explained in a draft report, NUREG-1640, which is explained in the earlier session.

In order to better reflect the impacts of various alternatives, we also perform a collective radiation dose assessment of population groups, and we've heard some discussion on this already this morning.

Collective dose allows a more common denominator for comparison and as a measurement tool that we use to compare cost-benefits of alternatives. It is not used to make health and safety decisions, however.

Other attributes for evaluating impacts to the environment include those to biota -- in other words, animals -- and land use. This is required by the National Environmental Policy Act.

We would include assessing impacts to public use areas, wetlands, preserved habitats, endangered species, et cetera.

Another attribute to consider is the impact of mining and processing of new materials to replace recyclable metals that are instead disposed of at a low level waste site. Also, the incremental contribution to pollution, possibly increased occupational injuries associated with any of the alternatives.

Next slide.

The last slide continues this listing of attributes for health and environmental impacts and points out that attributes are not necessarily cut and dried, because trying to minimize one could be offset by an increased potential of another.

Some of these impacts may be competing. For example, the value of sending more recyclable material to a low level waste disposal site may be offset by increased pollution from more raw ore processing. These are the types of issues we're trying to examine in balancing the choices.

One of the attributes that is typically difficult to quantify, but plays a strong role in decision-making, is environmental justice. We do not want to have one sector of society bearing a disproportionate amount of the burden in the allocation of impacts; for example, if recycled material might be preferentially used in low income housing.

Another concern is postponing to the future the difficult decisions for ultimate disposition; for example, bridge trusses re-entering unrestricted commerce when future demolition terminates at an authorized use site. We've discussed this some in the previous session.

There are other impacts that we have in common with non-radiological-driven decisions; for example, occupational injury, transportation, noise, road construction that might be associated with any of the alternatives we've discussed or any of the alternatives you might suggest.

This concludes my brief presentation. After I respond to any questions you might have on the presentation, I suggest we focus on the following question. What attributes and impacts do we need to address?

MR. CAMERON: Thank you, Bob. Let's follow Bob's suggestion and see if there are any questions that you have on the impacts that have been identified up here, so we can clear those up before we go on to other types of impacts that you might have in mind that we haven't identified. Allen?

MR. KIER: Alan Kier, NFS. I was wondering if you had looked at the impact, the economic impact on the general consumer for the different alternatives. For example, if a criteria is established that sends more material to low level waste burial, nuclear power generation costs obviously will increase. The consumer eventually pays for that in rate increase.

Have you looked at the total cost over a lifetime of this type of activity on utility rates, for example?

MR. NELSON: Actually, we haven't looked at any costs yet. We're still in the scoping process. That's why we're here today, is to get input on what types of things we ought to look at in the -- not only the impacts, but also the cost-benefit analysis, which we'll discuss in the next session.

So I appreciate that input, but we really haven't done any of the analysis at this point. We're still scoping.

MR. CAMERON: Is the type of impact that Allen suggested one that we would look at in terms of the economic impacts rather than this particular --

MR. NELSON: I believe it is, yes.

MR. CAMERON: All right. Thank you, Allen. Mike? Tony?

MR. LEMASTRA: Tony LaMostra, AISI. The comment or the bulleted item there about the recycle replacing -- not on that slide, but I guess the one before it -- recycle replacing raw material produced metals is probably not one that's that valid when you look at the total quantity of the materials involved.

What you're really looking at is replacing one mode of recycle with another source of recycled material, as opposed to the mining and the raw materials. So all the scenarios that fall from that may not be valid.

MR. NELSON: I think we heard that comment in San Francisco, and that may be true. The point is that even if it's true, we still need to address that in the environmental impact statement and

say that that's a fact, that, for example, the -- and, again, I'm not saying that this is true or not true or agreeing with you, but if it is true that the amount of recycled material is so small that it would have a negligible or insignificant impact on the mining industry, then we need to say that.

MR. CAMERON: And if you do have comments, specific comments like that in your written comments, that would be very helpful to the staff. Terry?

MR. SIVIK: Terry Civic, AISI. I think you have to look from a health standpoint at the cumulative effect of build-up of radioactive material over time. If we're going to be pre-releasing material, as you know, 46 percent of the materials used in the steel process are recycled. So over a period of a number of years, some of these -- we talked about half-lives -- some of these materials will have half-lives well beyond the 40-year period or so and there will be a lot of accumulation of materials, both from these facilities, as well as from the imported facilities.

So I think we have to look at that as a health effect evaluation.

MR. NELSON: I would agree with you. That is a limitation of the analysis we've done to date and something we have to do in this process. Thank you, however, for that comment.

MR. CAMERON: Okay. Let's go to John. We've heard one comment on the magnitude of a particular impact. Terry has just given us a suggestion for another type of impact analysis that has to be done.

MR. KARNAK: Tony beat me to it. When we -- EPA, this is John Carnig, with EPA. When we did our economic analysis, I had expected that a ton of recycled material would replace a ton of newly mined material, but that, in fact, we found was not the case, that it merely shifted to a different amount of recycled material that came into it. So we found, to my surprise, the environmental impact was less than I had expected.

I just wanted to mention that both our technical support document and our economic analysis are both available on the EPA web site, if you'd care to take a look at them. If you'd rather have me mail you a copy, I still have probably about 20 sets sitting in my secretary's office and she is desperately trying to get rid of them. So if you'd like a copy, give me a business card and just write recycle reports on it, and I'll send you a set.

MR. CAMERON: Thanks, John. Who are we going to now? Ken.

MR. KALMAN: Ken Kalman, NRC. I have a concern just as far as what's going to happen from the regulatory standpoint with all of this. I wonder if this is not going to be overly burdensome. When I think of the possibility of material getting recycled, some of it going into bridges, some of it going into paint cans, some of it going into shielding, and me, being in the position where I might have to send inspectors out every so often, go out here and look at the bridge, go over here and look at paint cans, go here to look at shielding, to me, that just seems like it could be a regulatory nightmare.

I tend to wonder if we might even be better off considering a possibility of I guess we'd call it a monitored retrievable storage of some sort, where you take this material, segregate it, and store it, let it decay to certain points, and then be able to put it into use.

MR. CAMERON: Ken, I think you have perhaps suggested another alternative for the staff to consider. But as a general question, Bob, you might want to tell us how will regulatory impacts, such as Ken brought up, how will they be factored into the decision-making process?

MR. NELSON: I'd like to answer both parts of Ken's -- I think he made two comments.

We will -- first of all, we have to develop a cost-benefit analysis for each of the alternatives, and that will be in our regulatory analysis and we'll also do a summary of the cost-benefits in the environmental impact statement. So that will be done, and regulatory cost is part of the cost.

Regarding your suggestion about a monitored retrievable storage, this goes back to a point I tried to make in the earlier discussion. Ultimately, what we're trying to develop are release criteria. If a licensee has material that are above the release criteria, it's clearly the licensee's option to store that material and allow it to decay to those release criteria, if that's feasible, given the half-life of the material.

That's really an economic consideration that the licensee has to make, what they -- whether they hold the material for some period of time and build a facility to store it or whether they ship it for disposal. That's really a question that I'm not sure whether that's within the realm of the rulemaking, but it's certainly a consideration.

MR. CAMERON: Thanks, Bob. Mike?

MR. MATEA: Mike Matia, from ISRI. Sort of a recommendation or a caution when

presenting impact data is, again, considering the audience. I have heard individuals who will look at an impact statement that says this exposure will cause one cancer in 10,000 additional and I've had individuals do quick math and divide that into a population of 200,000 and say, oh, 20,000 individuals will be afflicted who are not now, and they're allowed to go there because there's no explanation of what this data really says. Does it really allow you to make that mathematical extrapolation?

That's all they've got to work with. So being able to explain release data and how it affects the general population in a way that the general population can understand it.

MR. NELSON: I couldn't agree with you more. The communication of risk needs to be very clear, so that inappropriate or incorrect conclusions aren't drawn, such as the one you suggested.

MR. CAMERON: Thank you. How about other types of impacts that we may not have identified so far? One of the things that Bob had up there was environmental justice. It would be useful to get people's thoughts on how do you factor that into this type of situation. Randy?

MR. CLARK: Randy Clark, Westinghouse. Some of my friends here were talking earlier and a question we just had amongst us was we're mindful of the fact that after the invent of nuclear weapons and looking at the manufacturers of steel prior to World War II and after World War II and, as we all know, as a result of above-ground nuclear testing, the natural steel that we make into girders and steel products and all that went through a quick change.

