OFFICIAL TRANSCRIPT OF PROCEEDINGS

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Title: RELEASE OF RADIOACTIVE MATERIAL WORKSHOP

Case No.:

Work Order No.: ASB-300-986

LOCATION: Rockville, MD

DATE: Tuesday, November 2, 1999

PAGES: 278 - 516

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1 UNITED STATES OF AMERICA

2 NUCLEAR REGULATORY COMMISSION

3 ***

4 RELEASE OF RADIOACTIVE MATERIAL WORKSHOP

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8 U.S. NRC

9 Two White Flint North, Auditorium

10 11545 Rockville Pike

11 Rockville, Maryland

12

13 Tuesday, November 2, 1999

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15 The workshop commenced, pursuant to notice, at

16 8:42 a.m.

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

2 [8:42 a.m.]

3 MS. STINSON: Take your seats if you will and

4 we'll get started.

5 Good morning. Welcome back for day 2.

6 I was thinking about overnight what this group

7 actually accomplished yesterday, and I thought I'd walk

8 through at least a few elements that I heard in terms of

9 discussion items, a bit of progress, et cetera.

10 At first I'm going to talk about what really can

11 be accomplished in a setting like this. There is -- it's a

12 difficult setting. People were very patient yesterday

13 waiting for their turn to speak, but, you know, typically in

14 a discussion like this, the first day you really are going

15 to spend quite a bit of time just trying to -- well, having

16 to hear and learn from each other what some of the basic

17 elements of positions and issues are. And today I hope what

18 we can do is move to the next level below that and really

19 begin to explore through a discussion on control for various

20 alternatives, through a discussion of environmental and

21 public health impacts, and a discussion on economic impacts,

22 as well as looking at some of the technical underpinnings.

23 I hope we can more deeply explore what are some of the

24 outcomes, potential impacts of the various alternatives that

25 have been put forward.

1 Right now there's four in an issues paper, there's
2 at least four or five that were mentioned yesterday in
3 various permutations. And it's worth spending, I think,
4 some time, if you guys can in your comments be thinking
5 towards how to put a little finer point on some of the
6 elements of different alternatives that you think would be
7 more or less effective. We really want to evaluate in both
8 directions.
9 In terms of what we talked about yesterday, I
10 think we learned that there really -- for some folks there
11 really is a need to discuss the drivers for this rulemaking,
12 what is it, if it's not economics and, you know, need to get
13 certain materials into commerce or the potential value of
14 that. What is it that's driving the development of the
15 consideration of a rulemaking for this process? And I think
16 we could look to every sector to try to give us some more
17 understanding from your perspective what might be driving
18 this.
19 I think we heard from folks yesterday that people
20 are looking forward to hearing from the NRC more about their
21 authority to regulate in this area, and Don and others
22 mentioned that there's a range of questions in front of
23 them, they're being given due consideration by the
24 Commission, will go through the process at the Commission,
25 and there will be answers to a lot, you know, all of those

1 questions.

2 But, you know, in addition to that we heard that
3 there is a significant need for more information and
4 particular kinds of analysis, looking at different kinds of
5 solid materials, the volumes of them, the potential pathways
6 of them, understanding better the underpinnings of NUREG-
7 1640, perhaps other NUREGs as well.

8 People are interested in understanding the
9 international implications of what the NRC is pursuing and
10 whether -- I think we heard on both sides that the U.S.
11 could be taking a lead and perhaps going a different
12 direction than some of the international community, but we
13 also heard that it might be most appropriate for the NRC to
14 follow the lead of other countries and consider the need for
15 uniformity across international boundaries for dealing with
16 solid materials.

17 In terms of the alternatives, there was I thought
18 a lot of good discussion of a range of alternatives, but not
19 a lot of depth going into any one of those. And again, if,
20 you know, we should utilize today to do that, because this
21 is an opportunity to bring together 36 or however many we
22 are, 28 minds to do just that. It's a unique opportunity,
23 different than what you will do when you go back to your
24 office and write down your own thoughts and submit them as
25 public comment.

1 There are a number of questions that were posed to
2 the NRC that -- I saw some nods of heads and commitments
3 from the NRC staff to answer those questions and get back
4 with information, so, you know, we'll look to the meeting
5 summary and the public record to assist in assuring that
6 that happens, and some discussion throughout the day on
7 building public confidence, you know, how really can the --
8 and really from many perspectives, not just from the public
9 interest community, how can the NRC build public confidence
10 in what it's about to pursue, how can -- even going so far
11 as suggestions that how can the stakeholders be given the
12 charge to answer some of these critical questions and do
13 some of the research and evaluation themselves and bring
14 back those answers to the NRC and to the Commission.
15 So those were at least some of the things that I
16 heard in our discussions, and, you know, obviously a lot
17 more meat on the bones than that general summary, but
18 hopefully that refreshes your memory, and if there are
19 thoughts as we go through the day as to how to best utilize
20 a discussion like this or best utilize future -- certainly
21 we need to talk about the Chicago meeting a bit before the
22 end of the day and how best to utilize the upcoming
23 meeting -- we'll entertain those thoughts and items.
24 In terms of today we're going to spend about 45
25 minutes going through session 5, which we set aside

1 yesterday, so we'll talk about solid-material controls and
2 try to get some of your thoughts, making sure that we cover
3 the safety issues and talk more specifically about survey
4 equipment. Those were some of the items that were mentioned
5 in the initial brainstorming session. And we'll talk a bit
6 about the studies that are being developed, and particularly
7 soil analysis and NUREG-1640. That's a place where people
8 can enter into the discussion ideas about cumulative
9 impacts, the risk-informed effort that NRC is undertaking.
10 Those were some of the items mentioned in the initial
11 brainstorming.
12 And then we'll spend -- probably have at least an
13 hour, if not more, if we can squeeze it out, on
14 environmental and public health impacts, talk about economic
15 impacts in the afternoon, and try to summarize our
16 discussion with a little bit in finer point again on the
17 alternatives and pros and cons for various alternatives.
18 And this is where you'll get a chance to probably what
19 you've been anxious to do all along, weigh in on
20 alternatives.
21 Does anybody have anything that they feel there's
22 a burning need to discuss that they don't see a way to do it
23 in this agenda as it's laid out in those four topics? Does
24 anybody at the table plan to walk out of this room before
25 four o'clock today?

1 MR. LESNICK: Do you mean on purpose?

2 MS. STINSON: I mean that you can foresee now.

3 That you have plans.

4 MR. LESNICK: Do you have an inkling?

5 MS. STINSON: Are folks leaving? I mean, does

6 anybody -- I'm trying to get a sense for our -- okay, three

7 o'clock, anybody have to leave being three o'clock?

8 Judith has to get back to her precinct.

9 Okay. Great. So we'll try to -- I mean, it

10 sounds like we'll have most people. We'll go to four if we

11 need the time. If we can end sooner, we will.

12 MR. LESNICK: And just a reminder, our public

13 comment periods will be at noon and at 3:30 today. Right?

14 MS. STINSON: Yes. And the signout sheets are

15 outside.

16 MR. LESNICK: Great. Okay, friends, let's move on

17 to session 5: How Should Control of Solid Material Be

18 Assured Under Various Alternatives? And Tony and Bob will

19 lead us through this.

20 MR. HUFFERT: Thank you, Mike.

21 For those of you that have been following the

22 issues paper, this is found in sections 2 and 3, and those

23 sessions are implementation of restrictions.

24 As we discussed yesterday, existing NRC

25 regulations require licensees to make surveys of solid

1 material to evaluate the potential rad hazard that could be
2 present. As part of the licensee's radiation protection
3 program, they develop procedures for controlling the solid
4 materials at their facilities. This includes radiation
5 monitoring procedures to evaluate any solid materials before
6 they could be released. And also, as we discussed
7 yesterday, there are some issues with existing survey
8 programs at these licensed facilities. Not all licensees
9 use the same survey instrumentation and procedures to
10 monitor solid materials, which can lead to variations in
11 detection sensitivities and equipment. This in turn can
12 lead to differing levels of control of solid material, which
13 may result in nonuniform levels of protection.
14 Another issue is that existing guidance on
15 conducting survey is geared toward the release of solid
16 materials with surface contamination only, for example, use
17 of Reg Guide 1.86. There is not an established procedure
18 for controlling release of solid materials containing
19 volumetric contamination, because NRC does not have
20 regulations in place for these materials. There are also
21 physical limitations for measuring volumetric contamination,
22 because it is a difficult method to measure radioactivity
23 contained in a solid object using the typical hand-held
24 survey instruments that are present at most licensed
25 facilities.

1 An overall consideration in controlling solid
2 materials with volumetric contamination is how to detect or
3 measure this radioactivity in the material itself and then
4 compare it to a radioactive concentration guideline or dose
5 guideline.
6 It's likely that the survey method that is chosen
7 for controlling the solid material is going to depend on the
8 alternative that is chosen for regulating these materials.
9 Currently we are considering a range of alternatives, which
10 in turn requires the staff to evaluate a variety of survey
11 approaches, because the alternative chosen determines the
12 survey method that should be used to control the
13 solid-material release.
14 It follows that if we choose a dose criterion that
15 is very low or zero above natural background, very sensitive
16 survey instruments will be needed, because of the ability to
17 detect this very low concentration of radioactivity. And
18 there are associated measurement costs and practicalities
19 for each of these alternatives.
20 Another consideration in controlling solid
21 materials is restricting the release to only certain
22 authorized uses. For example, future use of the material
23 could be restricted to only certain industrial purposes
24 where the potential for the public exposure is low.
25 For restricted use, what other controls should we

1 talk about today? Some of the options for restricted use
2 may include the following.
3 Should the NRC consider licensing the first user
4 and/or processor of these materials? For example, use of
5 materials for bridge supports was discussed yesterday. In
6 previous sessions I heard the use of tank treads as a
7 restricted use. This would be beneficial for the
8 radionuclides with a short half-life, which would permit
9 adequate time for the radioactive decay to reduce the amount
10 of contamination in the material.
11 Another consideration that we need to discuss is
12 whether there should be a public reviewer involvement
13 process as part of the restricted use. For example, should
14 there be a local advisory board established if a licensee
15 decides to pursue a restricted release? And what is the
16 appropriate length of time for restricting solid materials?
17 As an example, should it be tied directly to the lifetime of
18 the structure that contains the solid material?
19 Yesterday I heard recommendations that controls
20 should be adequate to protect workers and patients that are
21 administered radiopharmaceuticals. The controls should not
22 be too costly to restrict the use of radioactive material
23 itself. Implementation should be practical. It should be
24 simple. It should be economical. And I also heard
25 yesterday that there are concerns about landfill and steel

1 mill monitoring systems. These systems are very sensitive.
2 They can detect very low levels of radioactivity. How
3 should we go about factoring these real-world detection
4 systems into any implementing guidance that we were to
5 develop if we decided to go forth with a rule?
6 Another thing that we haven't heard yet is
7 labeling the material. Should we consider labels on these
8 materials if we do have a restricted use?
9 With that, I'd like to open it up for discussion.
10 MR. LESNICK: Great. Thanks, Tony. I appreciate
11 it.
12 Yesterday there were a number of comments around
13 the table from different people about their survey methods
14 and approaches and some of the technologies under use, any
15 implications therein. And so Tony and Bob, if you don't
16 mind me, we can start with that first. There's a number of
17 questions you outlined. But how about accounting for some
18 of the real-world systems you already have in place or might
19 need to be in place in the future? Is that okay?
20 MR. HUFFERT: That's fine.
21 MR. LESNICK: Can we open it up? Let's use the
22 same approach, if you don't mind flipping your card over if
23 you'd like to speak.
24 Dan Guttman?
25 MR. GUTTMAN: Well, this is a real-world

1 situation. It's not as technical as might be preferred,
2 but --
3 MR. LESNICK: Can you get that microphone closer?
4 MR. GUTTMAN: This is real-world, perhaps not as
5 technical as some might prefer. Four data points, I'd like
6 to present four data points and ask three questions as to
7 how they were considered by NUREG, by your staff, and what
8 you can say about it now.
9 The first data point is an excerpt from testimony
10 given by Paducah union president Dan Fuller before Senator
11 McConnell a week or so ago, the appropriations hearings on
12 this whole question of why there are no survey controls.
13 Mr. Fuller, and DOE I'm sure is familiar with his
14 testimony, cited a DOE -- quoted July 15, 1999, Keith
15 Christopher's report, which I assume Mr. Huffert has
16 reviewed thoroughly. Early this year, says Mr. Fuller, the
17 director of DOE's Office of Enforcement conducted a survey
18 which found that many DOE contractors were not properly
19 monitoring internal ingestion of radiation doses. A July
20 15, 1999 memo -- this is Mr. Christopher's memo, which
21 you're all familiar with, I'm sure, who have done this
22 work -- evaluation and assignment of worker doses are
23 consequently inadequately and/or inaccurately performed such
24 that compliance with annual DOE limits for personnel
25 exposure may not be assured.

1 Mr. Fuller goes on to record what DOE found, that
2 further deficiencies include failure to advise workers of
3 their doses, failure to analyze for all radionuclides to
4 which workers were exposed, dose assessment for workers that
5 have an uptake that were not completed, internal dose
6 assessments are not accurate, failure to perform in vivo
7 bioassays, and rad worker restrictions are not implemented
8 in a timely manner. Data point 1.
9 Data point 2. Mike Mobley, who is actually a
10 terrific guy you all know, has publicly stated on a number
11 of occasions, including in "The Progressive" and October
12 1998 in a court case, that he as one of the premier State
13 regulators in this country has experience where a lot of
14 materials are going out from DOE, which as Mr. Loiselle
15 said, 1.8 million, who knows how much tonnage we're going to
16 have. A lot of material is going out that are not
17 controlled, and he's personally been in discussions with DOE
18 people saying what's the big deal, one or two hot spots
19 don't really amount to a hill of beans when we've got such
20 strict regulations. Who cares?
21 Three, as those of you who have been following the
22 DOE situation know, before the BNFL contract was signed, the
23 understanding is that the use was going to be restricted.
24 Secretary Pena issued a specific directive to Acting
25 Assistant Secretary Owendoff and Jim Hall, Oak Ridge

1 manager, make sure DOE retains regulation. When it came out
2 the other end of the tunnel, laundered. No restrictions, no
3 DOE control.
4 Four, the companies are doing an MSC and BNFL in
5 one year, before they even get startup. In 1998 DOE, which
6 doesn't have any OSHA jurisdiction, bumbles in and in an
7 audit finds they're violating basic OSHA rules. In the
8 summer, OSHA in a pilot survey, which you know OSHA doesn't
9 have jurisdiction over it, he finds many serious violations
10 at BNFL and at least one worker injury in just a preliminary
11 phase last October. We don't have the full details.
12 The question with these data points, three
13 questions. One, you, Mr. Huffert, you, Mr. Nelson, you, Ms.
14 Holahan, and your SEIC staff, is there anything you can tell
15 us that can give us, workers and citizens, reassurance that
16 the empirical evidence in the real world of the arid
17 irrelevance of this technical stuff to the real world of
18 worker experience and experience so far in recycling isn't
19 going to occur, particularly in regard to volumetric
20 materials, we're not going to find five or ten years down
21 the road the same thing at these Indian reservations, the
22 same thing in these State capitals, the same thing that the
23 workers have experienced.
24 Two. One is can you assure us what empirical
25 analysis have you done with volumetric materials to assure

1 we're not going to find the same callous disregard for
2 whatever asserted requirements exist?
3 Two, where in this NUREG document do I look, do
4 State regulators look, to see what happens if, as the
5 real-world experience shows, people don't actually know
6 what's in this material, even though they pretend to, people
7 don't inform those workers who are using it what's in the
8 material, people do half-baked sampling, people let hot
9 spots go by, orders from the Secretary of Energy or the
10 Chairman of the Nuclear Regulatory Commission are routinely
11 ignored? Where do we find the worst-case assumptions? What
12 page in this report? Because we'd like to look at that
13 page.
14 And, third, what are you going to tell -- I'd like
15 to know what you're telling State regulators here like Ms.
16 McAllister about when workers and citizens ask them. It is
17 now agreed by Secretary Richardson and the highest levels of
18 our responsible Government that workers, the canaries in the
19 coal mine, after 50 years, still don't know what they've
20 been exposed to, and there can be no assurance. Why do you,
21 the NRC -- what basis is there in your SEIC report to tell
22 anybody that somehow metal that goes out to unsuspecting
23 consumers is going to be treated more respectfully and with
24 a greater dignity than what you have been doing to the
25 workers?

1 Where in this set of materials do you point us? I
2 don't care about -- we will get to the next question of what
3 you can technically do. I want to know what is in the real
4 world that you have looked at.
5 MR. LESNICK: Let me ask before Barbara or Tony,
6 or others respond as they wish here, a couple of things. I
7 guess I would like to ask Bob or Don, or someone to respond,
8 because, Dan, I know there is a particular set of issues and
9 a particular circumstance that is very important, and it is
10 very important in particular to you and to Pace and others.
11 It has to do with the BNFL, the Tennessee situation and --
12 MR. GUTTMAN: I am not talking about that. I am
13 talking about Paducah --
14 MR. LESNICK: Let me finish, Dan.
15 MR. GUTTMAN: -- and 50 years of history.
16 MR. LESNICK: Dan.
17 MR. GUTTMAN: Fifty years, not BNFL.
18 MR. LESNICK: Let me talk now.
19 MR. GUTTMAN: Yeah.
20 MR. LESNICK: Okay. And it is clear, it is an
21 important issue, it is an important issue a lot of people
22 are working on right now. I think the benefit is in
23 bringing, as you did just now, in a particular experience
24 and then asking some general questions about how will
25 workers be protected. How can people be protected as

1 something like this is considered and going forward? So I
2 guess I would like to encourage you as the day goes on to
3 keep doing it, to draw upon the experience that you have
4 got, but to the extent we can generalize that to a broader
5 national level, --
6 MR. GUTTMAN: Let me repeat, I will be happy to --
7 MR. LESNICK: And, finally, I would like to turn
8 to Bob and someone at the NRC to respond to this, because
9 this issue of the nexus or lack of nexus of DOE activities
10 and responsibilities by NRC and that relationship, at least
11 for me, it would be helpful to clarify. So let me turn to
12 the NRC folks for some response here.
13 MR. GUTTMAN: One point of privilege.
14 MR. LARICK: Yeah.
15 MR. GUTTMAN: We have heard that 1 to 1.8 million
16 tons, that is a little bit of a nexus for this proceeding.
17 And, two, I am not talking BNFL, forget BNFL. The real
18 world is not what you are pretending, it is what happened.
19 MR. LESNICK: And, also, I guess I would like to
20 say before you guys respond is I think the next session as
21 well about NUREG-1640 may get into some level of detail that
22 would be of interest to you as well.
23 Who would like to --
24 MR. NELSON: I will start it.
25 MR. LESNICK: Sure.