We had to go to get pre-World War II steel to do our whole body counters, for example, to get very low backgrounds for accounting. Because we have already had, as a result of nuclear weapons testing, inserted into the recycle process, if you will, I think it's cesium, I'm told it's cesium, into the steel products.

And the question I have, so we already have a real life case of far more radioactive material recycled and introduced into the steel industry after the above-ground nuclear testing and so I think by comparison, one question we might ask ourselves for comparison is what economic and ecological impact on the steel industry, just focusing on the steel, not strontium-90 and all that, and the milk and the other things that took place at that time, but just focusing on the steel and the economic impact and the ecological impact, what impact did it have and was it significant or was insignificant.

And, of course, we're talking about orders of magnitude far lower introduction of the cycle of the standards that we're talking about, by comparison.

MR. CAMERON: Thanks, Randy. I might ask Bob, if he could, to perhaps explain how that type of concern that Randy just expressed, how is that factored into the environmental impact statement process or the analysis of impacts.

MR. NELSON: I suspect you could use it as a point of comparison, that there was this economic impact, whatever it was, as a result of contaminated steel entering the market, and we project this impact as a result of additional recycled material, and draw from that whatever conclusions can be drawn by the comparison.

I don't know what -- how those would weigh out, but that's an approach.

MR. CLARK: Randy Clark, again. As we said, at some very low level, the steel is already contaminated.

MR. NELSON: I understand that.

MR. CAMERON: So it might be some sort of a baseline that may be useful, we don't know until we look at it.

MR. NELSON: Right. You say if there was X dollar impact as a result of contaminated steel entering the marketplace as a result of fallout, and we project this economic impact from recycle, compare the two numbers.

MR. CAMERON: All right. Let's go to Norma.

MS. ROGERS: Norma Rogers, Allied Signal. On environmental justice, have you considered in your impact -- you're talking about releasing material that would go to landfills or disposal under other circumstances that we have today, or perhaps changing that in some manner.

So what is the environmental impact of all this material, instead of going to recycling or other uses, going directly to landfills and what is it going to do to the volume to landfills, plus the potential future problems that may develop at the landfill itself.

MR. NELSON: That's an impact we'd have to address. We haven't, as I mentioned before, really haven't looked at any impacts at this point. What we're, again, trying to do is identify those

categories or types of impacts that we need to address, such as the one you have suggested.

MR. CAMERON: I guess the suggestion is that, maybe it's an obvious point, but something that we need to take a look at that an alternative that we have that increases site-specific disposal types of considerations, may have more an environmental justice impact than another type.

It sort of ties into one of Gwen's points that she made yesterday about what's going to be the impact on disposal, will there be more pressure or less pressure for disposal. So that's a very good point.

MR. RANDALL: Dale Randall, with the State of Maine. I'd just like to point out that I think this discussion has verified that there's a lot of policy type issues associated with this matter and as such, I would urge the NRC to provide as much latitude as possible for agreement states in its implementation.

MR. CAMERON: That's a good process point. Agreement state -- as much agreement state input as possible. Bob, I don't know if you want to comment on process at all in regard to that.

MR. NELSON: I think he was also addressing the level of compatibility that might be assigned to the rule, if I interpreted the comment correctly. Giving states more latitude means providing the most -- a level of compatibility and allows them to implement changes or variations to the rule.

MR. CAMERON: Have we had any discussion at all about potential compatibility levels? Not yet.

MR. NELSON: I don't think so, not --

MR. CAMERON: Okay. Let's go to Tony, and then we'll come up to Bob. You want to follow up on this? Tony, wait a minute. We'll let Bob talk here.

MR. MECK: Bob Meck, NRC. It seems to me that on the agreement state and latitude, what we need to do is to look at the impacts of various alternatives for the latitude. Compatibility issues arise when you think of intra or interstate commerce and we look at that impact versus the impact of a lot of latitude.

So, yes, I agree, and I'm just elaborating a little bit about how we would approach that.

MR. CAMERON: Okay. Thank you, Bob. Tony?

MR. LEMASTRA: Tony LaMostra, AISI. A response to Randy. It wasn't cesium,

because cesium won't end up in the steel. It's primarily cobalt, ruthenium and some of the more metallic or at least alloy materials.

There definitely was contamination. When you look at the relative level that is present today, it's generally non-detectable. As an example, some slabs were rolled for Argonne National Labs, that's looking at the -- at a project where they're going to basically be developing a detector made out of steel plates, and they wanted to look at those for contamination so that it wouldn't confuse what they were really trying to measure, and plants just submitted samples, and most of it met their specifications for a very low level.

Where you have problems are on some of the more critical things, like shielding for low level detection and whole body counting and some of the more sensitive materials, like film.

MR. CAMERON: Thanks for that clarification, Tony. We've been talking in a general sense about these types of impacts. Maybe it would be useful -- and Norma sort of got us on that track -- to think about some of the alternatives that were presented not only yesterday, but earlier today, and talk about the types of environmental and health impacts that they might have.

I wondered if anybody had any thoughts about any of these alternatives and what types of health impacts might arise from them, unrestricted use, restricted, whatever.

Frank, did you have a comment?

MR. CARDILE: Frank Cardile, NRC. To feed on what Chip was just saying, one of the drivers in the way the license termination rule wound up was this issue of multiple sources. I think the first slide that we had up here, which I'd put back up, if I could, but I can't do both at the same time, but talked about both the dose from an individual source, like a one millirem limit or whatever the limit that you might have, and also multiple sources.

So as food for thought, both today and in your thoughts about unrestricted use and also in written comments that you send in, both to licensees and also to people from the steel industry, as to how these -- how -- when we talk about multiple sources in the license termination rule, we talked about a fixed site and a person being exposed perhaps to that fixed site, and what other sources might that person be exposed to.

Multiple sources here is a little bit more interesting. You're talking about a variety of materials that can be made, different end uses that can be -- material can be made out of.

So I guess the question I'd like to have both the steel industry type people and the other licensees, some of the license type people, to give some input to us on is the way in which multiple products could be made out of released materials.

MR. CAMERON: Thanks, Frank, for adding that. I don't know if it would be useful, also, for those of you who have been involved on the international front on this, Gwen and others, are there any lessons for the NRC's analysis of health impacts from what's been done on the international level already? I'm not aware of what has been done, but does anybody have anything to offer from that perspective?

MS. BOWER: Gwendolyn Bowers, State Department. I don't think there is anything at this point that would be really relevant to this discussion, in the advanced level that we're talking about. They're dealing at a very different level. So I don't think it would be applicable.

MR. CAMERON: Thank you. Any comments about impacts, health impacts of some of the alternative that we've talked about? I think Tom and then Norma.

MR. HILL: Tom Hill, from Georgia. One of the questions that you had in Issue 2, whichever, was what are the -- what's the potential for a single facility receiving material from multiple release points, as far as scrap goes.

One of the things that we have seen with naturally occurring material is that a lot of scrap can be collected by small mom-and-pop operations, sold to bigger scrap, recyclers, more regional basis, they go to processors.

So I think the potential is there for a processor to get scrap from multiple different release points. So that that should be considered. That's kind of parallel to what you were asking, Frank, but from what we have seen there, one reprocessor could be getting scrap from multiple locations from outside their state or region.

MR. CAMERON: Thanks, Tom. Bob, any comment on that from a staff point of view? Okay. Norma?

MS. ROGERS: Norma Rogers, general public this time. The thing that I see is my parents ask me questions every time something comes on the news or they read it in the newspaper or any media publication, and on some of the alternatives that have been discussed, the public perception of their health and the environment, that, to me, is going to be a very real concern to them.

They are going to have certain ideas about this and we start saying, well, you're going to have recyclable materials out here and as you talked about the steel from pre-World War II or not, everyone is saying, well, we're already so polluted, we're already so polluted, now you're polluting me more.

So when I go into my parents and I say, well, we're going to release some scrap metal from our facility or something or they read about this, they're going to say, wait a minute, I don't want that out here. So the perception of what's there is going to be very real, I think. The gentleman from the EPA and I were talking about that earlier.

I just think that some of your alternatives, that needs to be looked at.

MR. CAMERON: So I guess there's two points there. One of them goes back to perhaps Mike's point about very good use of risk communication and I guess perhaps the more direct point for issue for Bob and the staff is how is perception of risk factored into, if it is at all, into the preparation of the environmental impact statement. Is that right, Norma? Okay.