1 MR. NELSON: I will briefly address NUREG-1640.
2 The questions you asked regarding NUREG-1640, where are the
3 certain things you asked for. That was not the intent of
4 that document to address those issues, so you won't find the
5 answers to those questions in NUREG-1640. In the next
6 session we will discuss what is in NUREG-1640, but you won't
7 find the answers to those questions in NUREG-1640.
8 The issues you address regarding control of
9 material, protection of worker safety, protection of public
10 health and safety, are all concerns that we have regarding
11 releases of material, and concerns that we need to address
12 in any guidance that we develop to implement any rule that
13 is proposed.
14 You asked us yesterday, what are some of our staff
15 concerns regarding this rulemaking? Well, there are some of
16 them I have just mentioned. We see the implementation of
17 this rule, of any rule, being key to its success, and that
18 implementation is going to depend on the quality and the
19 level of the guidance that is developed to accompany it. So
20 these are the kind of issues that we need to consider, that
21 we need to examine as we go forward and develop any
22 guidance.
23 MR. LESNICK: Don. Don, would you -- hold on,
24 hold on, Dan. Don.
25 MR. COOL: Okay. Good morning. Don Cool. A very

1 good set of questions which don't necessarily, I believe,
2 relate to the modeling issue itself, but let me try to go
3 through some of them. Question Number 1, as I understood it
4 after the four points, the assurance that continued
5 releases, if I understand the way you expressed it
6 correctly, would not continue. That is precisely the reason
7 that we are asking the technical questions about how to
8 conduct a survey, absent any particular instance at this
9 point, but from the standpoint of looking at how you conduct
10 activities, how you conduct activities, with what kinds of
11 instruments and what kind of protocols in order to have
12 confidence that that system should be able to detect what
13 you are looking for.
14 But let's go on to the second step, because the
15 second step is implementation, and implementation is always
16 the key to any of these things. It is where the rubber
17 meets the road. Implementation is something that the
18 Commission takes very seriously. It is part of the
19 inspection process to look at those issues, not just from a
20 records standpoint, but from an onsite performance
21 examination standpoint. The issues raised here, were they
22 to be in a specific context, would be treated as allegations
23 or activities and would be investigation, would be examined
24 were they to be NRC licensees.
25 Fortunately, of course, I am not in a position to

1 directly address the DOE issues. Let's move on to the
2 second point of the series, because I believe your second
3 question was, where in the NUREG do you look for a worst
4 case assumption? And without stealing too much of Bob
5 Meck's thunder in a couple of minutes, the NUREG is a
6 calculational tool. So take whatever assumption you might
7 wish to make about amounts of materials or quantities of
8 materials, do the relatively simple calculation to estimate
9 whatever the dose is, because that is a scaling factor, that
10 is a relationship.
11 It is not a conclusion, it is not a limitation, it
12 is not a guidance, but it is a calculation tool. It allows
13 you to take one of the numbers and to calculate the other
14 number so that you can input and output on the process. So,
15 from that standpoint, for whatever kinds of system that you
16 had, you could go through and produce whatever dose
17 estimation, based on that particular model, with those
18 particular sets of calculational assumptions, to come up
19 with a conclusion.
20 MR. GUTTMAN: Well, as I basically --
21 MR. COOL: The third question, I think.
22 MR. LESNICK: Go ahead.
23 MR. COOL: What do you tell the states about
24 workers and about their exposure? Again, I can't speak to
25 the DOE orders and systems. For NRC licensees, 10 CFR Parts

1 19 and 20 require that worker exposures be monitored if they
2 likely to exceed 10 percent of the limits, and that workers
3 be annually apprised of their doses if monitoring was
4 required for compliance with that part. So if the transfer
5 occurred to a licensee and that licensee was doing work
6 under their license, then those workers would obviously be
7 afforded the same protection and would have the same rights
8 as any other workers.
9 If you are talking about a transfer where we are
10 no longer under a license condition, the presumption would
11 be that these individuals would have to be regarded as
12 members of the public and would have to be afforded the same
13 protections and criteria. And, in fact, the staff's
14 analysis to date assumes that those first touch individuals
15 are the individuals to whom the limitation dose values that
16 we might be talking about would, in fact, be applied.
17 MR. LESNICK: And the issues around 1640, we have
18 -- the entire next session is on that, so I urge you to hang
19 onto this.
20 MR. GUTTMAN: Sort of feedback, let me tell you
21 the way I hear. This is what I read. There are two pools
22 of waste we are talking about, utility and DOE, and as far
23 as I understand from what has been said, the DOE is the
24 lion's share. You folks who are going to make the decisions
25 are clueless as to the reality of the DOE. You are saying

1 something we would like to consider, when we get to it all
2 the rule will be followed. What we are telling you is you
3 can't do that unless you steep yourself in the reality the
4 way other people around this table have. You can't because
5 you are going to have to tell the state regulators how
6 thoroughly you have investigated this.
7 MR. LESNICK: Tony, and then let's move on. I
8 have got cards stacking up here. Did you want to say
9 something?
10 MR. HUFFERT: Yeah, just a follow-up. I think
11 that I am hearing also is when it comes to measurement and
12 detection of this radioactive material, you might want to
13 have a very high level of assurance that this material goes
14 out with a very good understanding of what the concentration
15 of radioactive material is in it before it leaves. That is
16 part of this discussion.
17 Yesterday, Tony LaMastra talked about some
18 relatively sophisticated detection instrumentations that
19 were used at the steel industry, very low false alarm rates.
20 They have trucks going to these facilities day-in, day-out.
21 I think the numbers that you gave, Tony, yesterday were on
22 the order of a few percent false negative rate. Is this
23 type of system needed at nuclear power plants or at
24 materials facilities? Should this material be cut up into
25 little pieces and measured so that there is 100 percent

1 assurance that everything that goes out of these facilities
2 is known to the atom? This is the kind of question that I
3 would like to have answered in this discussion.
4 MR. GUTTMAN: But let me -- but you are not going
5 to know --
6 MR. LESNICK: We do have others around the table,
7 Dan.
8 MR. GUTTMAN: I have some information that is
9 relevant. I don't want to monopolize it, but you can't just
10 be saying we are here, we like to get everything. You are
11 the experts today. We called, David Adelman and I called
12 Tennessee last week. They don't know how -- the 100,000
13 tons in Oak Ridge, two years after the contract, they don't
14 know what is in that now. They don't know with all of your
15 sophistication -- isn't that correct, David? They don't
16 know what is in that. BNFL doesn't have any public
17 statement of what is in that. Their assurance is no
18 problem. Like Mr. Huffert says, we will meter it before it
19 goes out. We have no idea what is in it now, it is
20 classified. BNFL is a foreign company, some of their people
21 don't even have security clearances in there doing this.
22 That is the information you need.
23 MR. LESNICK: Thank you, Dan.
24 MR. GUTTMAN: What is in it now?
25 MR. LESNICK: The issues you are raising, people

1 are noting, and they are not going to be able to answer you
2 real time.
3 MR. GUTTMAN: Well, they should be, because they
4 shouldn't be here if they can't. I don't mean to be -- I am
5 speaking --
6 MR. LESNICK: In some cases they are. In some
7 cases where if they need to look at things, that is how they
8 have to proceed.
9 MR. GUTTMAN: Because I have got people I
10 represent who are out there being exposed to this.
11 MR. LESNICK: Understood and respected. Steve.
12 MR. LARICK: Tony touched on one of the comments
13 that I was going to make. This issue of method of survey is
14 one of the key issues in my mind. I don't think that anyone
15 would object to stronger, stringent standards for surveying
16 things on the way out of the facility. I mean I wouldn't
17 think that DOE or NRC would object to that. It would make
18 the customers or consumers happy, it would make the public
19 happy. If that was factored into the rule, the contractor
20 would know that ahead of time, he would just stick in his
21 bid. All right. It may cost a little more, but I think
22 this is one of the key issues.
23 What you touched on as far as the availability of
24 instrumentation that can detect low levels of radiation,
25 that is on the market, it is commercially available. It

1 doesn't take a rocket scientists to operate it. Even
2 somebody like me could operate it, all right. And so my
3 first question is, why wouldn't you want to have that at a
4 facility as a requirement, in addition to other controls?
5 We are not saying that that would be the sole criteria for
6 the release of the material, but after it has been surveyed,
7 analyzed, whatever is necessary, when that vehicle is
8 leaving that site, it would seem prudent to have it go
9 through one of these systems. I don't see why anyone would
10 object to that. Again, if anybody has a comment about that,
11 why wouldn't you want to do that?
12 The other thing about the restricted release, I am
13 not going to try to be repetitive about the point I made
14 yesterday, but, according to the DOE folks, you have got a
15 bunch of materials, some are contaminated, some are not. I
16 won't get into surface versus volumetric, because I don't
17 think people on our side of the fence really care that much
18 whether it is surface or volumetric. If it is contaminated,
19 it is contaminated. It has got radiation, that is a
20 problem.
21 So if there were efforts made at the site to
22 better segregate these materials somehow, so that you are
23 having a small percent of the total to deal with, I don't
24 know what those numbers are. I will just pull some numbers
25 out of the air. But everyone says that 10 percent of the

1 material that we are talking about releasing is steel. I
2 have heard people say, well, half of that is at background.
3 So what we are doing is we are spending 90 percent of the
4 discussion on 5 percent of the material that is being
5 released. If there were some method, sorting method at the
6 facility to isolate the materials that had the above
7 background readings, and then deal with those materials, it
8 would seem to me that that would make sense.
9 MR. LESNICK: Let's get some response to those
10 two, if you don't mind. Any reactions? The first question,
11 then a second, okay.
12 MR. HUFFERT: The first question was, should we
13 consider using new instrumentation to implement a rule?
14 That is one way I am interpreting it.
15 MR. LARICK: Yeah.
16 MR. HUFFERT: That is up for grabs. As far as
17 sorting, that sounds like a very good idea.
18 MR. LESNICK: Also, can I remind folks, you think
19 about controls, we are talking about -- some are talking
20 about restricted, unrestricted. There may be some other
21 mechanisms, other types of controls you might want to think
22 about as well, I don't know. David.
23 MR. LARICK: One quick point. It is not new
24 technology. It is not new technology for anyone, it is
25 existing technology.

1 MR. LESNICK: Existing technology, okay.

2 MR. LARICK: It is commercially available.

3 MR. LESNICK: All right. Thanks. Let's go to
4 David Adelman and then we are going to go down to Jill, then
5 Mike Veiluva.

6 MR. ADELMAN: I want to amplify a couple of points
7 Dan made, and maybe frame it a little bit differently.
8 First, I think --

9 MR. KARHNAK: More pleasantly.

10 MR. LESNICK: Going for different style points, is
11 that what you are trying to say?

12 MR. KARHNAK: David is the grunge generation.
13 Sorry.

14 MR. ADELMAN: I think that there are several
15 reasons that DOE is important. The first is just the
16 experience of people, groups like NRDC and other public
17 interest groups. It is biggest player out there in terms of
18 people's knowledge of management of radioactive materials,
19 DOE is often what people know about. And the history of
20 DOE's management of radioactive materials, as I have said
21 before, is certainly far from consistent. And recent
22 examples like Paducah, the large scale cleanup, all of that
23 adds to the general public perception.

24 MR. LESNICK: David, you are going to get us to
25 control issues here?

1 MR. ADELMAN: I am.

2 MR. LESNICK: Okay.

3 MR. ADELMAN: I am.

4 MR. LESNICK: I just wanted to make sure.

5 MR. ADELMAN: So I think it is key that way. And
6 then the other way it is key is that we are arbitrarily
7 separating between the regulation that you are setting out
8 here and how DOE is going to regulate its materials. What
9 Andy Wallo has indicated is that there will probably be
10 consistencies, that there will be an attempt to be
11 consistent with whatever NRC proposes here. So in a very
12 real way, if you propose certain standards, there is a very
13 high likelihood that DOE will incorporate them in some way
14 perhaps into its 5400.5 rule.

15 So there are also very direct ways in which what
16 we talk about and do here, and the implications for a
17 standard that is set here will have direct impacts on what
18 DOE does and how it does what it does.

19 So in terms of incorporating or taking into
20 account experience at DOE facilities with the rule that you
21 are setting here, we think there is a direct link.

22 To go -- to talk more directly about some of the
23 control concerns, I guess I would break it down into three
24 areas. The first is the inherent technical limitations of
25 the survey equipment right now. At least according to some

1 of the EPA materials I have read, if you were to set a 1
2 millirem standard, depending on some of the assumptions with
3 regard to how you calculate that exposure, there are going
4 to be limitations on how reliably you can take measurements
5 of materials contaminated with cobalt-60.
6 So it seems like, at least uncertain
7 circumstances, you are pushing the technology that you have
8 currently available, and I think that is something that is
9 obviously critical for you to evaluate on radionuclide by
10 radionuclide basis. And where you have very significant
11 uncertainties, one should be evaluating whether or not any
12 kind of release should be permitted where you don't have
13 clear technical capabilities to undertake the measurements.
14 The second is on the economics, and this is
15 something I raise the other day, which is simply that if you
16 look at where the money is in this business, it is not in
17 the body of the materials, it is in avoiding disposal costs.
18 And so there is a very strong economic incentive to maximize
19 the amount of material that you release without cleaning it.
20 Once you throw in cleaning costs, particularly for low value
21 materials like steel, you lose any significant economic
22 benefit between recycling it and disposing of it. And with
23 those sorts of economic pressures, in addition to the costs
24 and time involved in surveying the equipment, it is
25 essential that from a regulatory basis that you consider

1 mechanisms that ensure that there is proper liability,
2 proper oversight and that we are able to effectively monitor
3 the releases that are taking place.
4 And then third, and this is somewhat related, is
5 just the realties of the implementation. Again, there are
6 going to be two factors that weigh into this, inherent
7 uncertainty of the instrumentation, but also the
8 uncertainties that are thrown into that when you have large,
9 complicated pieces of material that are going to be
10 surveyed. So what sort of possibilities for false negatives
11 are there? What are the implications in terms of the risk,
12 particularly to workers, when you have an improper release?
13 All of that must be evaluated.
14 MR. LESNICK: Thanks, David. Let's go to Jill,
15 then Mike and next door to Paul.
16 MS. LIPOTI: I propose the question, what is
17 driving this rule development? And what is driving it is
18 that Reg. Guide 1.86 is inadequate and the case by case
19 decision-making is time-consuming and inconsistent. Just as
20 NRC's generally licensed program was proven to be
21 inadequate, they worked to tighten up the holes, that is
22 what they are doing here, they are trying to tighten up the
23 holes with the current regulation. There is something wrong
24 with it.
25 Now, there are two places where government gets

1 involved. One is while equipment is under regulations.
2 State regulators do not regulate Department of Energy
3 facilities, or Department of Defense facilities, or Veterans
4 Affairs facilities. The second place is when stuff is
5 found. Now, you wanted some real life examples. We
6 reviewed our incident files to see the quantity of
7 cesium-137 and radium-226 that have set off radiation
8 monitors at metal recycling facilities in New Jersey. And
9 it takes about 30 microcuries of cesium-137 or four
10 microcuries of radium-226 embedded in a load of scrap
11 material to set off a typical monitor.
12 When I compare these values to the values listed
13 in Table 2.3 in Reg. Guide 1640, 300 dpm per 100 square
14 centimeters and 400 dpm per 100 square centimeters for
15 cesium-137 and radium-226, respectively, it appears that it
16 would take about 2,000 cubic meters of material contaminated
17 with cesium-137 or 200 cubic meters of material contaminated
18 with radium-226 to set off a typical radiation monitor,
19 assuming the dose criterion of one millirem per year.
20 So I do see the value in using these same type of
21 detectors that would be on the incoming part of a scrap
22 metal facility at the outgoing to screen the trucks that are
23 leaving a licensed facility.
24 Now, I am going to say something in defense of the
25 Department of Energy and Department of Defense. They have

1 been very responsive when we have found that some item of
2 theirs has set off detection at a scrap metal facility, and
3 they have come right away to claim their scrap and take it
4 back. We have called on them for a number of incidents.
5 One of them, Brookhaven responded with their entire
6 laboratory when we found a radium needle in scrap furniture
7 that was from a Philadelphia social service agency. So, DOE
8 and DOD have some good points, too.
9 MR. LESNICK: Let's move on. Mike Veiluva and
10 then Paul, please, on controls. Paul is first says Mike.
11 Paul.
12 MR. GENOA: Testimony. I think it would be
13 important to point out what current controls are used in
14 many NRC licensed facilities, and I think it is because
15 there is a spectrum of materials that are released from
16 facilities every day, it is important to understand the
17 requirements imposed on us currently to ensure that those
18 materials don't pose a radiological risk on the way out.
19 Materials, you heard about the survey
20 requirements. Imagine a nuclear power plant, there is a
21 fence around the outside, security, only certain people can
22 get in and out. Within that, there are buildings and
23 structures within those structures. There is a reactor,
24 there are subcomponents. There are materials in there,
25 radioactive materials. There are water treatment facilities

1 and so forth. There is maintenance that goes on and pumps,
2 people have to go in and out. Materials have to go in,
3 replace pumps, water treatment filters, whatever.
4 In doing all these things, you come in contact
5 with radioactive material. The people who are go in there
6 are trained workers. They are highly qualified. When they
7 bring material out, they have to go through a -- before you
8 even get in, they have to go through a radiation control
9 point, dosimetry, worker protection, all sorts of levels of
10 control are imposed.
11 When material comes out there, if the material
12 itself is to be reused, or recycled, or disposed, it is
13 segregated. It has to go through monitors of different
14 types, down to hand friskers if it surface contaminated
15 equipment. If it is volumetric in any way, it has to go
16 ahead and go into a counting laboratory where it may undergo
17 a 15 or 20 minute count on a multi-thousand dollar detector
18 system. From that, we can get down to a very, very low
19 level, but only gamma emitter, and from there we have to
20 scale some of the others, process, knowledge and sampling
21 that has been done over time to other laboratories,
22 analytical measurement.
23 So I guess what I am trying to get to is that
24 there are extreme controls, a large number of people, huge
25 resources, imposed to ensure that the workers and the public

1 are protected from radioactive materials. And I have only
2 just -- I don't want to bore you, I have just run through a
3 very brief analysis.
4 But, fundamentally, there are practical
5 limitations. If you -- an isotope is not an isotope, a
6 curie is not a curie, there are different types of
7 radioactive material, different isotopes at different dose
8 consequences.
9 MR. LESNICK: I was going to ask you, Paul, given
10 all that, what you said, where does that lead you then as
11 you kind of advise, if you will, the NRC?
12 MR. GENOA: That's exactly where I am going. I
13 would think that what you would require is that adequate
14 monitoring, strong controls be imposed to ensure that
15 materials aren't released. I believe those controls are
16 already imposed, at least on reactor licensees, and I
17 believe on all NRC licensees that use these materials. And
18 I think there is a broad misconception about the level of
19 control currently imposed. And I think you will find this
20 misconception -- I mean, Steve, you say that, you know, that
21 these tools are available. These tools you are talking
22 about are only gamma sensitive. They are not going to catch
23 a soft beta emitter and they are not going to catch an alpha
24 emitter. So you have just cut out like, you know,
25 two-thirds of the problems.

1 So there is much more needed. And, Dave,
2 actually, I agree with many of the comments you made. There
3 are limitations on the technology. If you push a limit far
4 below what is a dose or a health effect, you get down into
5 the range of, you know, detectability, and you get into a
6 problem, and that undermines public confidence. You need to
7 have a measurable level that people can sort what is clean
8 from what is not, what is safe from what is not. And so I
9 would just try to explain that I believe, fortunately, that
10 the technology that does exist is more than adequate to
11 detect levels well below a health risk.
12 And so I think that we actually have a nexus here
13 where a rule can work. But I think there is a lot of
14 information that needs to be shared around the table,
15 because people have this perception.
16 MR. LESNICK: Mike, before you go, just quick,
17 back and forth. Go ahead.
18 MR. LARICK: Yeah, since that was directed at me.
19 The idea of scanning vehicles on the way out, I understand
20 that is only going to pick up gamma emitters. But that
21 wouldn't be the sole criteria for the release, that would be
22 in addition to other methods. You are saying, you know,
23 that things are sufficient, but then we just heard from Jill
24 that she has found things.
25 MR. GENOA: She found things from Department of

1 Energy. Let's not mix NRC licensees that we are here to
2 talk about today with other licensees.
3 MR. LESNICK: I am hearing a theme here.
4 MR. GENOA: We all spent a lot of money to come
5 here to talk about this.
6 MR. LARICK: Well, I understand, but there are
7 things getting out with the controls that are in place
8 today. And so what I am suggesting is this would be in
9 addition to the controls that are in place today. And as
10 far as tools that you could use to monitor vehicles, those
11 are the best tools that are available to monitor vehicles.
12 Everybody understands their limitations, but there is no
13 tool available to monitor alpha or beta emitters inside of a
14 truck. If you could come up with one, you would be, you
15 know, you would be the next Microsoft. But it is not
16 available. So if you have a tool that would supplement what
17 you are already doing, I don't see why anyone would have a
18 problem with that.
19 MR. LESNICK: Let him quickly say something,
20 Steve, and then let's move on to Mike, if that is all right,
21 so we can have this back and forth.
22 Go ahead, Paul, quickly.
23 MR. GENOA: Yes, just the point, currently, if we
24 are to free release material, we need to do a 100 percent
25 surface scan, and then we need to do an aggregate scan.

1 What you are doing is an aggregate scan. You are using the
2 only technology you have available to solve your individual
3 problem, I understand that. We are already using comparable
4 equipment. You are trying to look at something that is
5 already packaged and shielded in a truck. We are looking
6 at the stuff separated in the right geometry, so there are
7 better ways to do it than you are currently doing. You
8 don't want to take the stuff off the truck. I understand.
9 That is your problem. We already have it off the truck so
10 we are doing adequate surveys right now and, you know, we
11 use new technology when it is appropriate. Give us a level
12 that we can set the instrument and we'll go buy them.
13 MR. LESNICK: Let's go next door to Mike Veiluva.
14 You need the microphone, please.
15 MR. VEILUVA: All right. I want to make a very,
16 very quick process point, which is I was asked yesterday
17 what informational issues would assist the environmental
18 community, public interest groups or what-not to get them to
19 further participate in this process.
20 Dan raised some good points. I also understand
21 that this is not the place necessarily to answer all the
22 points, but some of the forums that were discussed yesterday
23 may very be the appropriate point --
24 MR. LESNICK: Sure.
25 MR. VEILUVA: -- and I would like that thought to

1 be held.