MR. NELSON: Well, I guess I don't know precisely the answer to that question. I think that the -- if the perception results in a quantifiable impact, then we have to address that, I guess, either in a -- I'm trying to think what -- while I'm talking -- what that impact might be, but I'm not getting there.

But if there were, if that perception resulted in some impact, whether it be cost or other impact, then we would have to address it. I think that the communication of risk, however, has to -- we can't rely on that document to make that communication. The general public is probably not going to sit down and read an environmental impact statement.

They're going to listen to what is said in meetings such as this and draw conclusions from that, I think, more so than this document that we produce.

So I think it's important for us in venues such as this to be very clear about what -- several things. One is what the situation is today, because material is being released today and it's not a --

it's -- so that's the starting point. You have to understand -- the public has to understand what the current situation is, and that then comparing the current situation to alternatives and then clearly describing what those alternatives might result in.

There may be a misconception that material is not being released today and that what is attempted here is to allow such release. Material is being released today under a framework that is not entirely clear and certainly isn't set out clearly in regulation.

So I think that whole message has to be communicated better, starting with what's the situation today.

MR. CAMERON: Okay. Thanks, Bob. On the point of how perception might result in a quantitative health impact, I think there's only been one case on that. I don't know if Stu wants to talk about the issue that was raised in the TMI case.

MR. NELSON: Let me back up, because something just came to mind.

MR. CAMERON: All right.

MR. NELSON: If the perception that release of material into a particular product stream would make that product stream less desirable and if you could quantify that economic impact -- let's say preferentially, this type of recycled material gets into this product stream. I'm hypothesizing. And then because of the perception that there is radioactive material in this particular product stream, that product stream will become less commercially acceptable and, therefore, this industry will be economically impacted. Then you have to address that and that economic impact on that industry would have to be addressed as part of the analysis.

MR. CAMERON: And you may have hit on a point that Terry was going to talk to right now.

MR. SIVIK: Terry Civic, AISI. Yes. I think that's exactly right. I was going to touch on that, but I was thinking that what Norma was suggesting doesn't fit in environmental impact or economic impact. It's a what are the policy considerations and consequences of action type things, and public perception would be under that, and you can't assign a dollar value to that or you can't say that public perception is going to result in some adverse environmental impact.

But it is a consideration that I think she was trying to suggest that needs to be up there as almost as equal as the other ones.

MR. NELSON: I agree that it needs to be considered. I was trying to put it within the -- trying to address it within this formal analysis framework. Clearly, any decision has some policy and public receptive type impacts, and those have to be considered by the people making the decision.

I was trying to get this specific concern into some analytical form, because it was brought up in the context of this environmental analysis.

MR. CAMERON: Okay. Let's go back to Norma, and then we'll go to Frank Cardile. Norma?

MS. ROGERS: Norma Rogers. I agree with your statement about the impact. The reason I'm bringing it up on the environment and health impacts is that as a -- when I talk to the general public or when I'm talking with my parents, as I used the example, the health and the environment is what they always talk to me about. They always say, well, my health or I don't want the pollution in my yard, I don't want my grandchildren having to walk over this material.

And the public perception is pretty real, since we do not build nuclear power plants anymore.

MR. CAMERON: Thanks, Norma, for that follow-up. Frank, do you want to add something to this conversation?

MR. CARDILE: I would only add that to assist you and to assist everyone and to assist ourselves in answering these questions, it's not just a perception issue, but it's an issue that we need to do a sound environmental analysis of quantities of material, how much material is really going to be out there, how many of these products can be made, all of those.

I think we've talked about the fact that the amount of material we have is small compared to the total quantity of steel that's being manufactured. So, again, I go back to requesting comment and input and suggestions from the variety of the people that are here today, to help us to develop a good environmental analysis, to say, all right, this is the type of exposure that you potentially could be exposed to, to make it clear in a document that this is the reality of what we are -- at least the best

analysis we can do of what you might be exposed to.

Then we go from there and then the policy-makers can take over and say this is what we're going to do, this, this and this. But we need to supply both our decision-makers and your parents and everyone you talk to with, okay, we can analyze it and these are the materials that you might be exposed to. It's not all your spoons and forks, it's only two of them or something.

But we need to give a good analysis of the situation.

MR. CAMERON: Thanks, Frank, for reminding all of us of the importance of getting the comments into NRC on types of impacts, magnitude of impacts, to help them do the analysis.

In that regard, I just wanted to see if there are any comments on Terry's suggestion earlier about the need to look at cumulative impacts. Bob Nelson indicated that that's something that we're going to need to do.

I wondered if anybody had any comments on how do you look at cumulative impacts in a situation like this. I don't know, Terry, if you want to say anything more than you already have on that.

MR. SIVIK: Terry Civic, AISI. I think the NRC could look at that based upon the number of 46 percent. That's a number that I use and I think Ray threw out the same number as how much of the material is recyclable in their analysis, and take a few of the radionuclides and as they would be present in the concentrations that they would be and doing half-life calculations of those, as well as the statistical analyses on the cumulative additions of the same nuclide over a period of ten, 20, 40, 60 years, because, again, we have to look at that down the road, will we be concentrating the materials.

Also, looking at the waste streams, too, because they concentrate more so than the -- in the product themselves, bag house dust, bag house materials, how long will that stuff be accumulating in that bag house, what's the potential for exposure there, how often are the bags changed in the bag house and the dust go through the system, because workers will be exposed to that. Those are higher concentrations.

MR. CAMERON: Thanks for that. Bob, do you want to say anything before we go to Paul, and then over to Tony?

MR. NELSON: No. I think that was a good comment. That's the kind of thing we need to look at it.

MR. CAMERON: Great. Let's go to Paul Genoa, and then we'll go to Tony LaMostra.

MR. GENOA: Paul Genoa, NEI. Just before the San Francisco workshop, we convened two small focus groups of members of the public and allowed them to read information on the pros and cons of this approach, and, of course, this is just a very limited sampling, but we got some real insights right away, and I think it relates to what you're saying here.

The concerns are, one, is this going to be safe; two, is it going to accumulate in the environment. If we're going to start doing this, and that was envisioned, we're going to start doing something, they don't understand that something already goes on and this is just a different way of qualifying it; so if this goes on, will it build up in the environment, causing additional risk; will there be risk -- are you going to evaluate not only the risk to me immediately, but the chronic, acute risk, but also the chronic risk over my entire life; are you going to address exposure from multiple sources; if metal is recycled, am I going to get exposed from the metal in my car; if concrete is recycled, am I going to get exposed from concrete under the road; if whatever other materials are recycled, am I going to get exposure from ground water or whatever from that.

So there's the idea that there is a cumulative source from an individual source and there's also they want to be assured that you're looking at all of the different exposure pathways and accumulating those, so that there wouldn't be an individual or a group of the public that's going to be exposed to many different approaches.

And the real thing that they want is trust and confidence in the regulator that these materials are going to be strictly controlled, that all of those different aspects are going to be considered and incorporated into those controls to ensure that they're safe, and, also, that they understand that people make mistakes, have in the past, and some people may even be tempted to bend or break the rules for an economic advantage. So there does need to be penalties imposed on people who would break the rules and controls that you impose.

I believe that with those concerns addressed credibly by a Federal regulator that strongly stands behind the evaluations they make, then there will be trust and confidence moving forward. If any of those things are lacking, you will lose that trust and confidence.

MR. CAMERON: Thanks, Paul. It raises the issue, I don't think germane to this, it raises a lot of issues germane to this, but the whole issue of enforcement and compliance and how that plays into the public acceptability of this is important. Tony?

MR. LEMASTRA: Tony LaMostra, AISI. Two things that relate to both environmental impact and also the assumptions used in NUREG-1640.

One is that there's a definite difference between a basic oxygen process and an electric arc furnace. With the electric arc furnace, most -- I believe almost everybody uses bag houses. With a basic oxygen process, you typically don't, except for some of the downstream processes, like ladle metallurgy, but in the actual melting and refining, because of the temperatures that are involved, they typically will use other processes, like scrubbers.

What this means is that you have a much higher probability of not collecting the material in a confined space that's captured. Unless that melt is identified, you have more of a probability of the material being released to surface waters.