2 It seems to me, and I should explain that in a way
3 like David our approach and our view of this problem is
4 colored by the fact that we mostly deal with DOE and we
5 understand DOE is not a licensee per se, but I suspect that
6 they will be paying much attention to any rule that
7 ultimately comes out of this process, and so we have to
8 always consider that.

9 Today's landfill may be tomorrow's elementary
10 school site, so that when people tell me that volumetric
11 monitoring methods are still in the works and have not been
12 perfected, when people talk about recycling, when people
13 talk about so-called limited use, we get nervous. While
14 bits of steel and nickel may be monitored, look at the
15 volume of concrete, look at the volume of soil which may
16 necessarily fall under the rule.

17 Given that fact, I question whether we can fashion
18 a limited release rule or monitor methods which are
19 protective of public health to deal with those types of
20 volumetric materials.

21 Secondly, to pick up on a point, people are coming
22 at this from different perspectives, health perspectives,
23 economic perspectives. If the working assumption is that
24 the cost of waste management of this really low level waste,
25 something in between zero and low level waste, if the

1 assumption is that the cost per unit of managing that waste
2 is going to be less, the low level waste, you have to step
3 back and look at your monitoring methods and look at the
4 cost methods and really ask yourself is it worth it?
5 Why create a new class? Why not just keep it as
6 low level waste? Because if you are going to create a whole
7 new class of licensees, a whole new class of folks with an
8 economic stake in monitoring this stuff, and new
9 technologies, not only may it be questionable from a health
10 perspective but it may be questionable just from sheer
11 economic sense. It may impose a greater burden on folks who
12 are involved in the economic loop than it may actually be
13 worth, and this is a problem.
14 We come here and you have the hospital folks on
15 one end of the spectrum. You have DOE on the other end of
16 the spectrum and everyone is being asked to be treated
17 individually and no one likes being painted with everyone
18 else's brush, and one of the great dangers of this rule is
19 that you do just that.
20 MR. LESNICK: Thank you. Let's go to Eric,
21 please.
22 MR. GOLDIN: Paul has already described the
23 process by which surveying is done before material is
24 released from a nuclear plant and I just wanted to touch on
25 a couple of other things.

1 To show you how difficult this becomes, it is not
2 a question of releasing radioactive material into the public
3 sector. It is a question of determining when you have no
4 radioactive material. It is proving the negative, and I
5 will give you a quick example.
6 Let's say I am the health physics technician at
7 the boundary of a facility and am presented with this piece
8 of steel and I am told to survey it out, and it has been
9 painted, so I can take my frisker, which is the industry
10 standard and has been for years -- it's a Geiger counter
11 essentially with a round probe -- and I can survey that
12 material and the detection capability is believed commonly
13 to be about 5,000 DPM per hundred square centimeters. It's
14 a good little exercise for an HP tech to convert twice
15 background, which is what you can reliably detect with that
16 little survey meter, into the common units of DPM per
17 hundred square centimeters under certain assumptions, and
18 that is what you get.
19 Now if I scrape that paint off of enough material
20 and I end up with a bucketful of that paint, and then I am
21 presented with, well, how do I survey this stuff? -- a
22 bucketful of paint chips? The NRC guidance is you count
23 that on a different kind of instrument to environmental
24 levels which can easily detect fallout cesium in soil
25 samples, for example, and you have basically then two

1 separate standards for the same material, so if I take that
2 piece of steel, I survey it by hand, and then I take it
3 outside of the area, now I have declared it clean, which it
4 is, now I scrape the paint off -- what do I do?
5 You know, your decision points are based on what
6 kind of instrumentation you are going to use, trying to
7 prove a negative, and all along the basic situation is that
8 there is no radioactivity there anyway. You can't detect
9 it, so that is the practical implication type of thing that
10 you are presented with.
11 A couple of other points of clarification. One is
12 that for steel from a nuclear plant, it is almost never
13 volumetrically contaminated. All we deal with is surface
14 contamination. You are talking about pipes -- or girders
15 and piping and things from the secondary plant. If you have
16 piping and stuff from a radioactive system it has to be
17 deconned, destructively deconned and the metal removed
18 before you would ever consider trying to survey that to
19 determine if it is still contaminated or not.
20 The only thing that is contaminated
21 volumetrically, if you will, would be something like the
22 reactor vessel, which you are never going to consider for
23 trying to survey out.
24 The last thing is I noticed on the board up there
25 we talked yesterday briefly about recapture. If you can't

1 detect radioactivity on something and you let it go, how are
2 you going to recapture it, because you can't detect the
3 radioactivity on it? It doesn't make sense.
4 MR. LESNICK: Dan, you had a quick clarification?
5 Mike and Paul, are you saying the volumetric
6 question may not exist for purposes of commercial releases
7 in the context of the nuclear industry?
8 MR. GOLDIN: For steel.
9 MR. LESNICK: You guys both need microphones.
10 MR. GENOA: I know of no volumetrically
11 contaminated metal that we would release from a facility
12 conceivably, from any nuclear power plant that I know of.
13 MR. GOLDIN: Okay.
14 MR. GENOA: Now the question is what is the
15 definition used? If you use sloppy definitions that we have
16 seen thrown around that would tend to talk about subsurface
17 or in-cracks or whatever, that is not volumetric. That is
18 fixed activity and that is a different story.
19 MR. LESNICK: Thanks. Let me go to Felix and then
20 Judith, please.
21 MR. KILLAR: I also wanted to build a little bit
22 on some of the -- the industry and practicality, and what
23 have you, from the perspective of the fuel cycle and also
24 manufacturers.
25 One of the items that we run into is we use

1 thorium, which shows up in the front of the fuel cycle. We
2 use it in the manufacture of the lights over our head and
3 welding rods and things on that line.
4 If you look at the new criteria for releasing a
5 site that was used for production in the front-end or used
6 making, manufacturing lights or welding rods or what have
7 you and stuff the variability in natural background on that
8 same site from side of it to the other is enough that you
9 can't release that site. That doesn't even account the
10 material that you brought on the site because the limits are
11 so strict on thorium to stay within the 25 millirem that you
12 can't physically demonstrate that you have cleaned that site
13 adequately, so when you start talking about the
14 practicality, dealing with some isotopes like that, you
15 know, there is no practicality, at least at these particular
16 levels and stuff and that is one of the things we have to
17 take into consideration.
18 Yes, we can measure things down to the nth degree
19 but if it doesn't do you any good after you measure it
20 because you say, gee, I don't know if that is natural
21 thorium that was here before I started or that is thorium I
22 brought in to manufacture my product -- how do I answer or
23 how do I address the question?
24 How do I make the public and people comfortable
25 that, yes, I have taken all the stuff off that I brought

1 here and this is, quote/unquote, a "greenfield" now?
2 Similarly, you are dealing, as we mention once
3 again, with the NORM is dealing with the oil and gas
4 industry and stuff. They are not out there producing
5 nuclear materials but as a byproduct of their operations
6 they end up with contamination that includes radium, it
7 contains thorium, contains uranium, what have you, and as we
8 have talked earlier and I think Tony from the Steel
9 Manufacturers said when they measure those on individual
10 pipes, individual components on the ground they were fine,
11 that they met the criteria, they were released.
12 However, when they put all those pipes together on
13 a load that went to a facility for scrap recovery and what
14 have you, the total weight ended up exceeding the limit.
15 Now is that practical? You know, we have to be
16 practical. We want to make sure that when we do this final
17 measurement, release this, and we say that it is clean that
18 it is clean. We don't want it to come back.
19 We talked a lot about recycle. To tell you the
20 truth, from the industry perspective we don't want it
21 recycled because we don't want the finger being pointed at
22 us as the one who released that material. What happens a
23 lot of times in defense of my cohorts in the utility
24 industry and stuff, things that have come out that are a
25 source that was disposed of improperly from a medical

1 facility or from some clinic that shut down 30 years ago and
2 nobody ever recovered or recaptured, what have you, ends up
3 getting melted down, but the finger gets pointed at the
4 nuclear industry, pointed at the power plants and things
5 like that improperly.
6 Recapture? Yes, recapture is very important. We
7 like to try to recapture all the sources. DOE has a very
8 active program right now. The NRC has a program ongoing
9 right now to identify orphan sources and try and recapture
10 them.
11 We work with the CRCPD and with their program to
12 recapture orphan sources and get them back into control and
13 what have you. We try to do what we can with the state
14 agencies and EPA when sources are identified that there
15 isn't a current owner or the owners are bankrupt to find
16 someone to adopt that source or to possibly recycle that
17 source and make it back into another application.
18 This is life. Things go on. What we are looking
19 for is a practical standard that when we do this measurement
20 we say that the impact, wherever that material goes, whether
21 it is recycled into a baby carriage, a baby's toy or a dish,
22 whatever, it will have no medical or health impact on you as
23 a consumer. That is where we are trying to get to.
24 MR. LESNICK: Thanks, Felix. Any comments?
25 Judith, as you pull that microphone down to you, I would

1 like to thank people around the table. Different places
2 have brought some practicalities to this, whether it is for
3 workers at the steel mills, at the utilities and for others
4 around the table. I think, I suspect this is very helpful
5 to the NRC Staff who are trying to understand, better
6 understand and sort through this.
7 We are going to go to Judith and then Kathleen.
8 MS. JOHNSRUD: Thank you, Felix. I found those
9 very informative and useful comments, very seriously so.
10 You know, I had a role way, way back in the
11 licensing of Three Mile Island, folks. It was an unhappy
12 experience, I can assure you when the accident happened.
13 What I want to relate first are two very short
14 incidents. One, I think it was the first, maybe the second
15 time I visited TMI after the accident, and walking out I
16 rang the alarm. Oh -- they said -- you know, these things
17 are so unreliable, you just can't count on them -- we are
18 sure it's okay. Point one.
19 Point two -- not far from where I live there is a
20 trucking yard up in the mountains, oh, maybe 20, 30 miles
21 away, where our state did find a truckload -- or rather a
22 truck that had been brought to the yard, having been refused
23 entrance at some landfill, sat along the highway,
24 unattended, unmonitored, unknown for, as I recall, some
25 weeks prior to anyone's thinking to investigate.

1 Third, in that same realm, we had great
2 difficulties that exercised or legislators when we
3 discovered that some trucks had been used for a different
4 purpose, namely the shipping of hazardous materials were
5 found also to be used for shipping foodstuffs but had failed
6 to be decontaminated between the two shipments.
7 Now with that background, please, those of you
8 from the industry and the regulators, try to understand why
9 you have a very serious problem of public confidence in any
10 of the assurances. What I want to raise here pertinent to
11 these controls goes not to the workers so much, although to
12 them as members of the public, as to those members of the
13 public who in utilizing recycled materials, if any such rule
14 is promulgated, may be the second or third user on the
15 second or third round of recycle in which there has been a
16 lapse of time sufficient that some of the volumetrically
17 contaminated material has decayed somewhat, perhaps changed
18 its form and its biological impact with respect to that
19 person.
20 Well, you say, but these are externals -- that is
21 not possible. We have a long experience with kids eating
22 lead chips from the paint in old houses. We have rust,
23 decayed materials, that ultimately get totally released,
24 lost track of, which indeed along with potentially the
25 sludges that would be reused as fertilizers may have some

1 mechanism for entering the food chain, so the problem of how
2 you are going to control in a first instance with respect to
3 not just the gamma emitters but all remains, and I am not
4 hearing that you have got any answer at the source, you
5 know?
6 Secondly, I heard the comment made again today
7 that the equipment, and I am happy to hear of the
8 sensitivity of the equipment, but set at background, and
9 that was raised yesterday as well, that there would be a
10 comparison of the contaminant level of a certain object or a
11 certain stream, certain activity relative to background, and
12 that always gives me a certain concern because we find that
13 the utilization currently of a background figure that
14 incorporates indoor radon, which may have virtually nothing
15 to do with the actual background level detected at the
16 location of the material or where the material will end up.
17 Where is background measured? How is it measured?
18 Over what period of time? What averaging is done? What
19 removals from the reality that Dan started us out with are
20 we really talking about here.
21 I am very disturbed that I am not hearing that
22 there is, will be, can be adequate control for what
23 subsequently would be released, recycled, reused, re-reused,
24 ultimately abandoned, affecting the public in multiple ways.
25 Thanks for your patience,.

1 MR. LESNICK: Thank you, Judith.

2 Let's see. We are going to take 10 more minutes

3 during this session, so let's try to move through the cards

4 in a vigorous manner to the extent we can.

5 I am going to go to Kathleen and Andy, I know you

6 are wondering if we would ever get to you but we will --

7 Kathleen and then Andy.

8 MS. McALLISTER: First, I would like to say thank

9 you, Dr. Lipoti. I can say "ditto" to Dr. Lipoti's comments

10 except for the specifics of the circumstances.

11 MS. STINSON: Pull your mike just a little closer,

12 Kathleen.

13 MS. McALLISTER: Secondly, I think we started this

14 with talking about real life situations and I would like to

15 relate a real life situation with regard to use of the

16 equivalent of NUREG 1.86 with a licensee that is not a power

17 plant or a DOE facility. It was a licensee authorized to do

18 thorium lens coating, and they had a buyer for a piece of

19 their equipment and they were really interested in selling

20 it. They had the offer of a good price.

21 They actually had a contractor come in and survey

22 the piece of equipment and as is customary the agency had

23 done a confirmatory survey on it and we found exceedingly

24 high contamination levels by not having the familiarity with

25 the equipment that the licensee had but by removing just

1 certain guards, et cetera, from some of the process
2 equipment.
3 Now that gave us some real concern about what
4 would happen to workers downstream from the release of this
5 piece of equipment because the buyer was not a licensee and
6 that is why they went through the decontamination exercise.
7 Now the piece of equipment still is in the
8 licensee's controlled area, but it certainly tied up a lot
9 of the state's resources. It cost the licensee a great deal
10 of money. We didn't have the adequate guidance because their
11 survey mechanism was to do a surface survey, and although it
12 wouldn't necessarily qualify as a volumetric survey there
13 was a real confusion in the interpretation and the guidance
14 available for performing an adequate survey in order to make
15 the transaction.
16 We really do have a need for more specific
17 guidance and for this rulemaking, so that situations like
18 this don't occur and that it doesn't overburden all of the
19 individuals involved.
20 Now E-23 has discussed this and we came to the
21 consensus opinion that licensees' monitoring capabilities
22 will need to be evaluated and upgraded as appropriate. We
23 do have some technical issues that will require resolution
24 and one is really looking at the technical requirements for
25 the calculations in meeting the 1 millirem dose-based

1 standard for the nuclides involved, and the second does
2 relate to an issue that Judith raised and that is
3 variability in background models and equations.
4 I think we agree that these are issues that will
5 need to be looked at. However, until we put first things
6 first and accomplish what we really came here for, and that
7 was to discuss whether we do need the rulemaking, I think we
8 need that and we need to come to a consensus on what that
9 standard is. Thank you.
10 MR. LESNICK: Kathleen, if you haven't already, in
11 the future will those statements be conveyed I assume to the
12 NRC, if they haven't been already, whenever the time is
13 appropriate, that you have been referring to?
14 MS. McALLISTER: Yes, and we are grateful that the
15 comment period, the official comment period, has been
16 extended because -- may I just continue?
17 MR. LESNICK: Briefly.
18 MS. McALLISTER: Because that was one comment that
19 I -- very briefly -- that I did not make with regard to the
20 process.
21 Sometimes the comment period or the opportunity to
22 really peruse all of the documents, digest them, and come to
23 a reasonable set of comments is too short, because I can
24 speak for my committee. We are essentially volunteers that
25 do a lot of, almost all of our work in our own time, and we

1 have real jobs also that are demanding, and so sometimes the
2 comment periods are not long enough and I would just ask NRC
3 to consider that.
4 MR. LESNICK: Thank you. Andy Wallo.
5 MR. WALLO: Let me start out by saying there is
6 clearly some issues of DOE credibility that justified the
7 comments that have been made here, but I do want to say that
8 over at least the past three Assistant Secretaries for
9 Environment, Safety and Health that I have worked under,
10 they have worked very hard to raise worker and public
11 protection issues to a very high level in the department.
12 It is interesting to note that some of the
13 oversight reviews that Mr. Guttman quoted were our
14 reviews -- doing oversight on the department, trying to
15 improve it -- and I think those efforts have to some degree
16 worked and to a large part some of the success -- there is
17 no argument that we have past issues to deal with, big
18 issues that questions have to be answered and those things
19 have to be looked at -- and most of you who commented on
20 those are involved with the people doing the actual
21 investigations and the reviews there and I am kind of sorry
22 that the NRC, though they need to be aware of it, as you
23 rightfully note, past experience, so we know what we can
24 learn from those, but they are not the folks involved in
25 those investigations and you are talking directly to the

1 people who are involved, and so you have those questions and
2 you are asking them elsewhere.
3 What I want to say is that from this one of the
4 things we have learned is that better and clearer
5 requirements and enforceable requirements are important in
6 terms of getting people's attention and, as I said, the
7 things that Mr. Guttman quoted were related to questions
8 regarding 10 CFR Part 834, which the department issued in
9 '95. We finally issued it as a rule rather than an order.
10 Now with that some of the other things we have
11 learned I would like to move on to actual measurement
12 discussions and talk about I think some of the things we
13 have learned in doing a lot of survey works and when it is
14 appropriate I actually did have to go out and look and bring
15 back old material from the '50s is one of my first efforts
16 working for the department is looking at releases that were
17 made in the '50s and verifying that they were acceptable to
18 today's standards, so we can talk about that.
19 But in terms of clearing materials -- also one
20 note -- I think Dr. Lipoti's comments about DOE going and
21 picking up material, these were not material that were
22 surveyed out of Brookhaven and released from Brookhaven.
23 What they were was radium needles that were distributed to
24 medical or researchers, and the department came and picked
25 them up after the researchers or the medical practitioners

1 didn't maintain them.

2 It is not the same issue that we are talking about

3 surveying --

4 MR. LESNICK: Andy, you've got some comments about

5 monitoring that you --

6 MR. WALLO: I am working on it. Give me a break.

7 I didn't --

8 MS. STINSON: He's been waiting.

9 MR. LESNICK: I am here to help.

10 MR. WALLO: I am getting to it -- as an

11 introduction here.

12 With regard to surveying, I think oversight and

13 independent verification -- when I say "survey" I don't

14 necessarily mean with an instrument in all cases. It may be

15 an instrument, it may be sampling or it may be just a review

16 of the QA/QC practices of the individuals responsible for

17 doing the surveys or the sampling but there needs to be an

18 independent oversight function, and I was a little -- while

19 I don't have a problem with putting up portal monitors for

20 screening sites, I think that might be a reasonable thought

21 for a check but I would hate to have people look at that as

22 an independent verification.

23 It may be defense-in-depth but it does not --

24 unfortunately I don't agree that anybody should be able to

25 work these. I believe trained people and people who are

1 committed and understand what they are supposed to be
2 measuring should be doing the kind of works when we are
3 releasing this material, and I think that making the process
4 look like anyone can do it puts up back many years to where
5 health and safety is a secondary issue, and it really should
6 be a serious job, so I think while the portal monitors are
7 fine for confirmation there needs to be other independent
8 oversight that is more technical.
9 Now the decision on how you measure radionuclides
10 are drastically tied to the standards. The standards will
11 drive some of your measurement systems.
12 We talked about a whole range of options that go
13 from zero to zero -- and there's two zeros there. One is
14 zero, nothing comes out of an area that is possibly subject
15 to it, so that is why when I said surveying means more than
16 just measurement it may mean an assessment of process
17 knowledge. If the standard is it doesn't come out if it was
18 in there, that is not indistinguishable from background.
19 That's location and process knowledge. It stays. That is
20 one set of criteria, and again how much do you depend on
21 process knowledge.
22 The second is measurably indistinguishable from
23 background. Those are criteria that have to be set up and I
24 think as many folks rightfully noted, it depends on what you
25 are measuring. There are some things you might be able to

1 do with scanning and direct instruments that can verify
2 that, quote, "indistinguishable from background" or some
3 value above background, but then there are the alpha
4 emitters that may be inside materials or beta emitters that
5 may be in volume that really do require a sampling program,
6 which puts you into a mode much like the MARSIM did for soil
7 and structures contamination where you are going to have to
8 decide what the statistics are, not just a scanning for
9 surveying.
10 Again, to emphasize how important a decision --
11 you can't just look at surveying and measurements
12 independent of the standard. They are drastically tied.
13 For instance, Reg Guide 1.86 -- MARSIM doesn't
14 work because Reg Guide 1.86 is tied to a set averaging area
15 of one square meter with hot spot criteria of 100 square
16 centimeters per maximum measurement, which is three times
17 the average for the one square meter. You can't apply a
18 MARSIM review or a MARSIM process to those kind of limits
19 unless you take those away and then look at your averaging
20 in your areas.
21 So you need to look at your standard, how you
22 define what your standard says, and what the goal of the
23 standard is to really relate your survey techniques.
24 MR. LESNICK: Right. Good points. Thanks, Andy.
25 We're going to -- Barb says we can handle the

1 cards that are remaining, and then we're going to move on,
2 okay? Is that all right?
3 Joe Ring, and then Val. Then we'll take John --
4 Jill, is your card up again? We'll go to Robert, and Jill,
5 we'll end with you.
6 MR. RING: I wanted to try to put some numbers to
7 all the detection capabilities we've been talking about.
8 I've heard a couple of people say that you can't detect the
9 things we're looking for. We've done some studies.
10 Assuming that if you had a release criteria at 1 millirem,
11 you could detect the gamma radiations somewhere with a
12 detection limit that is 100 to 1,500 times lower than the
13 requirement would be. We've also done some for beta and for
14 alpha, and they're quite low as well.
15 MR. LESNICK: Okay. Thanks.
16 Val?
17 MR. LOISELLE: I just wanted to make this
18 statement for consensus around the table. I think we're
19 probably there, but no one has made this statement, so let's
20 say it.
21 MR. LESNICK: Well, this is not a consensus
22 process, but --
23 MR. WALLO: Portal monitors should not be the
24 point of control. Okay? If you like, out of my familiarity
25 with those licensees who have implemented Reg Guide 186 and

1 are the processor companies who do a great deal of release
2 under that aegis, I would provide the kind of discussion
3 that would support that.
4 For example, to get a license to release under Reg
5 Guide 186 is just not a walk in the park and a whistle.
6 It's a very arduous process. One has to develop a program,
7 one has to have the supporting procedures for that program,
8 and that is all wrapped up in quality assurance in the end.
9 And so, you see, it's quite different than portal
10 monitoring.
11 This is a piece-by-piece, 100-percent survey
12 surface criteria. When you add all of that up, your defense
13 in depth before the material is cleared from the licensee,
14 you've really got three levels of assurance that the
15 material has been cleaned and surveyed. And I think that's
16 important.
17 I'd also add this for Dan, that the Pace workers
18 in Oak Ridge were actually instrumental in the early
19 eighties in developing the implementation and procedures
20 that are used commonly among the half-dozen to a dozen
21 licensees who have these abilities. And from what I've
22 seen, they've always been comfortable with it.
23 Does the DOE know what they're sending us? Have
24 we accepted DOE material? Yes. When you're a licensee, you
25 also know that you cannot accept an unknown. It's a given

1 that material transferred between licensees has to be a
2 known. We get an isotopic in great detail from all of the
3 suppliers of this material, whether it's coming in for use,
4 processing, or disposal.
5 It's my experience that DOE has always provided us
6 a full isotopic of the materials they send us. We insist on
7 it. It's part of our license to know what we're getting,
8 because that becomes part of the curie inventory on site,
9 which a licensee is required by law to maintain. End of
10 story, more later.
11 MR. LESNICK: Thanks, Val.
12 Let's go to John Wittenborn and Robert.
13 MR. WITTENBORN: I understand Val's point, that
14 perhaps portal monitors shouldn't be the point of control
15 for the material being cleared from a regulated facility.
16 But if there isn't some system like that in place for the
17 material being cleared, that makes the steel mill the point
18 of control for this material. Because it doesn't matter to
19 us whether this material meets a health-based standard or
20 not, wherever you set the standard, because our detectors
21 are not set to measure for any health-based standard.
22 They're measured to protect the mill from the orphan source.
23 And that's why those detectors are set as close to
24 background as possible, because as people have mentioned
25 around the table, we cannot afford to let one of those

1 sources get through the system.

2 So you can set the standards from a health

3 perspective anywhere you want to, but we're still going to

4 be measuring at the steel mill as close to background as

5 possible, and anything that comes in the mill that sets off

6 the detectors is going back where it came from. That's a

7 practical consideration the NRC and DOE have to understand.

8 MR. LESNICK: Thanks. Robert?

9 MR. SENSENY: Thank you. Just a little outline of

10 some things that are going on internationally and a

11 real-life experience. The real-life experience first.

12 Detectors went off at a DOE facility and they thought that

13 some materials were going out, and when they checked on what

14 that material was at the entrance, it turned out to be

15 reinforcing bar coming in for new construction from another

16 country.

17 Part of the problem that we are facing

18 internationally is border controls, and materials going

19 around internationally across borders. So one of the

20 efforts that we are working with the International Atomic

21 Energy Agency on is the portal monitorings for our customs

22 people and for customs people overseas as well. Hopefully

23 this will if not be control points at least be the alarms

24 that will help in the future. But it will also spur -- what

25 we are seeing is that it is also spurring the equipment

1 development for a new generation of portal monitoring, and
2 some of these factors may help -- be more helpful in the
3 future to set additional alarms, if not control points.
4 Thank you.
5 MR. LESNICK: Thanks, Robert.
6 Jill, it looks like you're going to be the last
7 word on this session.
8 MS. LIPOTI: Just quickly, I fear that I have been
9 misunderstood, and I want to make sure that it's realized
10 that when the alarms go off at scrap metal and landfill
11 facilities, that the contributors to those alarms include
12 NRC licensees such as medical licensees, pharmaceutical
13 licensees, general licensees, as well as State licensees and
14 DOE and DOD and some unknown. So it's a full range. The
15 material is not only from DOD and DOE facilities, just that
16 DOE and DOD have been good about picking up their stuff.
17 I would also like to mention that nuclear
18 powerplants are not exempt from having volumetrically
19 contaminated material that leaves their site. At Oyster
20 Creek there were two dumpsters. One contained municipal
21 waste, and one had slightly contaminated radioactive soil.
22 And the poor garbage man picked up the wrong one. And he
23 brought it to Monmouth County landfill, which is a big
24 landfill, and he put his garbage where he always puts
25 garbage.

1 But Oyster Creek self-identified the problem, and
2 then they were left with what do to. Well, we ran through
3 all kinds of dose calculations, and I'm sure that putting
4 that dumpster in the landfill is a drop in the bucket in
5 terms of health-based dose standards. But Oyster Creek was
6 responsible, and they picked up where that material had been
7 disposed of, but in order to make sure they got it all, they
8 got 14 times the waste back to deal with. So utilities do
9 dispose of volumetrically contaminated materials and not
10 always are they properly controlled.
11 MR. LESNICK: All right. Thanks, Jill.
12 MR. GENOA: Let me clarify. I said very
13 specifically volumetrically contaminated steel for
14 recycling.
15 MR. LESNICK: Yes.
16 MR. GENOA: In earlier comments I made it clear
17 that there's a wide range of volumetrically contaminated
18 material that could be disposed, but just soil, sludge,
19 secondary resins, and a variety of things. I just wanted to
20 make that clear.
21 MR. LESNICK: Thanks for clarifying that, Paul.
22 We need to close --
23 MR. LARICK: Thirty seconds? Fifteen seconds?
24 MR. LESNICK: No, no. No, we're closing off.
25 We'll come back after a break, okay?

1 MR. LARICK: Okay.

2 MR. LESNICK: I'd like to thank Tony and Bob for
3 kicking off what really was, I think, a helpful and detailed
4 session. People really brought their experience, their
5 concerns, their points of view, the realities around the
6 table. I think it was a very helpful discussion. I'd like
7 to thank everybody for doing that in the way you have.

8 We're going to take -- how long a break, Barbara?

9 MS. STINSON: Ten minutes.

10 MR. LESNICK: All right, ten minutes; 10:15 we're
11 going to --

12 MS. STINSON: 10:15.

13 [Recess.]

14 MS. STINSON: We asked for more in-depth
15 discussion, and that's what we got in the last session. It
16 is really very helpful. I think that is by far the best
17 discussion really maybe for each of our sessions, by far the
18 best discussion that's taken place on the control issues and
19 bringing the real-world experience, et cetera, is very
20 valuable.

21 We're going to now talk about some of the studies
22 that are being done, and we're going to get a very brief
23 presentation on two of them and give you an opportunity to
24 ask some questions, but we're also going to give you an
25 opportunity to raise any suggestions that you might have

1 about other studies that the NRC might pursue. And we've
2 already heard some of those, some recommendations. But be
3 thinking about that and be prepared to offer those comments.
4 Bob Meck is here to -- and you've seen his name on
5 the report. He's here to initiate the presentation, and
6 Tony will assist.
7 MR. HUFFERT: Yes, I'll start it off, kick it off,
8 and then we'll switch between Bob and --
9 MR. MECK: Just to make Barbara's comments
10 accurate, here's Tony.
11 [Laughter.]
12 MR. HUFFERT: Thank you, Bob.
13 What studies are being done to develop information
14 to evaluate the alternatives? Now this is a new session
15 that we've added in response to some comments we received
16 during the two previous workshops in San Francisco and
17 Atlanta, and the purpose is to give you just an overview of
18 the technical work the staff has been doing over the past
19 several years, as well as a summary of the current
20 activities for more fully developing a technical basis
21 concerning the release of solid materials.
22 Over the past several years the staff has focused
23 on developing a technical basis for estimating the
24 radiological dose an individual may receive from the release
25 of certain solid materials with low levels of residual

1 radioactivity that is present on the surface or in the
2 volume of materials and equipment.
3 The staff limited its initial analysis to steel,
4 copper, aluminum, and concrete, as these solid materials
5 were considered the most likely candidates for release for
6 unrestricted use. And the results of these technical
7 research efforts have been published in NUREG-1640 entitled
8 "Rad Assessment for the Clearance of Equipment and Materials
9 from Nuclear Facilities," which is outside in the lobby for
10 your review.
11 As mentioned before, the public comment period on
12 this NUREG report is open, and your comments are welcome.
13 NUREG-1640 is limited in its scope and is only one
14 of several analyses that are needed to support decision
15 making in this area. Additional analyses are needed for
16 estimating the environmental impacts and the costs and
17 benefits of the alternatives associated with the solid
18 material releases, which are the subjects of sessions number
19 7 and 8 today.
20 As we discussed in session 3 yesterday, the staff
21 is currently developing a more comprehensive inventory of
22 materials that could potentially be released from nuclear
23 powerplants and other nuclear facilities, and we're also in
24 the process of analyzing collective doses to populations and
25 their potential for radiological exposure to multiple items

1 that may be released.

2 Another consideration is the ability and the cost

3 to do surveys and measure radionuclides at very low levels,

4 that is, either on the surface or in the volume of the

5 material or equipment that could be potentially released.

6 One of the materials that was not included in 1640

7 is soil. As part of the technical basis development on

8 soils, the staff is currently working on the release of

9 recycled soil, which I will discuss further after Bob Meck

10 presents information on the draft NUREG-1640 report.

11 So for now I'd like to turn it over to Dr. Meck,

12 who is the project head on the development of NUREG-1640 and

13 will explain the technical approach of the report.

14 Bob?

15 MR. MECK: Wow, that last session really was a

16 good one, and Don Cool said earlier that he didn't want to

17 steal my thunder. Well, I don't promise you any thunder,

18 but I do promise you some energy, and I want to thank people

19 here for the energy that they've been putting in and the

20 attention to this document, because many times a report like

21 this looks like so many tables of numbers and doesn't have

22 something behind it, and this is the opportunity to talk to

23 you at a high level about some of the strategies that we're

24 behind, how those numbers came about and how they'll be

25 used.

1 But first of all, yesterday there were several
2 questions raised about 1640. And there's one in particular
3 that I want to update you on, and that is the questions that
4 were raised or concerns of conflict of interest. We take
5 those comments extremely seriously, and our Office of
6 General Counsel will investigate that.
7 At this time I -- and anytime that there are some
8 concerns of that, I ask you to bring forth any specific
9 information that may help in such an investigation. And I
10 can be the point of contact for that, and I'll see to it
11 that it gets to the Office of General Counsel.
12 What I'd like to do now is turn to the scientific
13 aspects of NUREG-1640 and talk about that.
14 Again, at a high level, let me add that over on
15 the wall behind the flip charts you'll see a poster, and
16 that's a poster that I'm going to take next week to Hamburg,
17 Germany, to present about the work of -- that is included in
18 1640, and I will use that as a basis. If somebody wants to
19 come and talk to me about some more details of the technical
20 information there, we can rendezvous there at lunchtime or
21 at breaks, and I will do my best to answer some more
22 detailed questions in terms of the technical work on that.
23 One of the aspects of 1640 or the consideration of
24 a regulation in general is the potential doses to an
25 individual, and if we take a regulatory strategy that says

1 what is the highest dose to the critical group, and the
2 critical group is that group of people that's relatively
3 similar in activities and behavior that would receive the
4 greatest dose reasonably receive the greatest dose. If we
5 define a critical group in that way and we say any
6 regulation that we have really has to control the dose to
7 the average member of that critical group, then how do we
8 proceed? Who is in the critical group? And the answer is
9 it depends, like most answers unfortunately are.
10 What does it depend on?
11 The next bullet, Frank.
12 It depends on the material that we're talking
13 about, because activities around a particular group, for a
14 critical group, depends on just what kinds of processes and
15 what kind of uses you might expect from those materials.
16 Next bullet.
17 It also depends on the processes themselves, what
18 are the processes, the uses that are in there. Those
19 processes, as it says up on the slide, we examined 79
20 scenarios, as we call them, and those are listed in detail
21 in Appendix A of volume 2, which is available outside, and I
22 think you can see that there is a great deal of interest in
23 the workplace and also we're looking at the consumer.
24 We also investigated byproducts of processes and
25 what occurs there. So that's the listing of the scenarios

1 that are in NUREG-1640. As Bob Nelson indicated, the
2 concern of NUREG-1640, the part of the regulation about
3 that, is after it would be -- the material would leave the
4 licensee, and that is at that point of clearance. And
5 before that time, the NRC radiological control program,
6 protection program, would take care of workers at the
7 licensee.
8 NUREG-1640 said all right, what about outside,
9 where should we be concerned? And from the outset we
10 obviously did not know what the critical group would be. We
11 had to make some calculations. And what we calculate is a
12 calculation -- is a tool to convert the concentration of
13 radioactivity to dose. We have not picked a dose.
14 NUREG-1640 is not designed to do that. That's the
15 Commission's prerogative, and that would be a decision that
16 the Commission, if it decided to go that way, would make.
17 The numbers that we calculate would be -- is, like I say, a
18 tool to translate whatever dose could be selected into the
19 concentration of radioactivity.
20 Could I have the next bullet?
21 It also depends on which radionuclides. This is a
22 sophisticated audience, and you know that it depends on
23 radionuclides because the emissions from one radionuclide to
24 another differ in energy and how they would affect the body
25 or a biological organism. And so it depends on that.

1 And so again the critical group is defined by the
2 process or use or the scenario where we found the greatest
3 mean dose factor -- that's this calculational tool that
4 NUREG-1640 presents -- of the materials for each
5 radionuclide.
6 And now can we go to some of the results?
7 All right.
8 That's good. We'll just stop there with this one.
9 This one takes a particular case. Just to get
10 these concepts a little more concrete for you.
11 MR. LESNICK: We can go back to the first one.
12 MR. MECK: Okay. Go back to the first one, if you
13 will.
14 I'll talk about this. People know that when you
15 examine a process or a set of behaviors that everybody
16 doesn't act in exactly the same way. We're not talking
17 about laws of physics here, we're talking about human
18 behavior and real processes. And so, for example, the
19 amount of time that a scrap truck driver spends in his truck
20 can vary. And all of these other kinds of parameters can
21 vary.
22 So we took those into account in a statistical
23 manner, and so by making ranges, for example, how long a
24 truck driver is in a truck, and going to real situations in
25 industry as we know them today to get those data, then we

1 ended up, because it was a statistical process, with a
2 distribution of this calculational tool. And following
3 international and national guidance, we chose the mean of
4 the results to represent the dose to the average member of
5 the critical group.
6 And the particular circumstance that you're seeing
7 here is cobalt-60 on the surface of steel and the analysis.
8 And I'm showing the scrap transport because this turned out
9 to have the highest mean of all of the other scenarios that
10 we examined that covered this kind of situation.
11 Let's see some others, Frank. Just bring them up
12 quickly. Inside an automobile that was manufactured from
13 this steel. Let's see. I'm shining this on myself. Okay.
14 The mean for this one should be shown to be about in here.
15 Go ahead, the next one.
16 This is a mass close to the body. If somebody had
17 a belt buckle. Some of us have assumed some very large belt
18 buckles. The range here, I looked it up this morning, is
19 something like 36 grams to over a kilogram, which is 2.2
20 pounds. And so I think we've covered these big wrestling
21 championship belts.
22 [Laughter.]
23 On this one, and that mean is -- go ahead, Frank,
24 with the next one -- reuse of equipment. This happened to
25 be one that was a bounding case in terms of if you had, say,

1 a pickup truck or a vehicle of some sort where the
2 radioactivity was completely surrounding the individual and
3 the individual was able to ingest part of that from dust
4 inside that truck and then there would be external dose,
5 then this was it. I think that is the last one of those.
6 Is it or is there some more?
7 Scrap handling came out down here, so you can see
8 by going through all of these scenarios and then comparing
9 the results of this we have a tool and with this tool, these
10 units are reflective of the international units, and I
11 should mention that this axis that I am indicating does not
12 indicate dose but it indicates the value of this
13 calculational tool that we would divide into a dose to get
14 the concentration of radioactivity.
15 What is the next slide? Is that on? So hopefully
16 that gives you an idea of some of the strategy and the
17 limited scope that the calculations are designed to and I
18 will end it here and please be reminded that over here at
19 the wall, if you have some detailed technical questions, I
20 would be happy to answer those.
21 MR. HUFFERT: Earlier this year we began working
22 on the technical basis for soils clearance because it was
23 identified as an additional solid material that may need
24 disposition. We were specifically looking at the recycling
25 of soils that could be released for unrestricted use.

1 The goal of this effort is to mirror what Bob Meck
2 has done in NUREG-1640. We want to perform a dose
3 assessment of potentially recycled soil and as part of this
4 effort the Staff again working with the National
5 Agricultural Library within the U.S. Department of
6 Agriculture's Agricultural Research Service.
7 We wanted to conduct a comprehensive literature
8 search of recycled soil in the United States of America.
9 The National Agricultural Library was chosen because they
10 possess the world's largest collection of literature,
11 databases, and information sources on agriculture and have
12 developed and maintained the preeminent agricultural
13 literature search system, called AGRICOLA.
14 The objective of this effort is to identify and
15 retrieve citeable references that will identify and
16 characterize recycled soil usage scenarios and we are also
17 working with them for estimating the parameter values that
18 will be used for conducting dose assessments of the
19 predominant scenarios.
20 This would be done to identify the critical groups
21 and the potential doses from recycled soil. The
22 comprehensive literature search is scheduled for completion
23 this month and we are currently working to develop a
24 condensed listing of relevant literature and supplemental
25 information sources for retrieval and review.