The second is that the NUREG-1640 I don't think took into consideration the recycling that goes on in BOF shops using what's called sinter, which is an iron-rich dust that is essentially recycled back and back and back. So you can have this concept of concentration going on in the process, just from the differences between the two different types of steel-making.

MR. CAMERON: Thanks, Tony, for that very specific information. One thing that I wanted to ask the group, and it sort of ties into some discussions that we've had some suggestions, I think, that Terry made about sort of tailoring your regime to perhaps the type of end use type of materials.

How closely does the staff have to look at the impact on what I believe are called sensitive populations, children, older people? In other words, if there is a certain type of product that might end up in commerce, and this goes to Paul's point about the public perception on this, I think that one thing we hear is are our children going to be playing with toys that are made of radioactive material.

How does this whole sensitive population idea get factored into the analysis of health effects? Bob, I don't know if you have anything to say on that generally before we hear from others. Do you?

MR. NELSON: I don't, no.

MR. CAMERON: Any comment on -- Joelle?

MS. KEY: I'm Joelle Key, from the State of Tennessee. The only caution I would give you, you're going to walk into a two-sided house with that one or a two-sided something issue with that one.

On the one hand, if you don't examine those very sensitive populations and those very sensitive products, people are going to say you didn't consider it. On the other hand, if you do consider it, the problem we run into is that we did consider those very sensitive populations, those very sensitive products, and now people are saying, well, that's where you've approved it to go.

So it's really hard to now say, well, no, we don't think it's going to go there, that was just the worst case analysis, and we really run into some difficulty with that.

MR. CAMERON: So that's a caution, I guess, in terms of doing a worst case analysis and then people will assume that that's what is going to happen. Bob, what's the role of worst case analysis in our impact statement process?

MR. NELSON: Well, we don't look at worst case. We look at reasonable scenarios, but not necessarily the worst case scenario.

That type of bounding analysis is not required in an EIS. We typically look at the critical group that's going to be exposed and if the -- and use that as the point of analysis. The critical group is not necessarily the worst case group.

MR. CAMERON: Thank you. Paul?

MR. GENOA: Paul Genoa, NEI. A perspective on the critical group or, excuse me, the sensitive group in the country related to radioactive material.

It's important that we have to understand that there are sensitive groups in the United States for a variety of factors. Certain people are allergic to certain things. People die from bee stings and so forth.

It's quite a challenge to regulate society to prevent any impact to those folks. It's even more difficult when you try to consider sensitive populations, as some people would care to define them.

Now, the NRC has already made it clear that the unborn fetus is a radio-sensitive

individual and deserves special protection in the occupational world, and you've already imposed that. It's not clear to me that in evaluating your 100 millirem standard for public health that you have clearly articulated that that is safe for all members of the public, sensitive, unsensitive or whatever, and that might be worth evaluating in this analysis.

The concern you have, what you get to in this argument is that four out of five of us are going to get cancer and three out of four of us or two out of four of us, I don't know what the numbers are anymore, are probably going to die of cancer. Some members of the public are more sensitive to certain cancers because of genetic predisposition.

You're never going to empirically determine if radiation at any level had an impact on that, because of the problems epidemiologically.

So you're into a very difficult and challenging area at the levels we're talking about. Somehow you're going to have to deal with that and make some evaluations and I'm sure other agencies are thinking about that, but that's going to be real difficult to deal with, because the facts just really aren't there.

If there are effects, we know they're very, very, very low, but we may never know what they are.

MR. CAMERON: Thank you, Paul. Anybody else have anything on health and environmental impacts? I think we have probably plenty of time, if Bob is willing, to try to move into the presentation on economics.

MR. NELSON: Sure.

MR. CAMERON: Is that okay with everybody? Just go on in there. Again, we have a -- at 11:45, we'll close off, wherever we are. If we need to come back after lunch and start on economic again, we'll do this, but that will give you time to check out. All right, Bob.

MR. NELSON: For those of you following the issues paper, again, this follows Issue 2, Item B.

I want to discuss, in this final session, cost-benefit considerations. First of all, why consider economics and cost-benefit? Federal agencies must consider cost-benefit in their evaluations of

alternatives for Federal rules.

Executive Order 12291 directs all Executive agencies to prepare a regulatory impact analysis for all major regulatory actions. It should be noted that the Executive Order directs that actions should not be undertaken unless they would result in a positive net value to society.

NRC's guidance for such analysis is found in the NUREG that's listed on this slide. This document goes into some detail addressing attributes and how to prepare environmental analyses.

This analysis provides a tool to help balance health, safety and environmental impacts with the costs required to achieve or preserve them. The next slide addresses some of these economic impacts.

First, radiological surveys will play a key role in verifying that permissible levels have been met. Surveys would be required prior to release of material. In addition, those industries which may receive released material may wish to survey material prior to accepting it. Survey cost elements include the instrumentation used, the labor employed, training of staff, analysis of results, and any follow-up activities that may result from the application of the survey.

Many of the alternatives will have an economic impact on certain commercial sectors. Scrap dealers and those industries would need to tailor their operations accordingly. If total prohibition were the ultimate regulatory strategy, then scrap dealers and melters would need to strongly invest in detection technologies to preserve a radiological clean bill of health.

The cost impact may impact manufacturing process. This is most keenly observed in the potential for responding to false contamination alarms or for rejection of materials at the melter, scrap yard, et cetera.

We've already discussed metal replacement costs, so I won't get into that again. So we'll go to the next slide, which continues the list of potential cost impacts.

Depending on the alternative, it could also have an impact on disposal. The tradeoff is whether these materials should be sent to a public landfill or a low level waste disposal facility, or neither, such as recycling or reuse.

There are also costs for other industries that may be impacted. For example, film and

certain electronic products, which might have to re-tool to avoid exposure to sensitive -- because of their sensitivity.

Another concern is the potential for buildup of radioactive material in commerce over time, and we've already touched on this on the earlier discussion.

Additionally, we need to look at socioeconomic impacts; for example, any jobs lost or created by an alternative, any quality of life issues, whether there are impacts such as additional noise traffic or other impacts that we may have to look at.

A question for you is what other costs that we haven't enumerated here should be considered.

On the next slide, I'll briefly discuss what goes into a cost-benefit analysis. Simply, for each alternative, we evaluate potential health, safety and environmental impacts and weigh the costs required to achieve or preserve them; what benefits come from each alternative; what detriments, including costs, result from each alternative; and, looking at those, what alternative best serves the country as a whole.

Effectively, we need to select an alternative that yields a net positive value to society.

This concludes my brief presentation on cost-benefit. I'd like to suggest that we focus our discussion on the following question in relation to cost-benefit. Basically, what cost-benefit considerations do we need to address?

MR. CAMERON: Thanks, Bob. That's a helpful overview to this. We've had some discussion in the previous session about costs and economic considerations and a little bit yesterday, but this is a chance to really get into more detail. This is a helpful overview of some of the kinds of things NRC will look at.

It would be very helpful to hear from you following up on this prod to you, what considerations, what cost-benefit considerations should the agency be looking at here, and you might give some thought of some particular not just topics, perhaps particular industries, directly or indirectly, issues or aspects of this maybe that haven't been captured yet either in the presentation or comments that have been made thus far.

So let's open it up for a little bit here. Mike, step up to the microphone.

MR. MATEA: Mike Matia, from ISRI. One of the things that we have seen historically in cost-benefit analysis is what are the pros and cons if you do it this way and what are the pros and cons if you don't do it this way.

But in considering this issue, I think you should consider what would be the cost, let's say, to not only the general public, but to industry if you set a level, but mistakes happen, that material that is supposed to be released is released at levels higher than what you set; then what happens downstream; what are the costs, therefore; and, maybe even a step further, how do you remediate when that happens.

Because there's industries here right now that have been the brunt of mistakes and have had to also shoulder the burden of the costs. But if you were to release things, authorize things for release and the authorized entity makes a mistake, then not only what are the costs associated, but how do the costs downstream get relieved because someone upstream made a mistake?

MR. CAMERON: I think that's -- so you're addressing the -- a mistake and not an intentional violation, someone making a conscious decision to release above the levels. Is that right, Mike? An accident and then a scenario of what would transpire.

MR. MATEA: I think we're looking at both, because -- and let me just equate the current scenarios. Right now, there can be an accidental or an intentional mistake and many times the worst case scenario is that the steel mill or recycler will have millions of dollars of damage and the person who made the mistake, intentionally or accidentally, will have thousands of dollars worth of penalties.

So the bottom line is the industry gets penalized and has to bite the majority of the cleanup or remediation costs.

MR. NELSON: I think that's a valid comment and something we have to consider.

MR. CAMERON: Thanks. Other comments, suggestions about cost-benefit?

MR. ETHERIDGE: John Etheridge, with Entergy. I think in addition to some of the other cost-benefit analysis that you're considering here, you also need to consider the replacement cost when existing disposal capacity under 10 CFR 61 is exhausted.

We've already seen, in the United States today, in trying to develop new capacity, we've spent over $700 million in trying to do that. It could be a substantial amount of money and should be

considered in your analysis.

MR. CAMERON: Thank you. Tony?

MR. LEMASTRA: Just to put some balance on costs. Yesterday and today, we've heard of the high cost of disposal, the high cost of dealing with the materials. Typically, the costs run in terms of millions of dollars or hundreds of millions of dollars.

One of the problems that the steel industry and the other metals industries are facing is that, again, getting back to the perception, and I'll give a concrete example. Right now, aluminum dominates the beverage can market, whether it's beer, soda or any other kind of small beverages, it's going to be in an aluminum can. Plastics would love to take over that market, and you're looking in multiple billions of dollars.

The steel industry today dominates the food can industry. Aluminum would love to take over that the way they have taken over the beverage can industry, and, again, you're talking of a billion dollar or multiple billion dollar industry.

If the perception causes a shift in market or the automobile industry, where you have competition between steel, aluminum and plastic, if the perception causes shifts, you're looking at multiple billion dollar losses in production and in the economic health of the country.

So that's really where the metals industry is coming from. They're not talking about millions or hundreds of millions. They're talking about billions and many, many hundreds of thousands of jobs that are potentially at stake.

MR. NELSON: I appreciate that elaboration, because it follows on a discussion that we had just a few minutes ago in the other session, and that's helpful to point those impacts out.

MR. LESNIK: Let me go to Randy, but also ask you to do some thinking about -- yesterday we talked about instrumentation and is there a component of that that relates to this. Also, yesterday, we talked about trans-boundary aspects of this issue, both within the United States, between states, and then between countries. Is there a component of that that might weave into the cost-benefit analysis, as well?

MR. CLARK: Randy Clark, with Westinghouse. One of the ways that we try to be cost

effective in our business of decontamination and decommissioning, which is one of the big activities we have of excess facilities, some of which have a radioactive history within the buildings and the equipment that's within them, is that we do, in some cases, assets for services contracts with companies, as Oak Ridge does, also, with companies in order to effectively use the value of the assets that are there, many of which are historically radiologically clean, have no historical radiological history.

And along with those contracts, we have equipment that has low level contamination that can be cost-effectively cleaned up by a contractor, while working under our licenses and our regulatory process.

We basically then try to recover the value out of that and help offset our cleanup costs and effectively save the taxpayer money in doing so and putting together the processes we've talked about today, the new standards and the more systematic way of doing business is very important. There are very positive benefits to going to some of these new standards.

The cost effective side of that, as we have mentioned before, is very important to us, because the process by which we do release materials has to be a cost-effective process and that means that things that we historically found are very useful in this process -- for example, giving some kind of credit or graded approach to historically clean equipment, equipment that's been measured many times in the past, has been found to be clean, we have historical data to back that up -- that that not have to go through as rigorous a process perhaps as material which we know to be contaminated.

That perhaps in this whole process, there is a graded approach that still goes to some rem standard that we've talked about, rem per year, one rem per year or ten rem per year or whatever it is.

But we'd be able to come up with a graded approach that does that in a cost-effective manner, still achieving the objectives that the Commission and others would like to achieve, because we, like everyone else, foremost in our mind is we don't ultimately have to recycle the first piece of equipment.

Our primary goal is the health and protection of the public and the employees and the environment, and that's our number one priority, always has been, and we wouldn't recycle the first piece if we thought there was any risk to that by any of these processes.

MR. CAMERON: Are you suggesting, Randy, that this graded approach can be costed

out?

MR. CLARK: I think so, in some way, at least for us to know what it is. It has to be practical, has to be implementable, that we don't have to get in -- that perhaps we can do a number of case examples where we know that we have maybe 50 or so cases that have been analyzed in terms of being used and exposure and we know that this particular example fits case number 27 and find some way to facilitate relating measurements on a hand-held instrument, which is where we ultimately would like to go, to dosage and have enough scientific data to be able to meet the objective of dose to an individual in a worst case scenario, without having to go through a very exhaustive analysis.

Do that analysis up front, where possible, on a case by case -- on a case basis, that you can then refer to as like a matrix. Some way to expediate, simplify the process, make it easy for the person in the field to do, where I don't have to go get a Ph.D. to do the analysis and write a research paper on each item I want to release.

MR. RANDALL: This is Dale Randall, with the State of Maine. I wanted to point out that in looking at the cost-benefit analysis here, the two options aren't necessarily free release or disposal. You do have a decommissioning rule in existence that allows 25 millirem per year to the average member of the critical group, and that might well be the pathway for materials that aren't simply free released.

MR. NELSON: I'm not sure I understand the comment.

MR. RANDALL: I'm saying that the material may actually leave through a license termination process, rather than being free released prior to the termination of the license.

MR. NELSON: If the material -- if the licensee currently holds a license, then the material would be released under -- and were to leave the site, then the concept is that the licensee would have to meet the clearance levels, the release levels established by this rule.

MR. RANDALL: But if there is no entity in existence to ensure those materials remain on-site after license termination, then it is, in effect, free release.

MR. NELSON: I think I'm following you. What you're saying is that after license termination, you've effectively made a -- you've made a release decision. At license termination, you've made a release decision. You're leaving -- whatever is left there is released from regulatory control.

MR. RANDALL: And I think that should be brought to bear in the cost-benefit analysis, because the two alternatives are not simply disposal or free release via the conditions of this rule.

MR. NELSON: That is true. We need to bring -- have a nexus or connection between the decommissioning rule and the clearance rule. That's something that needs to be -- that needs to happen.

MR. LESNIK: You're saying that ought to be woven into the cost-benefit analysis, as well.

MR. RANDALL: Yes.

MR. LESNIK: Let's go to Norma, and then Paul.

MS. ROGERS: Norma Rogers, Allied Signal. On the survey, as you've said before, we are already essentially releasing materials and we already have in place survey equipment, procedures, et cetera, to do that.

And my question or comment is that there is expense in changing all of those procedures. There is expense in looking at the various radionucleii involved and what we already have in place, equipment that's already there, and are you changing with this dose, is that going to change it, will it make it lower depending upon the radionucleii that's involved, and the alternative that you use.

Is there a cost there, because we're going to have to change out all the survey equipment that's already in hand, as well as just the physical cost of doing it?

MR. NELSON: I think there is a definite cost element in surveys. We don't have a protocol for surveying, for example, volumetrically contaminated material. That would have to be developed and there would be some cost of -- just with that example -- of implementing that protocol.

It might mean additional training, it might mean different or more sensitive equipment. I'm just using that as an example, not trying to say that's the only element. That's just an example of one cost element that we'd have to look at.

MS. ROGERS: A follow-up. Norma Rogers. We already have some case-by-case situations in place and there can be substantial costs. Are you going to leave the case-by-case places in place or are you going to change those and what's the cost going to be? Because we have something we already have clearance to do. Are you going to grandfather that or are you going to incorporate that into

the new and we have to start all over again?

MR. NELSON: I'm not going to answer your question, other than to say there are certainly areas we have to look at from a cost standpoint.

MR. LESNIK: Paul, let's go to you, and then we're going to swing over to Allen, and then John Carnig.

MR. GENOA: Yes, real quickly. Paul Genoa, NEI. I guess I wanted to piggy-back onto the comment about decommissioning, because I think that is a logical extension of this.

First of all, the decommissioning rule on license termination is for buildings, equipment and soil. So it would not include a lot of the day-to-day materials that would be cleared out of a facility.

It would include tools and equipment like that, large in-place equipment I think it covers. But fundamentally, faced with a decision to decommission in a world that did not allow release, for instance, if one of the alternatives were materials from certain designated areas within a facility would have to stay there and could not ever be free released, then your equation is, well, if I can't do anything else, then, in fact, I either send them for disposal or I leave the building intact and free release the building in some fashion.