1 Following our literature review, the NRC Staff
2 will identify and characterize the recycled soil usage
3 scenarios and will then estimate the parameters for the dose
4 assessments and now I am requesting public input on any
5 information you might have on citeable literature and
6 databases pertaining to recycled soil, use that is relevant
7 for our use. Your input is welcome.
8 With that, I will turn it over to Barbara.
9 MS. STINSON: Okay, and you will see that Tony is
10 here for the rest of the meeting, so if you have any
11 suggestions you can get those to him. You can also contact
12 him through the NRC and you might just want to write your
13 direct line, direct dial phone number up on the flip chart.
14 We have had a particular pace to these discussions
15 and I am going to try to pick up the pace. The pace has
16 been everybody has in-depth comments and a lot to offer
17 every time their card goes up, and that is helpful, and that
18 provides for a certain kind of dialogue, but what you notice
19 is you don't get to speak more than once in an hour session,
20 because everybody really tries to get all their thoughts in
21 one place.
22 Another way to do it is to make some quick pointed
23 comments directly relevant to one point and we will try to
24 get some back and forth on that idea and then move on to the
25 next one and maybe get two or three chances in a session, so

1 we are going to spend about 30 minutes or perhaps less on
2 this discussion topic.
3 Comments on any of the analysis that you hear
4 being conducted by the NRC and any suggestions for
5 additional analysis?
6 Dan, as usual, your card is the first to go up.
7 MR. GUTTMAN: I defer to my betters on the
8 technical. On the conflict of interest, yes, I am happy --
9 I would like to put in the record since '96, as I am sure
10 you know, SAIC has been the regulatory compliance advisor
11 for the BNFL contract. The question I have to ask is as the
12 project officer what can you tell us all here, the press and
13 the public when and what has SAIC disclosed to you about all
14 of its paid work for DOE, BNFL or anybody else including
15 SODI that is a beneficiary of release or involved in
16 release? What have they told you and can you tell us now
17 all of their interests in that area, so that we can evaluate
18 this report?
19 MS. STINSON: Bob?
20 MR. MECK: The NRC is constrained by federal
21 procurement regulations in terms of how it goes about
22 awarding a contract and part of that constraint includes
23 conflict of interest disclosures. NRC adheres to those
24 regulations closely and as I mentioned before based on
25 comments that were raised, we're asking OGC to investigate

1 those and those answers are not forthcoming today but we are
2 asking them to investigate.
3 MR. GUTTMAN: Can you tell us now whether you knew
4 that they were doing regulatory compliance work for BNFL --
5 can you tell us that and can you tell us today who else they
6 are working for so we can evaluate this report here and now?
7 It isn't a General Counsel's issue. It is a technical
8 evaluation and bias issue.
9 We are all spending time discussing this report
10 and it sure as heck is going to be a waste of time if we
11 find out they are biased.
12 Can you tell us particularly names, names? If you
13 can't then let us know.
14 MR. MECK: I can't.
15 MR. GUTTMAN: Thank you.
16 MS. STINSON: Okay. David and then Steve.
17 MR. ADELMAN: I would like to just second the
18 general public concern about the report and about SAIC's
19 role in working with BNFL and one of the issues that we have
20 raised again and again -- it's just the general public
21 perception about this process and that is it crucial that
22 people feel like the issues are being evaluated in a
23 thorough and completely unbiased manner.
24 Just a couple questions about the technical
25 aspects of the report. I think one thing that is

1 challenging about reading a report like this is trying to
2 pull out the different assumptions that underlie the
3 calculations that you are making and there are a number of
4 assumptions that you can pull out based on the critical
5 group that you are identifying and as you go through that
6 process you can understand the length of time or the volume
7 of material that you are assuming is going to be underlying
8 your calculation.
9 I think there are broader assumptions that go into
10 the actual modeling that it is important for you to make
11 fully transparent and it might even be useful where there
12 are differences in different models that people use like EPA
13 or DOE or international organizations to try and highlight
14 those differences, so that is one thing.
15 The second is that again one concern that people
16 have is about the aggregate impact of releasing these
17 materials and by focusing solely on the critical group you
18 are not giving the public any sense of the relative
19 contributions from noncritical group people, or if a person
20 is exposed to multiple sources under different circumstances
21 what the relative impacts from those other exposures may be,
22 and you may have looked into this already but it is not
23 information that is readily available in the report that you
24 have presented to us.
25 Finally, a sense of the uncertainties -- I

1 understand that you are picking out certain critical groups
2 but there are a lot of assumptions like I was suggesting
3 before that go into these analyses and if there is some
4 rational way of weighing in, putting error bars on the
5 potential variation in the estimates that you are making.
6 MR. MECK: Okay, if I could respond to that, thank
7 you for all of those comments.
8 As I mentioned, we are listening about the public
9 concern and we will indeed get results back concerning that.
10 With respect to assumptions, I can give you a
11 couple -- I realize that this is a daunting document, and we
12 wrote it at two levels. Volume 1 is at two levels.
13 There's kind of -- not kind of, there is an
14 executive summary in italics as a box above each chapter,
15 and that was really aimed at the manager reading this, not
16 expecting managers to read this, so to go through and read
17 Chapters 1 and 2, that italicized box, that would be just a
18 few paragraphs would get you some overview.
19 With respect to the assumptions, they are found in
20 two places and again I understand if you are not familiar
21 with how it is set up why that might be difficult, but I
22 believe it is Appendix B in Chapter 2 -- that is where I
23 looked for example this morning to see what the weight of
24 the small object next to the body was and all of the
25 parameters and the ranges of those parameters and the

1 distribution of those parameters are contained in that
2 appendix that went into the actual calculations.
3 In addition to that, scenarios are described about
4 what is the scene that we are generally trying to portray
5 here. Furthermore, the references for where we got those
6 data are also cited in the document so it should be a
7 reproducible document. You should be able to go to those
8 sources and say okay, this is how they got those numbers and
9 where those parameters came from.
10 MS. STINSON: Regarding the aggregate?
11 MR. MECK: With respect to the aggregate, the
12 reason that you don't see it is that this document was not
13 designed for that. As I mentioned -- sorry -- it was
14 designed for just this part of it, and as a part of the
15 early-going process you are in -- hearing about how much we
16 have accomplished but the other part is going to be done.
17 With respect to the uncertainties, the statistical
18 parameters as were illustrated up there, for all of the
19 results are in here, at the 5 percent, the 50 percent, the
20 mean and the 95 percent.
21 MS. STINSON: So I think -- I mean it's not as
22 clear on the first summary slide as maybe it could be, but
23 there is -- well, it's -- potential for multiple exposures.
24 I mean there is an entire analysis being conducted on
25 multiple exposures and more input on that would probably be

1 helpful.

2 MR. MECK: I had one follow-up because --

3 MS. STINSON: Okay. We are going to ask you to

4 keep the pace going too.

5 MR. MECK: I'll keep the pace going. With respect

6 to the comparisons of other work, we have coordinated with

7 EPA over the last five years and our results are very close

8 to EPA's results and the comparisons with the international

9 studies, I would ask you to come over to the poster at some

10 time.

11 MS. STINSON: Steve and then Felix.

12 MR. LARICK: One comment and three questions.

13 Everything up here assumes that there is going to

14 be partially contaminated material being released and the

15 only thing I would like to point out is that if the level is

16 set at no detectable radiation then the additional exposure

17 is going to be zero.

18 Those people are still going to be subject to

19 background radiation like the rest of us, but if the level

20 is set at no detectable radiation then there is no

21 additional exposure, which seems to be in line with the

22 philosophy of ALARA, which seems to be something that the

23 NRC thinks is important.

24 Also, it doesn't really address the problem of

25 deselection of steel products that may have any amount of

1 residual radiation in them. It is good to say that, well,
2 if someone had something that was made out of steel that had
3 a smidgeon of radiation in it that someone's exposure to
4 that would be negligible but it is similar to the point that
5 Mike Mattia made yesterday. If you have a choice of steel
6 that doesn't have any radiation or something that is above
7 background, what are you going to pick? Most people are
8 going to pick the stuff that doesn't have any radiation in
9 it, and so that -- in effect, people would deselect the
10 material that might have residual radiation in it, and so
11 this doesn't really address that and that is my first
12 question.
13 The other question has to deal with there's really
14 no controls in place that I can see, either now or in the
15 rules after something leaves the facility, and so even
16 though you have identified several pathways of potential
17 exposure I don't see how you could identify all the
18 potential pathways because there is no telling what is going
19 to happen to that material after it leaves the facility.
20 There are some articles that have been written
21 recently about hip replacement and things -- tooth fillings,
22 things like that -- which sound crazy to some people, but
23 without controls or traceability about where this material
24 goes, there is no mechanism in place to prevent that, and so
25 I am not saying that that would necessarily happen but

1 there's no controls at all to prevent that happening and so
2 I would like for you all to address that also.
3 MR. MECK: Okay. I will try to speak faster
4 despite my Midwest upbringing.
5 [Laughter.]
6 MS. STINSON: Thank you, Bob.
7 MR. MECK: With respect to the deselection
8 question, the assumption here is it is a "what if" exercise
9 in the first place. If it goes out the door without
10 controls, where could it go? And the deselection aspects of
11 it, whether or not people would buy products or something,
12 is more in the realm of the cost benefit analysis -- you say
13 are these products going to be worth anything and some kind
14 of policy decisions beyond the scope of this.
15 With respect to -- rephrasing could be how do you
16 know you covered all the scenarios? The exercise here was
17 to see if we could identify that group that gets the
18 greatest dose. The other scenarios are also under study for
19 the aggregate that Dave was talking about.
20 The way that we approached whether it is a hip
21 replacement or braces on the teeth or something like that,
22 it was to approach it in a generic fashion. That was the
23 small object in intimate contact with the body, and so we
24 could move that object around and say, well, it could range
25 from this mass to that mass and it could have this kind of

1 an effect on this part of the body or that kind of a body
2 and so that is the way we would approach that in a generic
3 manner.
4 MS. STINSON: Felix and then Mike Veiluva.
5 MR. KILLAR: I just have a quick question for
6 Tony, a clarification on the recycled soils.
7 Maybe our vision is different -- the industry
8 vision is different than what the NRC's is and I would like
9 to clarify that. When we free release soil we don't care
10 where that soil goes to, whether it goes to a playground, a
11 cemetery, a parking lot, a school -- wherever. We know that
12 soil is clean of radioactivity or if we establish as
13 standard here it would have a measurable amount -- that is,
14 of no detrimental impact on the health of the public.
15 I am not sure what you mean by "recycled soil" --
16 we don't envision recycled soil. We just say it's released
17 to be used in the public in whatever form it can be, so
18 could you explain what you mean by recycled soil?
19 MR. HUFFERT: If there is a chance that the soil
20 could be used for another purpose, that is what I mean by
21 recycled. For example, if the -- hold on, let me look this
22 up.
23 Some of the scenarios that we are looking at that
24 we have identified so far, the rural resident, the suburban
25 resident, the commercial farm, a public use facility. These

1 are some of the things we are looking at right now and it
2 would be reuse, yes, of the material and I think that is
3 very similar to the word "recycle." In this case, you are
4 basically taking it and you are using it for another
5 purpose.
6 MS. STINSON: Mike? Paul again? Well, you all
7 three went up at the same time, so I am just trying to mix
8 it up a little bit.
9 MR. VEILUVA: Fair enough.
10 MS. STINSON: Or at least it looked like the same
11 time.
12 MR. GUTTMAN: All right. Just so I understand --
13 and this is a question directed at Tony -- when do you
14 anticipate that your soils analysis will be complete,
15 because right now we are in the NEPA juggernaut where we
16 have started scoping, we go to a generic draft. Where in
17 the process do you anticipate your review being complete?
18 MR. HUFFERT: The first step is to get the draft
19 report on the soil use scenarios completed and we are
20 planning on having a draft report of the citeable references
21 that have been developed with the National Agricultural
22 Library this month.
23 The next step is to do the dose calcs. We have
24 been working on that concurrently with the literature
25 search. We are hoping to get the individual dose factors

1 completed in time for the other cost benefit analyses for
2 the other materials. That is our goal.
3 MR. VEILUVA: I think it is interesting you are
4 doing a soils analysis, and I would encourage that, because
5 from our perspective the analysis to date of nonferrous
6 materials and volumetric dose has been inadequate.
7 For instance, we note apparently when the German
8 government enacted their clearance rule or clearance
9 guidelines, they extrapolated the experience with ferrous
10 materials to nonferrous materials at least based on this one
11 report we have.
12 I want to alert, especially for the Commissioners,
13 that the timing of these reports is important because we are
14 in this process and one of our concerns expressed back in
15 August is in a sense we are moving ahead in an
16 administrative and legal process and yet we are still coming
17 up from ground zero on some of these very important points,
18 because while there is a considerable library of information
19 on ferrous materials, on issues -- volumetric issues such as
20 concrete and soil, which may go anywhere, and may be used
21 for any purpose -- not just a landfill -- we need that kind
22 of information. I think the public needs that kind of
23 information to make any kind of educated review of this and
24 I would hope that that would be done with sufficient time
25 when the draft generic comes up so that we have a basis of

1 comparison.

2 MS. STINSON: You can give that mike to Paul.

3 MR. VEILUVA: Right.

4 MS. STINSON: And then Joe Ring.

5 MR. GENOA: Yes. In commenting on 1640, as we
6 have done publicly and in written comments, we think that
7 from an analysis point of view it's been a good job, that
8 the material selected, I think they went through a rigorous
9 approach to try to look at the potential dose implications.

10 I think some important points can be brought out
11 of that, and that is as some of the slides tended to
12 indicate that for the average member of the public the dose
13 factor is essentially zero, for most of these activities, so
14 there is some interesting information in there.

15 However, we do have some concerns on some of the
16 input values and what some of the results are and more
17 importantly the fact that it really only covers four types
18 of material and in fact that the materials that we release
19 day to day cover a whole spectrum of materials, and to that
20 end I would call our attention and urge you to consider the
21 ANSI standard that has been put forward.

22 There appears to be a very diligent process in
23 place that has identified criteria for a whole range of
24 materials with quite a bit of flexibility in its
25 implementation, so I look forward to some discussions on

1 that standard as well as a voluntary consensus standard, and
2 I think you are required to review it, and I would ask you
3 to do more than just review it, to really consider it,
4 because fundamentally it saves you from doing a whole lot of
5 work on something else if something else already exists that
6 will meet the need, and I guess the final comment is all of
7 these things in going from a dose to a concentration of
8 field as you know are dependent on the pathway analysis and
9 on the assumptions, so I would follow on with some of the
10 comments earlier that making the assumptions as transparent
11 as possible and also putting them in -- trying to remove
12 them from the technical jargon.
13 Bob, I just went up and looked at the poster up
14 there and seeing a ratio of what one standard is to another,
15 you know, five to the minus three ratio different, you know,
16 it takes some mental -- I know for you it is like speaking
17 English but for the rest of us we need to know. Tell us
18 flat out -- our standard is three times higher, five times
19 lower, two orders of magnitude higher. Don't put it in
20 ratios for us because we won't get it.
21 MS. STINSON: Thank you. Joe and then Terry
22 Johnson.
23 MR. RING: Thank you, Paul. One of the things
24 that I wanted to point out is that in N-1312's development
25 we did take a look at a variety of research projects

1 including some verification of our own and the numbers that
2 are presented, which we just saw in 1640, are very
3 comparable to the sources that we found from a variety of
4 other places.
5 MS. STINSON: I want to welcome Terry Johnson to
6 the table. We heard from him yesterday. He was here
7 throughout the day I believe, from George Washington
8 University, and given that Dr. Nusynowitz couldn't be here,
9 Professor Nusynowitz, then Terry has agreed to join us at
10 the table.
11 MR. JOHNSON: Thank you, Barbara. I really
12 appreciate the privilege.
13 In regard to using soil, one of the comments over
14 here expressed the idea that soil for free release could
15 literally be used anywhere. In considering soil being used
16 anywhere, like in a children's playground, we have got to
17 consider that the soil is contaminated with radioactivity
18 anyway. Some of the people from the steel industry might
19 not be aware that among the radiation exposure that we are
20 all exposed to about 30 millirems a year to the whole U.S.
21 population on average comes from terrestrial sources -- in
22 other words, direct irradiation from the soil below us, the
23 rocks below us, and the building materials that we use that
24 are derived from natural materials.
25 If children can't walk on soil, where they are

1 getting 1 millirem a year, maybe we had better keep them out
2 of Grand Central Station in New York and a number of other
3 places. There is a granite floor in Grand Central, I think,
4 one of the big train stations in New York where it emits a
5 radiation level far, far higher than natural background, and
6 so trodding across this granite floor will give you
7 radiation exposures that we should protect our children from
8 if we can't dispose of soil that might give them 1 millirem
9 a year.
10 MS. STINSON: Judith --
11 MR. LARICK: People in the steel industry are
12 aware of things like that.
13 MS. STINSON: Judith and then John Wittenborn.
14 MS. JOHNSRUD: Yes, if I may, Barbara, have your
15 indulgence for two or three points I will try to get out
16 quickly.
17 First is the question what if any solid materials
18 would not be subject to clearance and recycle or reuse or
19 both? The public is definitely going to want to know an
20 answer to that.
21 Secondly, I want to go back to the soil and ask
22 specifically to either Tony or Bob, some environmentalists
23 attempted to attend meetings concerning your research work
24 on contaminated soils. This is a matter of very substantial
25 interest in a good many communities where beneficial use is

1 being promoted by state governments, for example, and have
2 had difficulty even finding out the when and where and were
3 informed that these were private, proprietary meetings.
4 Why was it essential that those meetings with USDA
5 staff not be open for public observation? That is a
6 specific question I hope you will answer.
7 Third, I am very much concerned about the use yet
8 again of critical group, taking the average, the dose to an
9 average member of a critical group. It is my understanding
10 that in its current draft regs at EPA for the Yucca Mountain
11 site that they have abandoned that concept of dose to the
12 average member of a critical group in favor of looking at at
13 least a dose, maximum dose, to the -- I'll probably get this
14 in the wrong order -- reasonably exposed maximum dose to an
15 individual -- is that the right order? -- that coming closer
16 to giving some notion of what the maximal dose really is or
17 might be, and here again, I don't see that we are getting
18 that with respect to the totality of the potential
19 exposures, the aggregates.
20 Finally, you know, I keep getting the sense that
21 each little millirem is being considered in isolation.
22 Professor Johnson has just indicated that children walk
23 across soil or a granite floor -- yes, and that constitutes
24 a dose. As I recall at Grand Junction, Colorado, uranium
25 mill tailings were used as foundations and fill material and

1 children's playgrounds at dose levels in that instance that
2 were considered rather substantial and that was one of the
3 numerous sources of exposure.
4 I don't honestly see that the NRC has been or is
5 giving much promise of actually doing any realistic
6 assessment of the totality of doses with the impacts on
7 human health that far transcend just the fatal cancer and
8 ghost genetic defects. Much, much more work is required on
9 low dose impacts and I believe that we are beginning to see
10 that desire for such consideration on the part of some
11 international regulators. I wish that the NRC would take
12 that responsibility more seriously.
13 MS. STINSON: Okay. Four questions. Who is going
14 to do the materials that are not subject to reuse/recycle?
15 MR. HUFFERT: Probably Bob and me as far as the
16 soils meeting not open to the public. I'll answer that
17 question, and the last two is Bob.
18 So let me start of first. Your question, Dr.
19 Johnsrud, was why was the soils meeting with the U.S.
20 Department of Agriculture closed?
21 We have had a few meetings with them. They have
22 been very preliminary. We have also talked about
23 contractual matters in these proceedings with them. We did
24 not have much information when we were meeting with these
25 researchers with the National Agricultural Library and we

1 felt that it was premature to have an open meeting with the
2 public, that the results were too early.
3 We were also following our own management
4 directive and we were supported by management in that
5 decision.
6 MS. JOHNSRUD: Well, you know the public might not
7 consider it at all premature. The public might also like to
8 have some notion of what resources you are planning to look
9 at and to deny them access is in essence to say it's none of
10 their business when they are the end recipients of whatever
11 soil will be released and recycled and reused wherever.
12 MR. HUFFERT: We are planning to have open
13 meetings once we get more information about the draft
14 report, so we'll watch the space and if you want to have a
15 public meeting on this, please let us know. We will
16 consider it.
17 MS. JOHNSRUD: But that is missing the point.
18 Again and again when I participated in the NRC's workshop on
19 public participation two or three or four of five years
20 ago -- how long, now? -- access involvement early-on was
21 proposed by the Staff as well, was discussed by most of the
22 participants. I don't see anybody here who was part of
23 that, and yet here again on this most vital of issues,
24 releases that ultimately will affect the general public with
25 no controls in the future, not even any access -- early, at

1 the start.

2 You might find it helped you rather than hindered.

3 MR. HUFFERT: Okay.

4 MR. MECK: If I could just -- I will talk as fast

5 as I can, Barbara.

6 I hope that you also note that when we had a

7 contractor meeting not too long ago amongst the contractors

8 for technical basis and those that have the responsibility

9 for the environmental impact statement and regulatory

10 analysis, we did open that to the public.

11 This is something new for the NRC and when we are

12 starting these new thing if you will give us a little slack

13 on stumbling here and there, we will try to make these

14 things as open with the very purpose that you have in mind,

15 and that is to get that public input and also just simply

16 for the sake of openness itself.

17 And there is an increased awareness and, you know,

18 we are making an effort in that direction.

19 MS. JOHNSRUD: And where was that notification of

20 that as a public meeting? Was that in Federal Register and

21 how many days notice? And for those of us who have been

22 involved with this issue for years, indeed, decades, I find

23 it odd that we are not included on a distribution list in

24 order to find out.

25 Not very long ago the NRC abandoned sending out

1 its Federal Register Notices and other notices,
2 informational notices by e-mail, which was supposed to be
3 that wonderful, inexpensive technology that flooded our
4 in-boxes and was very valuable, yet it was abandoned.
5 MR. MECK: It might surprise you that some of us
6 are frustrated also.
7 MS. JOHNSRUD: Oh, good.
8 MR. MECK: In that way. And it, quite candidly,
9 is a result of resources stretched very thin. And, as I
10 said, -- well, if you could just like give us some slack in
11 getting this system --
12 MS. JOHNSRUD: Well, we have done that.
13 MR. MECK: Well, --
14 MS. JOHNSRUD: For years. We have done that.
15 MS. STINSON: I think what Judith is trying to
16 suggest is --
17 MR. MECK: We are aware and we want to do better.
18 MS. STINSON: -- she wants the notice, a public
19 notice, and 14 days in advance. It is going to be important
20 then to get possibly a distribution list, particularly for
21 some of the studies coming out of this process.
22 MS. JOHNSRUD: Go back to that nice, cheap, easy
23 e-mail, too.
24 MS. STINSON: Yeah, the e-mail helps. Okay.
25 MR. MECK: We will try to do better.