Of course, that's where you've got a disconnect between the standards of whatever you choose for clearance and the existing 25 millirem, and if you couldn't do it to 25 millirem, then you'd be forced to go into a restricted release scenario and impose institutional controls.

So there are quite a few impacts as you carry that logic out and they should probably be incorporated.

MR. LESNIK: Thanks. Allen?

MR. KIER: Allen Kier, NFS. First, I would like to comment that I do agree with trying to develop a national consensus standard for release criteria. My concern is at what level do we pick that release criteria to be.

If it goes below reasonable values, we start, as I commented earlier, impacting monetarily how we do business. What I'm thinking about is we discussed an earlier session on this tool decision-making process, where we determine population dose, person rem for different alternatives.

I was wondering if the Commission had also developed or looked at establishing a dollar per person rem value. Taking a look at the traditional ALARA concepts of you take an action and reduce a dose, the cost associated with reducing that dose, does it break even or do you save money, if we look at it from a dollar per person rem saved?

MR. NELSON: Yes, we do. That's addressed in the NUREG that we had up on the slide, 0058. We use a value of $2,000 per person rem in the analysis. The basis for that is in that NUREG, if you want to take a look at that, but that's basically the metric that we use. Don, did you want to say something?

MR. KIER: Just one quick additional comment. So that will at least be one of the tools that we will look at when we look at one rem, or one millirem or .1 millirem.

MR. NELSON: Yes, definitely.

MR. KIER: Thank you.

MR. LESNIK: A helpful clarification. John Carnig.

MR. KARNAK: John Carnig, EPA. I keep hearing 25 for the D&D regulation. My understanding is that's 25 plus ALARA.

MR. NELSON: That's correct.

MR. KARNAK: Okay. Thank you. The second point is I'd like to -- although I appreciate Paul having clarified the point, I'd like to hear it from NRC, about whether or not material can be left on-site and can be released as part of the D&D procedure as opposed to being cleared under a clearance rule separately at a different level.

I guess my question is, was Paul's characterization correct that anything short of the building and the land itself and other permanent things cannot be a part of the clearance at 25 plus ALARA.

MR. NELSON: I'm not following the question. Let me first state that the license termination rule or decommissioning rule applies to soils and structures. That's the application of the license termination rule. And the license termination rule envisions that the soils and structures will remain at the site and because of that, for example, in the structures, the scenario, the driving scenario was the building

occupancy scenario.

The nexus or connection I was talking about between the license termination rule and the clearance rule is that after you decommission a site and building in place, sooner or later, that building is going to come down.

But the scenario is different when the building comes down, because it's going to be torn down and as a process, the material is going to get diluted and so you -- first of all, you're not going to have the building occupancy scenario anymore. You're going to have a much different scenario, a much different exposure scenario, which would result in a much smaller dose.

The question is, is there an equivalence between those values used on the license termination rule and criteria established for clearance. That's the connection I was talking about.

Now, there's another scenario that is happening today, where, in the process of decommissioning, licensees are tearing down buildings as they go and the way it's done today is that if the licensee meets the release criteria under the decommissioning rule -- in other words, the decommissioning criteria, then they can tear down that building and free release it.

MR. LESNIK: John, did you have a particular caution or an angle on this or an insight that --

MR. KARNAK: Since the issue came up about whether or not material -- whether anything other than the building and the land would be covered under the D&D release, I just wanted to make sure we were clear on that.

MR. NELSON: It's building and structures is what the decommissioning rule covers.

MR. LESNIK: I want to ask Bill House, if he's here, is there anything about kind of the industry that you're here to represent, kind of the waste management industry, is there anything around cost-benefit that might be taken into account.

MS. ROGERS: Norma Rogers, Allied Signal. I just have a question about this. I really do not understand. Am I going to have some of my material potentially penalized because it has to go to waste disposal because I'm not decommissioning? This is just through my process, but it's the same type material that would not have to go to waste disposal if it were a decommissioning situation.

So I'm paying to bury the materials, that if I decided to shut down the whole plant and say we're going to decommission, I don't have to bury it anymore and I've got a cost-benefit actually there. I don't know, I'm asking the question.

MR. NELSON: I think that gets back to this connection I was talking about between the existing license termination rule and any release criteria that we come up with. We have to look at the situation you're describing, where you have a building and, under one scenario, if I decommission the building to meet the license termination rule and got my license terminated, I could then tear it down and release it.

But if I chose not to have my license terminated and wanted to rubbleize the building, well, I can't do that because it doesn't meet the release criteria under the clearance rule.

So under one scenario, I meet it, but I don't want to go to that scenario point. I want to release it now. So there has to be -- we have to look at the compatibility of the numbers that we derive. We have to clearly look at that.

MR. LESNIK: Thanks, Bob. Bill, I didn't mean to put you on the spot, but I know you're wearing several hats, folks from the solid waste, hazardous waste, low level waste. Any insights you've got about, as they proceed with cost-benefit on this, they pursue that analysis, particular angles from that industry.

MR. HOUSE: Bill House, Chem Nuclear Systems. I'd probably give the same response that the steel industry has given and the scrap metal industry with respect to soils. The volumes we're talking about here, if they were to end up in a solid waste arena, it would be a minor impact to that whole industry because the volumes are so large there.

With respect to low level waste disposal, and disposal versus release decisions in general, it's going to be highly dependent on where we set that dose limit. Economics are going to drive, within the bounds of legal and regulatory issues, to a great extent, what decisions are made by the industry.

If we drive this thing up to 100 millirem, for example, and that's an accepted public dose, maybe we drive things back to traditional low level waste sites versus a landfill scenario, similar to Envirocare. Then you get into a situation that John is talking about, where you eat up the two remaining

disposal site, remaining capacities and are stuck with no place for the higher concentration waste.

MR. LESNIK: That's a very valid point and something we have to look at. Other comments about cost-benefit?

MR. REITLER: Ed Riteler, Westinghouse. Over the last two days, there have been several comments related to both the health and economic impacts related to the possibility of industry's dumping materials on the environment.

The only thing I would ask the NRC to do there is to -- when they look at the scenarios, to determine whether that is a possibility, and there are certain ways you could handle that. You could -- I mentioned this yesterday. You could incorporate ALARA into any screening levels that you come up with or you could identify any exceptions that might result in dumping and handle those on a case by case basis.

But a lot of the fears of the public, whether it be perception or marketing trends, we don't want that to happen and dumping may cause that to happen. So just look at that.

MR. TURNER: Ray Turner, David Joseph Company. In responding to the slide on economic impact on scrap metal and other industries, replacement of metal production, the impacts of mining and processing of new metals to replace the metals sent to low level waste, we seem to be centered, in the last few moments here in the conversation, about structures and buildings and that's what we're talking about. We're talking about carbon steels.

As of the year 2000, according to our -- we keep a pretty close pulse on the industry, because that's our business, but as of the year 2000, recycle scrap metals and alternative iron sources, there is a four to five million ton per year over-supply already.

So I don't think you're going to have to -- if you don't, you're only talking a thousand tons or so a month to begin with. You're not talking about something that's going to force you to go out and mine some more metal to replace that 300,000 tons of recyclable buildings and carbon steel spread out over 30 years. I don't think there's any impact there.

On the other hand, on the issues of non-ferrous metals, like nickels and copper, I haven't heard the total quantity; neither have I heard the term of the recycling or disposal or whatever we're going to do here.

If that's going to be spread out over 30 years, also, then certainly that economical impact would be minimized. But if that nickel or copper supply is significant and in inventory and is placed into the public mainstream of recycling, it would have a devastating impact on the nickel and copper producers or marketers in the US today.

MR. NELSON: You mean if it showed up as a lump sum?

MR. TURNER: Stockpiled or dumped, as opposed to spreading it out over the entire 30 years or whatever the term is going to be. Yes. If it was lump sum recycling, nickel and copper would be much more volatile. I don't think you're going to see any economic impact as far as the price of scrap metals or mining of new sources on carbon steel.

MR. NELSON: So you're saying that nickel and copper are more volume -- that are volume-sensitive, whereas iron isn't.

MR. TURNER: That's correct. They're traded in much smaller volumes, but they're also traded in cost per pound as opposed to cost per ton. But extremely smaller volumes than carbon steels.

MR. NELSON: That's very good input. Thank you very much.

MR. LESNIK: Any other last comments before we break so you can check out of the hotel, about cost-benefit? Is there anything you would want to raise? If you have something after lunch -- let's break for one hour.

MS. STINSON: I think what we're going to try to do this afternoon, if you're willing, is to mine the expertise, to use a phrase, of this group to take a slightly different twist on the summary discussion. We have one more discussion period slated, which is what are the pros and cons of various alternatives.

We're kind of getting into that in this whole discussion. So I would ask you to think about a slightly different twist to that question, which is what is it going -- from your point of view, what do you see the NRC's greatest obstacles and opportunities in implementing some of these alternatives, what are some of the implementation factors that they should be considering.

So obstacles and opportunities and factors in implementation, and kind of -- maybe we could kind of have a comparative discussion. We've been talking about, well, if you do this scenario, these

are the likely impacts on environmental or economic side, what if they pursue one versus another and try to do some comparative examination on implementation.

We'll probably take just about an hour of discussion on that and anything else you want to talk about, and I would imagine we'd be out of here by 2:00. Is that safe to say? So you can plan accordingly, if you can make travel adjustments. So back here at quarter to 1:00. Thanks.

[Whereupon, the meeting was recessed, to reconvene at 12:45 p.m., this same day.]

AFTERNOON SESSION

[12:57 p.m.]

MS. STINSON: Let's get started, if we can. We've lost some folks. Let me just say that we have a member of the public interest community here, Glenn Carroll, from Georgians Against Nuclear Energy is going to come in and read a statement that I think is signed by quite a number of her colleagues. I don't think it's very long, and she may have other -- she may stay and have other comments to make, et cetera, but she'll be joining us shortly.

What we thought we'd do for the remainder of our time together is talk about any implementation issues that you all can raise for the NRC to consider. Again, keeping in mind, this is all pre-decisional for them. They have not only not decided about proceeding with the rulemaking, they haven't decided about proceeding with any particular alternative, but need to complete a thorough analysis of not only what it would mean to do a rulemaking or not, but also what it would mean to do a rulemaking under the various scenarios that we've been talking about.

So with that in mind, why don't we just open it up and see if anybody has any thoughts to kick off the discussion. Yes, Tom.

MR. HILL: Tom Hill, from Georgia. If nobody else is going to start others, I will do the agreement states' comments, that I think I would be remiss not to, and further the discussion this morning from the compatibility perspective.

From what I have seen and heard here, I'm sure there are some issues that may be interstate commerce related and, therefore, some strict compatibility may be seriously considered. But I think as usual, the agreement states would be looking for flexibility in the rule and the opportunity to be more restrictive if their particular state had that need. So I'll get that on the record.

I don't think that's anything new to NRC as far as the analysis and review goes, but do work with the agreement states in this issue, please.

MR. MECK: Bob Meck, from the NRC. One of the things that comes up is the awareness that the agreement states regulate norm or at least some of them do, and that those norm standards are different from agreement state to agreement state. And so the question is, if the NRC has some sort of a

dose level, what ramifications would that have with respect to the things that the NRC does not regulate or the agreement states don't regulate under their relationship to the NRC and the relationship of the norm and the variability that that might be from state to state. That's kind of a scattered comment, but I think -- I hope you get the gist.

MS. ROGERS: Norma Rogers, Allied Signal. I would just like to state that some of the case by case situations that exist today already, a lot of time, effort and expense has been put into those situations by the licensees that have them.

I would like to encourage the NRC to remember that and look at that in a grandfathering type situation when it comes to these type materials, so that we do not have to reinvest a lot of resources to show, again, that material is okay.

MS. STINSON: What other issues, what other implementation problems can you see in converting towards a -- in the direction of a rulemaking? Obstacles or just things that the NRC is going to have to address. Paul?

MR. GENOA: Paul Genoa, with NEI. One of the things that was mentioned earlier yesterday was the recent existence of an industry consensus standard by the American National Standards Institute, ANSI, that has established a standard that covers a full range of materials.

One of the obstacles I see currently is that while NUREG-1640 establishes a very fine construct for developing some relative concentrations in dose and some scenario situations, it only covers a range of materials and although it appears that our conversation is focused on steel for 80 percent of the discussion, I think steel recycling probably represents about ten or 20 percent of the problem and that there are many other materials that we deal with every day, and steel is not the biggest one.

So I guess I see an obstacle in that you will need to do quite a bit more technical basis to cover all the other materials that are needed in a comprehensive release standard.

I would just encourage you -- of course, we've only seen early drafts, because the document is not yet out, but I would encourage the NRC to consider establishing a rule and perhaps, if ANSI does cover all the materials adequately, that that might be an approach towards implementation to be able to actually refer to an existing standard in implementation space, one that covers the whole range of materials

of interest.

Thank you.

MS. STINSON: Yes.

MR. TURNER: Ray Turner, David Joseph Company. I would like to suggest that if we're talking about -- whether it's free release or restricted release into the recycling industry and we evaluated pathways, or the NRC has evaluated pathways in the electric arc furnace scenarios and basic oxygen furnace, or BOF, scenarios, I'd like to suggest they go further and look at cupolas and induction furnace, the other types of furnaces that could recycle that type of material, as well.

MS. STINSON: Good. Thank you. What else? Other analysis that should be completed? Paul?

MR. GENOA: I only did the halfway raise because I don't know if it's other analysis, I guess. But if we're asking for input on what the NRC needs to think about in moving forward, particularly in the idea of public communication of information, I think it's extremely important how the issue is framed.

We heard yesterday, in a discussion of the broad scope of NRC activities and how this fits in, we heard words like 100 millirem standard has been determined to adequately protect public health and safety. That's not going to cut it.

The public doesn't want to hear adequate. They want to hear definitive. If I set this standard, it is clean and it is protective public health and safety, period. If you can't get up and say that, don't go forward.

So I think that whatever this material is called, once it is cleared, it has to be called clean, it has to be called safe, whatever. And if we hedge on that and if we don't believe that, then you can't go forward, and I think that's really important.

I think for ten or 15 years, we've had a sort of nebulous response to the regulations. We don't see that out of the EPA. They set a standard, five part per million lead is hazardous, 4.99999 is not hazardous. We need to have the same thing here. It either is or it isn't.

MS. STINSON: Dale?

MR. RANDALL: Dale Randall, with the State of Maine. I would only comment that under the present regulation -- namely, the 5,000 dpm per hundred centimeters squared, perhaps I'm incorrect in calling it a regulation -- obviously a different measurement technique is being applied and if the NRC were to go forward, some thought should be put to volumetric counting standards and maybe some guidance in situ gamma spectroscopy and other techniques that are available today that weren't when 8107 came out.

MS. STINSON: What other comments? Go ahead.

MR. LEMASTRA: Tony LaMostra, AISI. On that issue of volumetric determinations, just be aware of small sample size, if you do in situ measurements, that you may not have uniformity throughout.

So if you're looking at a one-by-one jelly detector or a one-inch diameter, rather, jelly-detector, you may find hot spots even volumetrically throughout your mass. So whatever protocols are developed, you're going to have to look at good sampling technique and good statistics.

MS. STINSON: What about any other implementation suggestions or concerns that you have regarding different scenarios, sort of getting at the comparative discussion a little bit? Restricted -- some of the restricted release issues that we talked about earlier and different slices of that versus pursuing an unrestricted release scenario. Any comments on really comparing any of them?

This is kind of your final chance to weigh in with some advice to the agency for this meeting anyway; certainly not your final chance in the process. Anything?

I see Glenn Carroll in the back. I don't know if this would be a good time. Would you like to -- I'll introduce Glenn Carroll. She's President, CEO, Organizer of Georgians Against Nuclear Energy.

I'll let you introduce yourself further, Glenn.

MS. CARROLL: My name is Glenn and I'm with GANE, Georgians Against Nuclear Energy, and I'm bringing a message from 125 entities that signed a letter laying out as clearly as we can our position and why we have chosen not to participate in this meeting.

Letter to the United States Nuclear Regulatory Commission, against radioactive recycling

and release.

To the United States Nuclear Regulatory Commission. The environmental and public interest communities are declining to participate in the Nuclear Regulatory Commission's Atlanta rulemaking workshop for two reasons. First, the concept of release of radioactively contaminated materials into the marketplace is unconscionable, morally abhorrent, and contrary to the NRC's mission to protect public health and safety.

Second, we told you that in 1990, with the BRC, below regulatory concern, hearings, and again in 1993, when we participated in the NRC rulemaking procedure which established the decommissioning criteria for nuclear power plants.