1 MS. STINSON: In terms of dose to average
2 individual on the EPA. And then just to say a little bit
3 more about the cumulative impacts you are going to be
4 studying.
5 MR. MECK: Right. On the critical group question,
6 the average member, the information for 95th percentile is
7 also in NUREG-1640 and that really is a Commission decision,
8 whether they follow the national and international
9 recommendations to use the average member, or if they go to
10 the reasonably maximally exposed individual as some other
11 agencies do. And I think the aggregate question is one that
12 we are studying and we are also aware and concerned of.
13 MS. JOHNSRUD: I would like to suggest that until
14 such studies have been completed and made available, that
15 the recommendation to the Commission be to put all of this
16 endeavor on hold, especially since you are so short of
17 resources that you are not able to inform the public of what
18 you are doing in a timely manner.
19 Excuse me, I like you, Bob. I don't mean to sound
20 nasty to you.
21 MR. MECK: No.
22 MS. STINSON: Thank you, Judith.
23 MR. MECK: I enjoy working you, as you well know.
24 MS. STINSON: John Wittenborn and then Jill
25 Lipoti.

1 MR. WITTENBORN: Changing subjects, I would like
2 to ask two very technical and specific questions, and it
3 won't take much time at all. First of all, why is nickel
4 not included as a metal for release analysis purposes in
5 NUREG-1640? And, second, does the discussion of copper
6 include copper alloying metals such as brass and bronze?
7 And, if so, what are those volumes that you are talking
8 about there?
9 MR. MECK: Nickel wasn't a large volume, large
10 mass item for NRC licensees and so that is why it was not
11 included. And the studies for brass and bronze, the
12 processes were investigated and the conclusion was that it
13 was similar enough to copper that we could find the critical
14 group by analyzing copper.
15 MR. WITTENBORN: Nickel is obviously a critical
16 issue for release of materials from the DOE facilities, and
17 maybe I should ask this question to Andy next door. Is
18 there going to be some risk assessment review of the nickel
19 that is proposed to be released?
20 MR. WALLO: Yes. The department looks at nickel
21 and we have got that in our models, and we are looking at it
22 as we work with the NRC and EPA, we share the things we
23 analyze as well. And, so, yes, there is information
24 available on it, and there is more work being done.
25 MS. STINSON: Jill and then Tom Civic. Jill, how

1 long ago did you put that card up?

2 MS. LIPOTI: I am interested in the DOE's enhanced
3 participatory rulemaking for nickel. Soil, getting back to
4 soil, we have a lot of contaminated soil in New Jersey, and
5 one of the ways that we found it was we used this handy DOE
6 aerial fly-over, and they have an airplane that flies over
7 the area and gives you very good contours in terms of where
8 contaminated soil might be, and that is useful for recapture
9 where soil has been transported off-site,
10 thorium-contaminated soil, radium-contaminated soil.

11 We have had several interferences with the aerial
12 fly-overs, things like brick houses and big churches and
13 schools that are made of bricks do interfere, as well as
14 industrial radiography sources. But it was still very
15 useful to determine where the material had been deposited.

16 I wanted to compliment the NRC in using the Monte
17 Carlo techniques to estimate probability distributions for
18 dose factors and modeling different materials. I think that
19 is an improvement over the earlier EPA work and a good
20 improvement.

21 In your illustrative application example in
22 Appendix J of 1640, you analyzed ferrovanadium slag, and,
23 boy, that got my attention. You used epic pest as your
24 illustrative example, but we have shield alloy, and they
25 have ferrovanadium and ferrocolumbian slag as well. And

1 what was interesting to me, before I saw this illustrative
2 application, I thought you were recycling metal into metal,
3 like steel would be made into different steel stuff. But in
4 this example, slag gets made into concrete, which gets made
5 into building block, which then exposes people, and that was
6 the first time I made the mental connection what when you
7 are talking about reuse and recycle, things change form and
8 change pathways of exposure.
9 I was interested in the discussion in the use of
10 slag in building block and then in basement construction,
11 because you did exclude from critical group consideration
12 those people that spend a lot of time in a single room in a
13 building, such as invalids, and I really thought was a group
14 that should be considered. And I wondered also if you
15 included, besides direct gamma, radon emanation. I couldn't
16 tell why you met by equilibrium dose contributions, and I
17 didn't know if that meant radon as well. And radon emanates
18 differently from different types of matrices, and I wondered
19 how that was factored into your calculations.
20 MR. MECK: I don't think we have got the time to
21 go into those details, but if you could see me afterward, we
22 do. And it certainly is true that it is important to follow
23 the byproducts of materials as processes go and to track
24 where the radioactivity goes.
25 MS. STINSON: Good. Thank you. Tom, and then

1 Terry Johnson.

2 MR. CIVIC: The American Iron & Steel Institute

3 has a radiation task group that we convene every now and

4 then. When NUREG-1640 came out, we essentially skimmed it.

5 And I guess we wanted to report to you that we found some

6 disagreements with some of the assumptions and some of the

7 modeling that was done with respect to steel.

8 We had a decision to make at that point in time,

9 it was to review 1640 in detail to see --

10 MR. LESNICK: Move up closer to the microphone.

11 MR. CIVIC: To see if we could again help fix some

12 of those assumptions, help look at some additional pathways

13 and help fix the report. But we chose a second course, it

14 was that, rather than devoting resources to correcting

15 something that we didn't believe in, we thought we would,

16 again, just put our efforts to convincing you that recycling

17 steel back into commerce was short-sighted and something

18 that -- an inequitable process that we didn't want.

19 So, we just wanted to put on the record today,

20 again, that we found some differences with the assumptions

21 and modeling that was done with steel.

22 MS. STINSON: Terry.

23 MR. JOHNSON: Thank you, Barbara. Well, first of

24 all, I am not a professor. Universities do not make their

25 radiation safety officer very frequently a professor,

1 because a professor would want to have tenure, and most
2 universities want to be able to fire their RSO as soon as
3 there is a bad NRC inspection. So, I am not a professor. I
4 am not a doctor either, if somebody wants to make that
5 mistake.
6 Yeah, you were talking about slag in the western
7 states. If we consider this, something like 10 millirem or
8 100 millirem, or especially one millirem as unacceptable as
9 exposure to a member of the public, we need to consider also
10 evacuating certain of our western states, or at least whole
11 counties in these western states, and I am not certain they
12 would make suitable national parks either, they possibly
13 should just be fenced off. There is in these soils in many
14 counties in some of the western states radioactive materials
15 that expose the individuals out there to many, many times
16 the natural background radiation from terrestrial sources
17 that we get elsewhere such as on the East Coast.
18 Now, you may think I am talking about slag, mill
19 tailings, fallout, I am not. I am talking about the uranium
20 and thorium that is naturally in those soils.
21 MS. STINSON: Terry, can you bring this back to
22 the analysis that the NRC is proceeding with.
23 MR. JOHNSON: Well, I wanted to follow up on some
24 of these comments. Also, about this one millirem in
25 combination in other things, everything has to be considered

1 in combination with other things. You can't pretend to
2 subscribe to the linear non-threshold hypothesis down to
3 zero without subscribing to the whole theory. And one of
4 the implications of this hypothesis is that every millirem
5 stands on its own. The risk from one millirem in one
6 situation, or one rem in one situation, has nothing
7 whatsoever to do with the risk from some other millirem or
8 some other rem from some other source.
9 And in regard to soils, if there are soils that
10 are so unsafe that they can't be used for general purposes,
11 one idea that has occurred to me for years is that the DOE
12 owns sites that are contaminated anyway, from testing. Now,
13 the DOE would throw up their hands and say, well, this is an
14 NRC problem, we have never had any, you know, contact with
15 this type of radioactive material. But, nevertheless, they
16 are a public agency, they are paid for by tax dollars, and
17 if there were low level radioactive waste sites built on
18 these sites that are already contaminated, I don't know how
19 anybody could conceive of that being an extra risk to
20 anybody. Now, I am not suggesting they would be shoddy
21 either. They would be built with all of the technological
22 advances and, you know, methods that we would build a waste
23 site anywhere else. But they could be built on lands that
24 are already contaminated.
25 MS. STINSON: David, you came in under the wire.

1 Any last comments?

2 MR. ADELMAN: I would just like to --

3 MS. STINSON: Microphone.

4 MR. ADELMAN: -- support what Judith was saying,
5 that a reasonably maximally exposed individual is a more
6 appropriate person to be focusing on. It would also be I
7 think interesting from our perspective to look at relative
8 analysis between the RMEI versus the average member of the
9 critical group.

10 And then, second, with regard to uncertainties, I
11 would actually just focus on the first volume. I think it
12 would be useful to look at -- use an alternative
13 illustrative example to look at where there are certain
14 factors that are more or less determinant of the final
15 result you would get. So, for example, it may be that a
16 certain pathway of exposure or certain assumption that you
17 are making pretty much determines the dose than an
18 individual from the critical group is going to get. And if
19 you could -- if that is something that is more or less
20 consistent, I think that would be something that would be
21 really informative in terms of telling the public what
22 assumptions are most crucial to the analysis that you are
23 doing.

24 MS. STINSON: Okay. Thank you. Hopefully, there
25 is a little more in-depth understanding of some of the

1 analysis that NRC is proceeding with. Certainly, there is a
2 strong request for access to the information and some, I
3 think, concerns expressed about the timing of the
4 information, the development of the reports, et cetera, as
5 well confirmation of what NRC has already done in providing
6 this information early in their decision-making process.
7 We are going to move on to the environmental
8 public health discussion and see how far we can get through
9 that before our noon break for public comment. So if you do
10 want to make a public comment at noon, be sure you sign up
11 outside. We will pick up that sheet in a moment. Give
12 these guys a moment to shift and shuffle.
13 MR. LESNICK: Giorgio, right? Bob, are you going
14 to come up? Good. So we will move on to Session 7. As
15 Barb said, we will have an introduction from NRC staff on
16 this, and we will start the conversation, see how far we can
17 get before noon.
18 And, Dr. Judith Johnsrud, I am aware that you may
19 be leaving in the early afternoon, so I would like to make
20 sure, after presentation, if there are some comments in
21 particular you want to make on environment or health
22 assessment issues, please, let's make sure you do that.
23 Okay.
24 MS. STINSON: And anyone that can properly
25 pronounce Giorgio's last name in your opening comments one

1 of the pieces of candy that Mike Veiluva brought us for
2 Halloween.
3 MR. LESNICK: How is that for an introduction,
4 Giorgio?
5 MS. STINSON: Giorgio, maybe you can for us.
6 MR. GNUGNOLI: I think they should have the whole
7 bag if they are going to do it.
8 Good morning, I guess it is still morning. I am
9 Giorgio Gnugnoli of the Special Projects Section in the
10 Decommissioning Branch in the Division of Waste Management
11 in the U.S. NRC. I am introducing the discussion on the
12 potential health and environmental impacts associated with
13 the various alternatives for clearance being considered.
14 For those of you following the issues paper, this session
15 relates to Issue 2, Item A.
16 What are the potential health and environmental
17 impacts that should be considered? First and foremost, the
18 basis for NRC's consideration of any action related to the
19 release of controlled solid radioactive material is
20 protection of the public health and safety and the
21 environment. NRC will evaluate the impacts of all the
22 alternatives being considered.
23 One of the attributes to be considered is the
24 potential radiological impact. The first step is to assess
25 the potential dose to individual. For each alternative, we

1 consider the potential exposure from individual and multiple
2 sources, so the individual is looked at as being eyeglasses
3 from recycled material, steel girders in housing, et cetera.
4 This is somewhat different than what was done in
5 1640, if I can just depart a bit here in that 1640 was
6 trying to find what are the maximum situations that were
7 occurring. If you are going to look at the full impact when
8 you go to collective dose, you need all of the scenarios,
9 you need all the pathways. You just don't look at bounding
10 situations. I will get more into that later.
11 In what we are doing we are going to use a two
12 step process in picturing how this exposure can occur.
13 First, we examine how the material is released and comes
14 into contact with people. This is the scenario analysis
15 that was spoke of in the last presentation.
16 The next step is to look at ways in which the
17 biological impact is delivered to the individuals, whether
18 it is by eating, or inhaling, or touching, or it is just
19 external exposure. This is the pathway analysis part. One
20 can look at this whole thing as part of a material flow from
21 license activity to the generally affected environment, and,
22 again, this goes into more detail in 1640.
23 In order to better reflect the impacts of various
24 alternatives, we also perform a collective radiation dose
25 estimate of population groups, and this gets into a little

1 bit, in the discussion, a question raised about different
2 critical groups, from different kinds of materials and
3 different pathways.
4 When we go to the collective dose, we sort of
5 bring everything together. The different scenarios may
6 associate with different indicator individuals. The
7 collective dose allows a more common denominator for
8 comparison. In effect, we can better account for different
9 materials and in different pathways, resulting in different
10 individual doses to different people.
11 The next slide. Other impacts to evaluate are
12 those to the environment, and these would include impacts to
13 biota, such as other animals, land use. This is required of
14 us by the National Environmental Policy Act. We would
15 include assessing impacts to public use areas, wetlands,
16 preserved habitats, endangered species that might be more
17 radiosensitive than human beings.
18 Another possible impact is to consider that from a
19 mining and processing of new materials to replace recyclable
20 materials that are instead disposed of in the low level
21 waste site, the incremental contribution to pollution,
22 increased occupational injuries, et cetera, those would all
23 be factored in. Also, the possible demand for more level
24 waste capacity, possibly leading to more siting. So we sort
25 of have to look at all these possible impacts that would

1 occur if we limit the releases according to various criteria
2 and various options.
3 The last slide continues this listing of
4 attributes for health and environmental impacts and points
5 out that the attributes are not cut-and-dried, because if we
6 were trying to minimize one impact, it couldn't be offset by
7 problems in another. It was raised yesterday that being
8 very, very restrictive about what might be released might
9 affect medical therapeutics, it might affect the research
10 and other things. So, in effect, we have competing
11 interests. And we have to look at basically the whole
12 picture, every decision we make in terms of setting a
13 standard or restricting release, we will have to look at
14 what is the ripple effect in various aspects as they affect
15 society.
16 One of the attributes that is very difficult to
17 quantify, and it has been prominent in recent years, is the
18 strong role in decision-making of the concept of
19 environmental justice. We don't want to have one sector of
20 society bearing a disproportionate amount of the burden in
21 allocation of the impacts, by this we mean things like
22 children that would be wearing dentures, or dental braces
23 and that material coming from recycled uses. So, in effect,
24 children seem to be carrying more of that impact than adults
25 would be because they might not be the ones using dental

1 braces. Or, likewise, low income housing that might be a
2 target point for recycled materials where other housing
3 would not.
4 So, in effect, we have to keep that in mind, and
5 this idea of equity overall also applies to possibly a
6 reluctance to postpone to future generations difficult
7 decisions that we might be doing today. So if we have an
8 authorized use of a girder or a bridge abutment, are we
9 doing nothing more than just postponing to the future things
10 maybe we should address and deal with today?
11 There are also other impacts that are in common
12 with radiological decision-making, such as occupational
13 injury, transportation noise and road construction, and
14 those, again, would be featured into the analysis of
15 potential impacts.
16 That pretty much ends the formal part of this. We
17 are looking to you. What other impacts should we be looking
18 at?
19 MR. LESNICK: Thank you, Giorgio. Bob, is there
20 anything you wanted to add before we turn to the group?
21 The session just previous to this, we spent a good
22 chunk of time talking about health issues, but I don't want
23 to assume we have covered entirely what you might feel needs
24 to be highlighted for the NRC. We talked about worker
25 health, you know, the exposed individual. We talked about

1 public health as well.

2 It might be helpful, as you think about this, as

3 the NRC moves forward in this, are there categories of types

4 of impact, particularly environment and health, that you

5 want to make sure they keep in the back of their mind as

6 they go forward, generically? And, also, we have had some

7 discussion about particular alternatives. They will

8 certainly be weighing and thinking about different

9 alternatives that come to mind, particular categories where

10 it might be more acutely important to pay attention to this

11 category of health or environmental impact.

12 So, let me, Giorgio, in talking to you, you would

13 really rather have a wide open discussion rather than a very

14 narrow. So let's open it up that way. Okay.

15 Kathleen, let's start with you, please, and then

16 we will go to Eric.

17 MS. McALLISTER: I have a few matters. One is

18 that assumptions, in accordance with what I have read to

19 date --

20 MR. LESNICK: Would you pull that just a little

21 closer?

22 MS. McALLISTER: Sorry. Assumptions concerning

23 radiological profiles of scrap metal are based on limited

24 information and subject to uncertainty. And as a result,

25 estimates of risk could change significantly due to only

1 small changes in corresponding radiological profiles. And I
2 would hope that that would be taken into consideration.
3 Also, this might be a bridge between the last
4 session and this one, but from reading the NUREG, I had
5 gleaned that approximately -- we had gleaned that
6 approximately 33 percent of slag is estimated to go to uses
7 such as soil conditioning, for addition to acidic soil and
8 ice control over icy roads.
9 And this is kind of the output side of it. We
10 wondered if this could possibly result in localized
11 contributions to exposure pathways, particularly if you
12 consider that processed sewage sludge from licensed
13 facilities may sometimes be used as fertilizer, and if
14 that's combined with slag for soil conditioning in a
15 farmer's field, is the dose modeling comprehensive in
16 assessing all pathways. And also if it's used as -- if slag
17 is used for ice control on roads and roadbeds that already
18 contain the slag, would that result in an underestimated
19 dose to a critical group with pathways using individual
20 models.
21 A second concern that we had thought needs to be
22 considered is the development of interventional strategies
23 to ensure prompt action if a dose-based standard or limit is
24 exceeded, with a concurrent mechanism for reporting, that
25 is, if there is a clearance standard adopted and something

1 occurs at a later date that materials are found to exceed
2 that. And this is just something that was a thought,
3 whether there would be a provision for no-fault insurance
4 for businesses, industries, and the public if they are
5 adversely affected socially or economically.
6 MR. LESNICK: Thank you. Did you want this one?
7 MR. GNUGNOLI: On the last item, I guess the next
8 session may talk a little bit about liability, and that's
9 certainly something that should be considered.
10 The NRC, though, is -- we're in a strange
11 situation where we can't let cost liabilities or, you know,
12 mechanisms for self-insurance and things like that outside
13 of the actual licensed use really enter into our decision
14 making. We have to always do safety, health, and
15 environment first, so we're not that clear at that point.
16 In terms of intervention strategies, it really
17 boils down to how low the expected dose or impact, whether
18 you look at it collectively or to individuals, for this
19 maximum or critical group. If we're talking at very, very
20 low levels, we would have to consider fairly, you know,
21 low-probability reconcentration scenarios. So we have to
22 sort of tier it to sort of say what is more believable or
23 credible in terms of those possibilities. So where you
24 might let out little bits, little bits, and they could all
25 somehow converge and reconcentrate.