The final decommissioning standard flies in the face of input the NRC was given by public interest groups and the American people, to allow zero release above preexisting natural background. In fact, by the NRC's own estimates, thousands of people could die if NRC standard is used.

I'm going to make an aside. That's a pretty wild claim, and we've footnoted, we've documented and worked out the basis for that figure. So there are copies of the letter, if you want to check that out.

Our position remains. Where's Don? I want to look at Don. Don. Our position remains, the NRC's enforced standard must be to contain radioactive wastes, isolate them from the environment.

Two other controversial and environmentally unacceptable practices are showcased in the current NRC process; dumping of so-called low level radioactive waste and dismantling and landfilling of used nuclear power plants, the source of massive amounts of contaminated metal and soil.

We share a common concern for the high volume of contaminated metals, materials and earth that have been spoiled for other uses by the nuclear industry. It is high time our species faces the grim reality of nuclear waste and comes to terms with it.

There is no known safe level of exposure to radiation. Let us not be seduced by short-term economic concerns, to make decisions that can wreak irrevocable damage in the gene pools of every species of animal and plant on our earth.

The honorable nuclear work now is towards developing and implementing effective technologies for nuclear waste containment. We call on the NRC to prohibit the release of radioactive materials and wastes to the marketplace and the environment.

Please enter these comments into the National Environmental Policy Act record.

This letter was on the internet for three days and received 125 signers. Nearly 100 groups at the local and national level signed, 12 international groups, and although we weren't even soliciting individual signers, 16 people came out of the woodwork and designated themselves as backing this statement.

Thank you.

MS. STINSON: Thank you, Glenn. And Glenn also brought copies of this and, Mike, maybe you can distribute those around.

Glenn, I'll just say that a number of the issues and topics that you've raised and the concern of public perception came out throughout the discussion and is of concern to many folks in this room, and what we're doing is preparing a -- we're taking the flipchart notes from every session and quickly translating them into a document. It's just meeting highlights, which we will distribute to everyone, so -- and really everyone who has sort of been interested in and involved in this issue or interested, but boycotting this particular discussion, so it'll get broad distribution, and then there is a meeting summary.

So you call can see for yourselves what other interest groups are raising concerns similar to yours and it really kind of -- the public concern that is expressed out there cuts across all, and everybody takes a different view of it, but it really cuts across all interest groups.

Okay. What other issues would you like to raise or implementation questions, anything else really that you'd like to raise before we close this afternoon? Mike?

MR. LESNIK: I would like to address two comments. One, I'd like to address to Glenn, as well as to those that are in here. And that is, historically and up to this point, the Institute of Scrap Recycling Industries, which is the trade association that represents scrap recyclers, both in the United States and abroad, as well as a number of manufacturers, has had a position, a very general position, in that radioactivity doesn't belong in the scrap recycling stream.

That position came about because of the years of battles that the recycling and the steel industry has had with orphan source material, as well as naturally occurring radioactive material, getting into the recycling stream.

So it's always been a concern that this material that was never designated to get into the recycling stream has gotten there and has complicated the livelihoods, as well as the product of many companies; has forced many companies to purchase radioactivity detectors, simply to protect the companies, their employees, and their product.

The discussion now with these issues is going -- is looking at a couple of issues that I'll simplify, because that's how we best understand them. One is, is there ever some level that's above zero of radioactivity that can be a part of the recycling stream. That's a reason why we're participating in these discussions and the reason why we haven't taken a position on this, other than the position I've alluded to, because we wanted to hear all of the facts, listen to all of the concepts, not only the science, but the concerns.

One of the issues that has been of concern is that we've listened to the scientists at both the NRC and the EPA, two entities who have been tremendous friends of the recycling industries and who have responded in areas such as generally licensed sources and better control and orphan sources and how to get them out of the hands of the recycler.

But we've also listened to the concerns of representatives of many environmental groups and the one problem that we have is that in listening to both sides, at least we have been hearing some common ground. We've been hearing that there are some areas where there are some agreements, although when we hear public statements and read material that's been published, there's indication that there isn't a common ground.

And the other concern that we have is that for the recycling industry to really be able to put our thumb on a position, it would greatly benefit to hear the nuclear representatives make a point and have it rebutted by the environmental industry, and have the environmental industry make a point and have it addressed by the nuclear industry, so that we can hear both sides in the same room, rather than hearing them in different forums.

I think we -- and I'm speaking for myself -- understand why many entities in the environmental arena have wanted to not attend these meetings. We understand your concerns and your reasons for doing that.

What I would ask is, is it possible that at some point, maybe not under the auspices of an NRC meeting or an EPA meeting or even an environmental meeting, but in the auspices of can we hear all parties discuss the issues, so that we could come to some conclusion and maybe others can come to some better conclusion, because it's the age-old argument that if you listen to two people discuss the same issue, but you hear them at different times, they both make sense, and in some cases, they may be saying the same thing; in some cases, they may be saying the different things.

But until you can hear them address each other is it possible to say I understand what our position should be because I've heard the issues debated.

And so what we would ask is hopefully all sides could agree to such an exchange of ideas in person, one-on-one, so that we can hear the debate and we could then better understand what are the common points, what are the differences, and make a better informed final decision on where the scrap recycling industry needs to fall to.

MS. STINSON: I can well imagine that there are other interest groups who are also not here that are in the same position. As Meridian discussed the development of these workshops with many other interest groups, such as solid waste officials and the unions, that they did not feel they knew the issues to a degree that they were completely up to speed, and yet there is this intense public debate going on in the media and elsewhere, and people are talking to the same issues and yet past each other in some instances, and there are some real, real differences and what are the basis of those differences.

So it sounds like what you're suggesting, Mike, is the creation of some kind of a forum where all parties can agree that they will sit down together and face-to-face address those issues, and I think it would be helpful to get more of people's thoughts at some point about how to construct such a thing. It's not an easy thing to do on this issue.

What else, Paul?

MR. GENOA: Paul Genoa, NEI. I hear and understand a lot of what you're saying and

we had hoped that through the public workshop process, such an opportunity would be created. It appears there are some obstacles there. If there were creative solutions that we could get past to bring parties together, we would participate or we'd certainly think about it, and we have thought about how to do such a thing.

MS. STINSON: Rick?

MR. BUTTON: I believe there's a UN, United Nations committee that's been formed or being formed to discuss the same issue, possibly meeting later this month in Geneva, I think. I also believe that the European community is debating the same issue, and I would encourage the NRC to at least forward the results of these meetings to those committees for their reference, as well.

MS. STINSON: Thank you. Don?

MR. COOL: Don Cool, with NRC.

MS. STINSON: In the back.

MR. COOL: I think probably it is worth taking just a moment and letting me reaffirm, from the Commission's standpoint, that our desire is, in fact, to have the exact dialogue that we've been talking about here for the last few minutes. Our original hope and desire was that this set of workshops would, in fact, be that kind of forum, where that kind of dialogue and back-and-forth and understanding could take place.

I guess I remain optimistic, with two workshops yet to be held, that that is a possibility that can occur even within the meetings that have already been envisioned. However, I would expect that if that's not the case, that we would still be very open and interested in having those kinds of discussions as we proceed through the process, because this set of four meetings is not a start and a finish.

It is a start. It is a step in a process to determine what to do, how to do it, and what its implications are.

I fully expect that there are going to be other opportunities, perhaps many other opportunities as we move through this particular process to try and have those discussions. And at least from the standpoint of the staff, if there is an opportunity in other forums, whether the steel manufacturers, NEI, some of the citizen or environmental groups or others, which would not carry the imprimatur of an

agency's meeting or something else, which might facilitate that dialogue, we'd be quite interested in examining that issue and presuming that we had an appropriate legal basis from some of the other constraints that I have to deal with in terms of how the agency conducts its business, participating in that process.

MS. STINSON: Okay. Thank you, Don. Any other final comments? Okay. Thanks everyone for your participation. You will receive, immediately after this meeting, highlights, as well as a listing of everyone who did attend.

NUREG-1640, anybody who wants to put a big check mark by their name can get a copy of NUREG-1640 mailed to them. We really apologize they weren't here.

MR. LESNIK: Leave that on the front table there maybe.

MS. STINSON: Put it right here. Thanks everybody, safe travels home.

[Whereupon, at 1:25 p.m., the meeting was concluded.]