1 We will consider that, and we're just -- you know,
2 if there is information or assistance on the part of public
3 interest groups and industry in terms of helping us doing
4 that, you know, we welcome that information. We're trying
5 to do this on our own as well, but certainly the information
6 about the slag, that would be very useful to us in our
7 considerations.
8 But the idea here is we -- there's those two
9 parts. We need to really get a good hold on the scenarios
10 of how the material can leave and then affect us, and then
11 also the pathways of how the impact is delivered, not just
12 us but again the environment as well. But the scenario part
13 of it is a bit challenging, and part of the contracted
14 efforts with SAIC and the other contractors is to try to
15 help build up that bank of knowledge about that.
16 MR. LESNICK: And Kathleen, that first point,
17 before we go to you, Eric, sounds like, Jill, that is a more
18 specific example of the generic theme you were talking about
19 is transformation of materials into other products and for
20 other uses and to pay attention to that. That was a more
21 concrete, if you will, example.
22 Eric?
23 MR. GOLDIN: With respect to the potential
24 radiological impacts, you talk about calculating a potential
25 collective dose to different population groups, and this is

1 a question, because I don't know the answer, but I believe
2 NCRP cautions against risk assessment for collective dose
3 derived from large populations and extremely small doses, so
4 just something to check on, I guess.
5 MR. GNUGNOLI: They also say that we should --
6 that 1 millirem per year is insignificant. So they say a
7 lot of things, and we have to consider these things.
8 But there are two reasons for doing collective
9 dose. One, certainly to get an idea, if we miss something
10 because we've either focused on one material and one
11 critical group, but also it's a big step in terms of the
12 next presentation, which is in weighing benefits and
13 detriments, and so generally what the NRC does is it uses a
14 collective-dose approach to do cost-benefit analysis to help
15 in terms of looking at the range of the alternatives and how
16 they would stack up.
17 MR. LESNICK: Let me move on to Mike Veiluva, and
18 then over to Jill. And when you're finished, if you'd put
19 your card down, so I know who's in the queue here.
20 Michael?
21 MR. VEILUVA: Thanks. I'm treating this agenda
22 item as the closest thing we have to addressing the scope of
23 the future generic impact statement, since the agenda
24 otherwise doesn't really square.
25 In treating that invitation, I'd like to raise the

1 jurisdictional issue, which is our view that any analysis of
2 the environmental and social impact of the various
3 iterations of alternatives address the behavior of the
4 various actors that may be affected by the rule. And what
5 I'm referring to is not simply NRC, not simply licensees.
6 DOE will likely be looking at this rule as a generally
7 applicable guideline. That really opens up the potential
8 volume of what may be affected by the rule.
9 To give an example -- and again there are so many
10 reports that DOE puts out regarding what it is, and it's
11 hard to keep track of them all as they pass by. A June 1996
12 estimate was the low-level waste volumes in site, 11,300,000
13 cubic meters of low-level waste -- I'm sorry, that's XE-2.
14 In site they estimated 20,700,000 cubic meters of material.
15 So that when you expand the analysis to include DOE as a
16 potential actor and someone acted upon by this prospective
17 rule, you really open up the potential impacts: how
18 Agreement States will behave under the various alternatives,
19 classes of licensees, and lastly contractors or disposal
20 sites.
21 Different materials are going to have a broader
22 impact on the public. Again, soils and concrete, to the
23 extent that they are moving into the public, at least our
24 western experience in land uses are that land uses that are
25 public or quasi-public, such as landfills, tend to remain in

1 the public domain. They wind up as your parks. They wind
2 up as your schools, libraries, what have you.
3 Lastly, uncertainty. I can't stress enough the
4 20-year battle that at least we have had with certain
5 Federal agencies on the subject of squarely addressing
6 issues of uncertainty and accident with respect to the
7 potential impacts. It's easy enough to do the routine
8 activity analysis, and I understand there's the Monte Carlo
9 analysis, and there are different formulas to apply, but
10 simply telling the public you've done a Monte Carlo analysis
11 doesn't really help, in the end, assuring the public that
12 you've considered the subject of uncertainty.
13 We can argue about 1 millirem. We can argue about
14 2 millirem from routine hazardous waste management. But
15 what about the hot spots in the volumetrically contaminated
16 situation? That will be substantial, I think you have to
17 squarely face it, under any scenario. It's not simply
18 someone walking across the floor of Grand Central Station --
19 and that's where the concern is, I believe --
20 MR. LESNICK: Okay.
21 MR. VEILUVA: Going outside the ferrous materials.
22 It's the assurances addressing accident -- uncertain
23 activities, and if you are not capable technologically of
24 addressing volumetric contamination, how do you build those
25 into your uncertainty model?

1 MR. GNUGNOLI: Thank you.

2 I believe that you have a very good point about
3 the fact that there could be a secondary or tertiary effect
4 of our putting a rule in place, then DOE doing an equivalent
5 revision of their orders to affect a rule and how that sort
6 of would pass along in terms of Agreement States and others,
7 and we'll have to take that into consideration.

8 The question about the uncertainty is something
9 that's been on the NRC's minds for quite a while in various
10 areas of waste management. The idea of how do we deal with
11 volumetrics is something we're struggling right now with,
12 and a continuation of investigations done by contractors and
13 how we're going to be able to deal with that in both -- not
14 just in terms of a calculation but also in terms of how we
15 would monitor for that. So that is our intent to try to do
16 that. Whether we will be successful or not, we'll have to
17 see.

18 The situation with the accident situation, I guess
19 my first-blush look at this would be is I would hope that
20 what was done in terms of transporting low-level waste
21 across roads and accident scenarios might help us look at
22 how we would look at lower, lower, lower levels of this
23 material. And so we will take what we can in terms of
24 analogues from other areas that we've done work on and try
25 to apply that to what we're doing here.

1 I don't know if I've covered everything for you.
2 MR. VEILUVA: Yes.
3 MR. LESNICK: Yes, I think that's good.
4 We're going to go to Jill, and then Terry, and
5 David Adelman.
6 MS. LIPOTI: Giorgio Gnugnoli?
7 [Applause and laughter.]
8 I'd like to second what Mike said about looking at
9 secondary uses and tertiary uses of your analysis including
10 State material such as NORM and NARM. He only addressed up
11 to Agreement States, and I'm afraid you have non-Agreement
12 State materials as well.
13 On a policy level, this really is
14 direction-setting for the Nation, and it may discourage
15 recycling. And you have to consider the impact on our use
16 of natural resources and the increased mining that may occur
17 if you can't use -- if people are discouraged from using
18 recycled material.
19 The other one that you mentioned is that when you
20 talked about impacts on biota and land use, you talked about
21 endangered species and radiosensitive populations, but you
22 didn't mention genetically sensitive individuals when you
23 talked about population groups, and that is people are
24 genetically sensitive, and you might want to consider that
25 in your potential doses to different population groups.

1 MR. LESNICK: Thank you.

2 Shall we move on?

3 Go ahead, Bob.

4 MR. NELSON: A quick response. Good comments.

5 In previous workshops we've used the example of
6 mining to replace material that might not be recycled, and
7 the answer we got back from the steel industry as I recall
8 is that the amount of steel that would be subject to recycle
9 here is so small compared to the amount of steel that's
10 produced or otherwise used that there would be -- the impact
11 on the mining industry would be almost immeasurable. At
12 least that's what we've heard in previous workshops.

13 MR. LESNICK: Thank you.

14 Shall we move on. Terry and then David Adelman
15 and then Dan.

16 MR. JOHNSON: Thank you.

17 In regard to reducing the impact, particularly
18 occupational impacts, I have 25 years experience as a
19 radiation safety officer on a practical dirt level doing
20 this type of work, and I recognize that almost always the
21 simplest and fastest -- especially the simplest -- means of
22 disposing of radioactive material are the best, because they
23 avoid handling, they avoid transportation issues, and so
24 forth.

25 For instance, it's very important that we can

1 continue to use decay in storage, because that's a very
2 simple way to get rid of radioactive waste. And presently
3 this is capped at 120 days half-life. But in reality the
4 effect of ten half-lives on any radioactive material is the
5 same, regardless of what that half-life is. Now if the NRC
6 is uncomfortable with expanding above 120 days for all
7 isotopes, maybe they could exclude certain isotopes that
8 have a very high radioactive toxicity or, you know, like an
9 annual limit of intake less than 10 microcuries or something
10 like that. But the NRC should consider expanding that so
11 that we can expose more than 120 days.
12 And I hope that none of these deliberations,
13 especially regarding sludge, would prevent us from
14 continuing to use sewage disposal, because that is, of all
15 things, the simplest and fastest and safest way to dispose
16 of radioactive materials.
17 I recently audited an important medical facility,
18 one of the Nation's facilities, and there they don't use
19 sewage disposal. And I observed one of their activities,
20 one of the researchers poured from little vials minuscule
21 amounts of radioactive material into a pan. Then she took
22 the pan and she poured it through a funnel into a two-gallon
23 jug or something like that, a reservoir for liquid
24 radioactive waste. Then she had to drain the funnel, put
25 the funnel away, cap the radioactive waste, put that in a

1 cabinet someplace, and she had to handle these things, the
2 pan, the funnel, the radioactive waste, over and over again.
3 And then she had to also go to the solid waste and dispose
4 of those vials she'd emptied, because they were still solid
5 waste.
6 Now when researchers sink-dispose, they can avoid
7 all of that activity which has its potential for, you know,
8 occupational exposure to them. So I think we should
9 preserve that ability of universities and medical
10 facilities.
11 MR. LESNICK: It strikes me, Giorgio, that just
12 listening to Terry, that something you said earlier kind of
13 rang in my head about understanding practices, current
14 practices, and then looking then at different kinds of
15 impacts, I think Terry inadvertently made that point, I
16 think.
17 MR. GNUGNOLI: This is basically a tradeoff
18 consideration certainly. The more you have to handle it,
19 let's say, from the occupational point of view, because you
20 want to reduce the public dose or the offsite dose, there is
21 a tradeoff, you know, whether you -- it's the old idea of if
22 you had no ventilation in the facility, all the workers
23 would be in there with the stuff, you know, all in there,
24 and so then but if you ventilate it outside, then it goes to
25 the population. So you try to look for technologies like

1 filtering and other things to try to balance the situation.
2 Yes.
3 MR. LESNICK: Let's take the three --
4 MR. JOHNSON: Well, wait a minute, on the
5 occupational level, though, the risks that I allude to are
6 not necessarily all radioactive risks. They include back
7 injury and a whole host of other things besides dose.
8 MR. LESNICK: Let's see, we do want to make sure
9 we get public comment period in here, and so let's take
10 David, Dan, and Judith.
11 David.
12 MR. ADELMAN: I guess the first, I think, one of
13 the broad-ranging questions a lot of public interest groups
14 have right now is just whether or not NRC can do an analysis
15 that adequately addresses these aggregate concerns, and in
16 part that's informed by a concern about just the lack of or
17 the degree of uncertainty about the volume of material that
18 may or may not be released. So I think that in the analysis
19 it's essential that you address that kind of uncertainty and
20 how it influences your analysis.
21 Another concern is again we understand it's real
22 world, there are always going to be improper releases, it's
23 essential that we have an estimate of what the frequencies
24 of those releases are going to be, the potential volume of
25 the material involved, as well as the potential impacts from

1 improper releases. So you're proposing to set a standard we
2 know that's not always going to be met, and what are the
3 potential impacts, particularly on workers.
4 I'd just like to also say that I agree with a
5 number of the comments that have been made about slag, and
6 with a number of radionuclides, particularly the
7 long-lasting ones that are actually concentrated in the
8 slag. So these are radionuclides that stick around for
9 thousands of years and can raise particularly complex
10 questions from an analytical perspective.
11 Finally I'd just like to raise a question about
12 the ALARA principle and how that's going to be applied under
13 these circumstances. I think one of the philosophical
14 questions we have is that ALARA is typically applied where
15 you have a site that's already contaminated in some way and
16 you have some practical considerations about the degree to
17 which you can clean that up. Here we have somewhat of a
18 reverse situation where you're saying we have this
19 contaminated material and we want to assess whether or not
20 we're going to release it. And legally those sorts of
21 circumstances in other situations are treated fundamentally
22 differently.
23 Just think of nuisance law, where there's a basic
24 difference between whether you come to a nuisance or whether
25 a nuisance comes to you, in a sense, and you're on a

1 different legal footing. And I think that in terms of
2 assessing different standards and distinguishing between a
3 number of the other issues that people are raising, I think
4 that's an important consideration and one of the essential
5 concerns that the public interest groups could have.
6 MR. LESNICK: Giorgio, did you want to comment,
7 or --
8 MR. GNUGNOLI: I share your concern. It's not
9 maybe a concern on my behalf, but we are focused on how
10 we're going to do this aggregate analysis. The NRC's
11 experience generally is that you have a site that you're
12 going to license and the activities on that site correspond
13 to some releases, and you look at an 80-kilometer radius
14 around there, and you look at that population, and that's
15 basically where your population dose or aggregate is looked
16 at. And depending also of releases, if it's radon, you
17 might even go to continental basis.
18 But this is a different situation. We're talking
19 about sort of many sources all over the place. And so the
20 way we're going to have to do this is a little bit more
21 complicated. It's a little bit different. And part of what
22 we're doing here is trying to deal with this methodology.
23 So it's a little bit different, and we understand that, and
24 we fully appreciate it.
25 This is not going to be your usual slam it into

1 this computer code and boom, this is the way it's going to
2 be done. And we're still working on not only using that
3 technique but really how do we articulate it, how are we
4 going to articulate this particular approach in dealing with
5 the collective dose? So we share that concern. We're
6 working on it.
7 The question or the comment about the improper
8 release, if there's an accident or they point to one pile
9 and another pile gets taken kind of thing, we're basically
10 going to have to look at reference examples of things that
11 have been done in the past and to what degree that we can
12 predict how these kinds of abuses can occur. We can start
13 looking at again scenarios for this kind of situation. It
14 would probably be done sort of as under an accident analysis
15 overall, but we're not -- we don't have anything really hard
16 and fast right now about how we're going to look at it. But
17 we're just going to basically have to use the information
18 that we have and try to see if we can get an analog to try
19 to figure what would happen if a pile of stuff accidentally
20 gets shifted over somewhere where we had no intention of it
21 going.
22 Again, if we're going to be talking about releases
23 at doses that are very, very low, we're not going to be in
24 the same league as if someone were to release, you know,
25 spent nuclear fuel. So in effect we'll just have to look

1 and see the practicality of trying to deal with large
2 quantities of very, very, very, very low radioactive
3 material and how that might be impacted or might impact
4 populations.
5 MR. ADELMAN: Is there an assumption that it would
6 only be relatively low-level material that would be
7 released?
8 MR. GNUGNOLI: Well, no. It depends again on our
9 alternatives, but so far the alternatives that we listed in
10 this issues paper are 10 millirems per year and below. And
11 if we have to look at the material released that would
12 correspond to that range, we're certainly going to be in
13 better shape if we're looking at that range than someone who
14 might have a facility where the material would correspond to
15 50, 100, or above in terms of millirem per year. So in
16 effect if we're looking at the lower range, I'm not saying
17 there's no problem, I'm just saying that it's going to be a
18 little bit more difficult to generate the kind of scenario
19 that would compare to releases of much higher-level
20 radioactivity that we usually do in accident analysis.
21 MR. LESNICK: Okay, guys should I move on to --
22 MR. GNUGNOLI: Well, I think there was one other
23 question about the ALARA principle.
24 At this point I think the ALARA principle will be
25 figured into the cost-benefit analysis relating to the

1 selection of whatever path the NRC is going to take. If a
2 standard goes out that is a free-release standard at a
3 certain dose, if you're below that with the material you
4 have, in effect one would hope that we did our homework to
5 bring in ALARA considerations in setting the standard if
6 there is a rule that's going to be set.
7 But once that's done in terms of a case-by-case
8 basis, it's -- if you're at that level or below, at least I
9 would think that we would have worked ALARA considerations
10 in setting the standard to start with, not in terms of
11 individual choices. If it's authorized release, if it's
12 actually a license action, then again ALARA would have to
13 figure into it on an individual case.
14 MR. LESNICK: Dan Guttman.
15 MR. GUTTMAN: Following on what I think we
16 started -- Tom and John and Mike and Judy -- I'm a little
17 bit confused. I understood the last session was about two
18 studies. Now we're talking sort of about studies, but I
19 don't -- and contractors. Are we in the kind of phase Judy
20 was describing, where you're kind of preparing stuff to dump
21 on the public, but we're not involved? And, if so, I gather
22 from my inferences from Tom and John, this conflict thing
23 may be a lot more fire than I had thought, rather than
24 simply smoke. If somebody -- I'm just stunned to hear that
25 nickel wasn't considered in light of its obvious role and

1 some of the other things SAIC was involved in. But -- so
2 will you commit -- who is the --
3 MR. LESNICK: The question really is --
4 MR. GUTTMAN: Where are you? Who are the
5 contractors you've got now? Will you please tell us that
6 you're going to publicly disclose everything those
7 contractors are doing for interested parties to the public
8 at large in advance of their employment and continuing as
9 they pick up more people?
10 MR. LESNICK: And can I back that up, also is can
11 you clarify, I think, the initial point, question Dan was
12 raising is are you -- what's the top here? Are we talking
13 about existing studies, future studies? So I think it would
14 be helpful, Giorgio, or Bob, to clarify that also.
15 MR. GNUGNOLI: Sure. There are a number -- at
16 this point it would be kind of difficult to go back in
17 history and say -- explain to you who the contractors are
18 before they're employed, because they're employed.
19 MR. GUTTMAN: So they are employed?
20 MR. GNUGNOLI: They are employed.
21 MR. GUTTMAN: Well, who are they?
22 MR. GNUGNOLI: Okay. There's -- SAIC is a
23 contractor that's going to be doing the development of the
24 individual and collective doses. They're going to be
25 looking at the volumes inventories, which types of

1 materials, and dose computations.

2 MR. GUTTMAN: I would like to here publicly

3 request we get the disclosure that SAIC has filed on the

4 record this afternoon in this proceeding. Nothing to go

5 before the General Counsel. This is a public right to know.

6 You tell us why you're continuing to hire a conflict that to

7 us, and you haven't said anything to the contrary, is an

8 obviously tainted contractor. Wasting the public's money

9 and resources, we're sitting here with taint. Please bring

10 back, go get your Commissioners from lunch or wherever they

11 are, on the golf course or -- I shouldn't say that. And

12 get --

13 MR. LESNICK: Come on, Dan.

14 MR. GUTTMAN: No, I'm serious. Why are you hiring

15 the same contractor?

16 MR. NELSON: Is there a point to your allegation?

17 MR. GUTTMAN: It isn't an allegation, it's a fact

18 nobody has told us to the contrary. They have worked and --

19 you should be telling us what that disclosure is today.

20 You're wasting our time coming to a hearing, a meeting,

21 based on information without disclosing to the public in

22 advance what we have to do to discount for bias.

23 MR. LESNICK: Barb, did you want to --

24 MS. STINSON: They're going to now -- I think

25 Giorgio is going to walk through the contractors that are

1 currently employed, okay? And that'll be information
2 disclosed for a start.
3 MR. GNUGNOLI: The other contractor is ICF
4 Consulting, and they are going to be doing much of the
5 NEPA-related work such as supporting us in terms of the
6 generic impacts, the environmental impact statement.
7 They'll be helping us in terms of preparation and collection
8 of public comments and preparing the information to provide
9 to the Commission basically reflecting what's been happening
10 at these particular meetings and other comments that have
11 been sent to us electronically and formally.
12 The other group is a combination operation between
13 the Oak Ridge ORISE group and EML, and they're working on in
14 effect surveying --
15 MS. STINSON: Can you spell out the acronym there?
16 MR. NELSON: Environmental
17 Measurements Laboratory.
18 MR. GNUGNOLI: Yes, Environmental Measurements
19 Laboratory. And ORISE is Oak Ridge. Let's see --
20 MR. MECK: Oak Ridge Institute for Science and
21 Education.
22 MR. GNUGNOLI: Thank you, Bob.
23 And they'll be doing the work in terms of the
24 survey work, the monitoring work, and also helping develop a
25 regulatory guidance in terms of implementation.

1 I don't know if I've missed anybody in this.

2 MR. NELSON: Yes, one. Meridian.

3 MR. GUTTMAN: Let me, at the risk of any

4 suggestion that I am tainting anybody, this Government

5 agency should have been able to have told us all the facts.

6 I am out here on my own because this Government agency can't

7 tell us where that conflict or where that bias is, and I am

8 really surprised.

9 MR. LESNICK: Thank you.

10 Judith. And then we're going to stop for a public

11 comment period.

12 MS. JOHNSRUD: I am appalled. I am absolutely

13 appalled, and I think that the vast majority of the American

14 people would be as well. We have been hearing comments the

15 last day and a half that only very large doses of ionizing

16 radiation have any health impact.

17 It is clear that the standards are set on lifetime

18 cancer risk and gross genetic defects in the first couple of

19 generations. I see no evidence with respect to the

20 organizations, the contractors, that have just been

21 mentioned of anyone who has done substantive work in the

22 realm of the impacts other than cancers and gross genetic

23 defects.

24 There is a rich body of such information which the

25 NRC and other agencies have consistently vigorously resisted

1 even taking into consideration. There are numerous
2 activities on the part of Government agencies nationally and
3 internationally and private organizations and semiprivate
4 ones under way at the present time to disestablish any hint
5 of any health impacts to human beings resultant from low
6 doses of ionizing radiation. The work has not been advanced
7 nearly far enough for anyone to have the arrogance to say
8 that there are no health impacts or that they are not worth
9 considering.
10 I will be submitting to you at some point at least
11 a minimal bibliography of materials and of people expert in
12 the appropriate fields with whom the agency has the burden
13 to make clear that the agency has been in contact and has
14 utilized those research capabilities of persons who dissent
15 from the establishment position with regard to low-dose
16 radiation.
17 I am especially distressed that this afternoon,
18 when I cannot be here, that there will be discussion of cost
19 and benefit, and that does seem to take the first seat at
20 all of these proceedings. And yet I have to hear, in any of
21 these proceedings, reference to the costs to the public from
22 a variety of radiation impacts that have in fact been
23 established. I would you, for instance, to the BEIR-V
24 report in which there is mention of disease, of illness
25 apart from the cancers, apart from the gross genetic

1 defects. For lesser genetic defects we see a variety of
2 difficulties that are experienced by the individual, by
3 those who care for a person with either physical or mental
4 problems that are genetic in nature. Those are real costs
5 to real people. And, by the way, they can kill. They can
6 kill the health providers who wear themselves out taking
7 care of a child who is in need of special assistance. Those
8 are real world costs, but the NRC doesn't consider them. It
9 is time you did, gentlemen, and Trish.
10 MR. LESNICK: Thank you.
11 MS. JOHNSRUD: I am not done.
12 MR. LESNICK: Oh, well.
13 MS. JOHNSRUD: You will just -- our friends back
14 here will wait. The operative phrase is "primum non
15 nocere," and I should hope that everyone at this table is
16 well acquainted with its meaning. Anybody not? It does
17 mean, "First, to do no harm."
18 Now, a contract was undertaken many years ago with
19 the licensing of nuclear facilities by the AEC and the NRC,
20 plus, of course, the entire Defense establishment and DOE.
21 And that contract with the American people, as is given in
22 the Atomic Energy Act and elsewhere, is to protect their
23 health and safety, and protection of the environment. And
24 that contract included the care for the radioactive
25 materials and waste that were deemed to be under regulatory

1 control. And now, of course, we find, as well, those that
2 are not under regulatory control, the NORM and NARM in need
3 of control.
4 And so that contract with the public, upon whom
5 you now are clearly intent upon dumping the radioactive
6 waste that should be retained out of the biosystem, and out
7 of the biosystem for the full duration of their hazardous
8 life, seems very evidently to be the purpose of this entire
9 proceeding and that the Commission is bent upon undertaking.
10 This absolutely overrides the proviso that the individual
11 recipient of a radiation dose should have a choice in the
12 matter as to whether or not to receive. And I hear today
13 that you intend to use collective dose as a mechanism for
14 assigning benefit, which I find absolutely incredible,
15 whereas, it is the individual recipient who bears the risks.
16 And, finally, and this takes me back to what I
17 mentioned just briefly yesterday, the precautionary
18 principle, which does in fact state that unless it is clear,
19 it is shown, it is demonstrated that there is not damage
20 from an action, that that action should not occur. The
21 burden of proof belongs not on the public to say, to
22 demonstrate, to prove that there will be no damage from many
23 sources of contaminated materials, from what I hear,
24 virtually any material deemed to be radioactive. That
25 burden of proof belongs with those who generated, those who

1 are licensed to use and to control, and so also does the
2 burden of liability and the burden of cost.
3 We started in the environmental groups who are not
4 here, and continue to insist that the Nuclear Regulatory
5 Commission has a social contract to retain control over all
6 of those radioactive materials and wastes that are generated
7 by the activities which the Commission licenses, and I, for
8 one, and many others, will also request that you do so. Do
9 not release, do not recycle, do not reuse. Instead, develop
10 the program to reclaim those materials that can be
11 identified and can be taken out of the open biosphere and
12 instead be placed under control, sequestered, isolated for
13 the duration of the biological hazard. Thank you.
14 MS. STINSON: Thank you, Judith.
15 Terry, as Mike said, we are going to have to move
16 on to our public comment period. Sorry. Sorry. And thank
17 you all for your patience. We can pick up with your comment
18 when we come back, if you still want to make it, Terry.
19 MR. JOHNSON: Yes.
20 MS. STINSON: Let me just say that the comment
21 period for this preliminary process is extended to December
22 22nd. I think that the comment period for NUREG-1640 is
23 also -- is open, no deadline on that at this point. So keep
24 that in mind for your consideration of submission of
25 comments.

1 Also, there is a sign-in sheet that is missing.
2 We had some sign-in sheets for those who are present at this
3 meeting, and would like to receive materials. So if you see
4 it laying around someplace, please get it to me. The names
5 I have on the list are -- raise your hand as I call your
6 name. John Hamrick. Thank you. Eugene Sheely. Jeff Lux.
7 Ray Dostie -- Pat Dostie. Sorry. Ray Turner. Henry
8 Morton. Henry, are you still here? I saw him earlier. Do
9 you want to make a comment? Okay. Tony LaMastra, there is
10 Tony.
11 Okay. With those -- is there anybody else that
12 wants to make a comment that didn't get a chance to? Okay.
13 Rich Burklin. With those, we are going to have to limit it
14 to three minutes. If you can, keep your comments to three
15 minutes. And Eugene Sheely begin, and Jeff Lux, you are up
16 next.
17 MR. SHEELY: I am Dr. Eugene Sheely from the
18 United States Air Force. In 1994 the Mexican government
19 spent considerable money on putting commercials on TV
20 explaining the dangers of using used clothing marked from
21 the United States. The Goodwill and garage sales were out.
22 A lot of people consider that this was a good thing to do,
23 after all, they couldn't prove that used clothing from the
24 United States wasn't a health hazard. Someone could get
25 sick from contaminated clothing. But then again, there are

1 others who complained that there is much greater health risk
2 from other areas, and the money could have been better spent
3 teaching people the dangers of drinking contaminated water,
4 to stop drinking sewage runoff, the importance of
5 refrigerating meat or washing their hands, to bury their
6 refuse after they went to the bathroom, instead of going
7 alongside the house, as they do in many parts of the
8 country.
9 Hopefully, all of us here are just as concerned
10 about our environment as is Judith who represents the Sierra
11 Club here. The question is not whether we should protect
12 our environment, but, rather, what is the best way of doing
13 just this. Just as the question was not the possibility of
14 someone being sick or becoming sick from wearing used
15 clothing, but was this the best way to protect the health of
16 the citizens of the country.
17 It is a foolish idea to believe that we can
18 eliminate all risks associated with our lives. If we walk
19 on a golf course, or if I walk on a golf course, can anyone
20 promise me that I am not going to be hit in the head by a
21 golf ball, or that someone's club won't slip out of their
22 hands and hit me? Maybe we should pass a regulation that
23 only one person can be on a golf course at a time so that we
24 can eliminate that risk.
25 We cannot eliminate all risk from life, but we

1 certainly need to look at ways of minimizing these risks and
2 decide what is an acceptable risk and what is not. Can low
3 level radiation possibly cause someone to have some health
4 problems? Perhaps.
5 Let's look at the recycling of steel that is
6 contaminated at the one millirem level. What is the
7 alternative to refining this steel? As was mentioned by one
8 of the participants here over lunch yesterday, any steel
9 which is not refined, means that more steel needs to be
10 mined or any steel that is not recycled means that more
11 steel needs to be mined, refined and processed. And who
12 here would not agree that the mining and refining of the
13 steel creates some hazard to the environment at one level or
14 another?
15 The question then becomes not if there is some
16 risk from low level radiation, but which of these processes
17 exposes society to the least risk. Which is the more
18 dangerous? Which is more likely to cause health problems,
19 mining and refining or recycling these materials?
20 The most vocal opponents to using these materials
21 have been concerned with financial concerns associated with
22 people not buying their products. The purpose of the
23 Nuclear Regulatory Commission should not be to determine
24 which baby-buggy people are going to buy, rather, it should
25 be concerned with, is that baby-buggy is safe or not?

1 Private enterprise can then decide if they are going to use
2 those materials, considering if they are deemed to be safe.
3 MS. STINSON: Eugene, 30 seconds.
4 MR. SHEELY: Okay. I'm sorry, I said one minute a
5 second ago, but I don't think you heard me.
6 All right. Let me just go real quickly then here
7 at the end. A few years ago while I was walking through the
8 biomedical facility at Los Alamos National Lab, a banana I
9 was eating set off a radiation detector. The radiation from
10 this banana was certainly above the background radiation.
11 Should bananas then be outlawed from our home because they
12 are above background radiation? If so, what about Gatorade?
13 That is certainly going to be above background radiation.
14 MS. STINSON: Thank you, Eugene.
15 MR. SHEELY: Okay. Thank you.
16 MS. STINSON: Sorry to rush you. Jeff Lux and
17 then Pat Dostie, you are up.
18 MR. LUX: My name is Jeff Lux, I work for
19 Kerr-McGee Corporation, but I am really responding as a
20 person, as an American citizen. First of all, I will save a
21 little bit of time by saying ditto to the last comment. But
22 then Dan has made a number of comments about establishing
23 limits versus assuring compliance with those limits, and I
24 observe that rulemaking procedures in general address
25 technical issues, but rarely address NRC's roles, NRC

1 programs and responsibilities. And it is easy to get the
2 impression that at best NRC is saying, we want public input
3 regarding what the limit should be, but how NRC will
4 inspect, how NRC will ensure compliance, how NRC will
5 penalize, how NRC will respond to noncompliance is not a
6 matter of public input. That is our business, we will
7 determine how we do that.
8 And I really think it would be beneficial for this
9 rulemaking to include, how will NRC inspect, how will NRC
10 enforce compliance, how will NRC respond to noncompliance?
11 Now, I know that wouldn't necessarily become part of a
12 NUREG, but I think it could just as legitimately be a part
13 of the rulemaking as the NUREG that is produced.
14 Regarding SAIC and potential conflict of interest,
15 the first point I would like to make is I don't think that
16 that conflict of interest necessarily invalidates the dose
17 assessments, and that we have to do a legitimate job of
18 evaluating those dose assessments and saying, is this
19 complete and is it correct? However, I think it might also
20 be appropriate for NRC to address this perceived conflict of
21 interest and if, in fact, it does exist, it might be worth
22 it -- I don't know what NRC's contract with NRC -- with SAIC
23 states, but it might be worth it to NRC to say, I think we
24 would be better off having a different contractor produce
25 the final report because of that perceived problem.

1 MS. STINSON: One minute, Jeff.

2 MR. LUX: Finally, --

3 MS. STINSON: That is good timing.

4 MR. LUX: I am really going as fast as I can. I
5 think it is important when we discuss survey methods, how
6 can you survey for release? All the surveys we have been
7 talking about are surveys for material that leave the
8 facility and goes elsewhere. But I would bet 90 percent of
9 the release surveys performed are not for material leaving
10 the facility. Probably 90 percent of release surveys that
11 are performed are for something that has gone into the
12 controlled area, is leaving the controlled area, may come in
13 at a later time. Again, I may take a clipboard into a
14 controlled area, and it may be surveyed when I leave. I am
15 not sending it off-site, but I can't justify a different
16 limit than for unrestricted use, or I have to maintain
17 control of that clipboard.

18 So I think survey methodologies must be developed
19 that take into mind, or that do consider the fact that not
20 all release surveys, in fact, probably the vast minority of
21 release surveys are for material that is actually leaving
22 the site to go into public use.

23 MS. STINSON: Thank you.

24 MR. LUX: Thank you.

25 MS. STINSON: Pat Dostie, you are up next, and

1 then Ray Turner.

2 MR. DOSTIE: Yes, Pat Dostie, State of Maine, just
3 a couple of quick comments. When it comes to volumetric
4 contamination of steel, just a quick comment here. If
5 concrete can be activated, then I would presume the
6 possibility exists for some rebar to be activated also.

7 The other comment here I guess is directed more to
8 the Commission, but I guess it is appropriate because it
9 kind of struck me funny last night. When I came here I was
10 under the impression that the Commission was not aware of
11 some of the issues that the panel members were bringing up.
12 Last night I started reviewing some of the material, and
13 when I started taking a look at one item that consisted of
14 four attachments, a policy issue, notation of vote, I was
15 kind of surprised to find out that the Commission is already
16 aware of some of these issues. It troubled me, because what
17 troubled me here is they still voted to stay the course
18 instead of endorsing, let's say, what Meridian and the NRC
19 staff sort of recommended.

20 The reason I am disheartened here is twofold.
21 One, I see some of the framework here for these proceedings
22 are strikingly similar to the BRC efforts that took place
23 about a decade ago. The other thing here is that I was
24 wondering, and I am hoping that is not the case, I am just
25 wondering if the Commission itself is really listening. If

1 they are, fine, I am happy for that. If they are not, then
2 I suspect history might repeat itself.
3 MS. STINSON: Thank you. Ray Turner and then
4 Henry Morton.
5 MR. TURNER: Ray Turner, David Joseph Company. I
6 would just like to state in the opening session, I think
7 Session Number 5 this morning, we talked about types and
8 applications of radiation detection systems. I would just
9 like to state that our detectors in the recycling industry,
10 in the scrap industry are not set only for detecting orphan
11 sources, but for detecting very low level NORM sources, as
12 well as I indicated yesterday, that low level NORM sources
13 can result in rejection of a ship that can cost $5 or $10
14 million.
15 Ships are loaded on probably one or two a day,
16 import or exported, into or from the United States, not just
17 one occasionally, but several every week. These systems are
18 not going to get any less sensitive. I can assure you that
19 they are already becoming more and more sensitive in orders
20 of magnitude.
21 A second comment, there is more than one category
22 of injury. There is financial injury, there is health
23 injury. I would like to suggest here that the NRC in the
24 rulemaking, and in the setting of standards, and in the
25 release criteria, in thinking about where this material is

1 going to go, -- who is the recycling industry, and what is
2 going to happen with that standard? And in doing so, I
3 would like to suggest that you contact -- I know we don't
4 have Mr. Mattia here today, but contact the Institute of
5 Scrap Recycling Industries and have them poll their members
6 to determine if this material comes into an unrestricted
7 release, into a normal scrap recycling facility, and is
8 commingled with other materials, and if that release
9 criteria limit is such that hot spots may exist and set off
10 detectors somewhere, is that recycler, is that scrap dealer
11 going to be willing to commingle that material that may be
12 cesium or cobalt or whatever, with his material and take the
13 risk of shipping that off to a steel mill somewhere else
14 where it may be rejected, or even worse financially to that
15 scrap dealer, to an export cargo?
16 And secondly, I would like to recommend the NRC
17 also poll the Steel Manufacturers Association, the AISI, the
18 American Foundry Society, the Ductile Iron Society, these
19 are the consumers of this material, and have them poll their
20 members to determine if that scrap dealer accepts that
21 material, and is willing to take that risk, and he
22 commingles that material with other material, so now it has
23 lost its identity, and if that scrap dealer brings that
24 material to the consumer or to the steel mill, --
25 MS. STINSON: Thirty seconds, Ray.

1 MR. TURNER: -- and it rings his alarm, that scrap
2 dealer can tell him, you don't have to be concerned about
3 the alarm because it has already been free released, it is
4 okay, is that consumer willing to accept that risk and take
5 that material? Thank you.
6 MS. STINSON: Thank you. Henry, and then Tony
7 LaMastra is up.
8 MR. MORTON: Yes. Henry Morton. I think I will
9 confine my comment to what I think is one of the large
10 volume issues, and that is soil, and, in particular, soil
11 that is contaminated with the uranium, thorium series,
12 recognizing that some of the other fission products or
13 activation products weren't unique capable of, or lend
14 themselves to measurement.
15 In particular, in looking at the range of possible
16 annual dose rates that you have mentioned, that is up to 10
17 millirem per year, with the pathways and the scenarios, the
18 range of those that have been mentioned, it would be
19 basically -- I think my conclusion is that -- is the
20 outcome, in terms of derived concentration, with
21 methodologies, pathways and scenarios that you have
22 proposed, will, in effect, yield a result that is pretty
23 close to non-differentiable from background for free release
24 or clearance of soils with the uranium and thorium series in
25 it.

1 The net result of that, that is the alternative,
2 in effect, is disposal at a regulated facility, with the
3 attendant risks that are involved in transportation for
4 members of the public and the consumption of the disposal
5 space.
6 So, first, I would suggest that in the
7 environmental assessments that you consider the alternative
8 of transportation and other impacts that are going to be a
9 consequence of hauling soils long distances to regulated
10 disposal. Also, on an implication here, it seems to me that
11 if the NRC does adopt this rule, then it follows by
12 implication that perhaps the agreement states and perhaps
13 other non-agreement states will adopt a similar rule.
14 MS. STINSON: One minute, Henry.
15 MR. MORTON: If that is the case, then -- and it
16 applies more broadly, looking at large volumes of soils,
17 does this imply, for example, that a site that may have been
18 cleaned by the federal government under one of the federal
19 programs to a 40 CFR 192 standard of 15 picocuries per gram,
20 will that soil, once the agency leaves, will that soil
21 become eventually subject to disposal, subject to a similar
22 limit by the owner of the property eventually?
23 MS. STINSON: Thank you. Tony, Richard Burklin,
24 you are up.
25 MR. LaMASTRA: Tony LaMastra, American Iron &

1 Steel Institute. I first wanted to just clarify, AISI did
2 more than just scan NUREG-1640, and we will be making formal
3 comments on what we believe are both errors of fact and
4 errors of assumptions in NUREG-1640, where we really believe
5 that they can have a significant impact on the dose
6 projections.
7 The second comment is that -- I am kind of
8 confused about a statement, and I am not sure if I heard it
9 properly, but what I perceive to have been said is that the
10 NRC is not going to let economic factors beyond the
11 licensees be considered. And if that is the case, to me it
12 almost seems like you are violating the very tenets of
13 ALARA. And if your actions, by failure to take those things
14 into consideration, can have a significant impact on the
15 public in the sense of the demise of entire markets of,
16 let's say, again, the metals industry through the
17 deselection of particular products or particular metals, and
18 if that does occur, you are not talking in terms of losses
19 of millions of dollars, or even hundreds of millions of
20 dollars, you can be talking in terms of losses of
21 multi-billions of dollars where entire segments of the
22 economy are wiped out with the jobs, with the loss to the
23 economy, with the loss to the taxes.
24 So if I heard it correctly, --
25 MS. STINSON: One minute, Tony.

1 MR. LaMASTRA: You know, I think that is something
2 you ought to really reconsider. Bob's comment on the impact
3 of mining is correct. The amount of scrap that would not be
4 recycled would have a minimal impact on mining.
5 Comments were -- or questions were asked about,
6 what is in steel today? We ran a study looking over a three
7 month period of heats, well over a thousand samples, and my
8 particular minimum detectable activity in the system that I
9 had was less than .02 picocuries per gram. That is what we
10 are seeing.
11 MS. STINSON: Last comment.
12 MR. LaMASTRA: Yes, the steel industry is aware of
13 what is in the environment, the amount of radioactivity, the
14 amount of radioactivity in the air, in the water, in the
15 soil, in the raw materials, because our industry depends on
16 knowing that. So we are aware of what is out there.
17 MS. STINSON: Thank you. Richard.
18 MR. BURKLIN: Yes, I have a list of
19 recommendations. My name is Rich Burklin, I work for
20 Siemens Power Corporation, and Siemens manufactures nuclear
21 fuel for reactors. Siemens recommends a consistent method
22 of releasing material from potentially contaminated areas.
23 The method chosen should be dose-based rather than
24 instrument-based, and one thing that I think we can all
25 agree on, although we may not agree on the magnitude, is

1 that whatever dose limits are chosen have to be very
2 protective of the public.
3 It will also be helpful if the dose limits chosen
4 were compatible with other international limits. Right now
5 there is a consensus model, or a consensus standard out
6 there, it is the ANSI standard that has been mentioned
7 several times in this meeting in here. The ANSI standard
8 sets a screening level of one millirem per year, and it
9 meets all the objectives that I just stated. Additionally,
10 for the fuel fabrication component of the industry in here,
11 the numbers that are generated in that standard are both
12 measurable, very important, and can often be achieved, and
13 the standard allows the flexibility in certain situations
14 when the scenario chosen in the standard does not meet the
15 actual for a particular release.
16 So Siemens suggests to the NRC that it adopt the
17 ANSI standard. I will make one other statement in here, and
18 I wish I could be more quantitative, but it is my
19 understanding that the ANSI standard considers very large
20 objects in doing this, and this somewhat addresses the
21 concern about multiple exposures in there. If they are
22 dealing with very large objects in there, that should
23 somewhat reduce the concern of people being exposed to many
24 of these sources.
25 MS. STINSON: Thank you. Well, it is 12:32.

1 Let's take a break, an hour break for lunch. We will come
2 back and talk about economic impacts and next steps. Thank
3 you. See you at 1:30.
4 [Whereupon, at 12:32 p.m., the workshop was
5 recessed, to reconvene at 1:30 p.m., this same day.]
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1 A F T E R N O O N S E S S I O N

2 [1:30 p.m.]

3 MS. STINSON: Okay. We might have some additional
4 comments on the environmental section, but we want to move
5 pretty quickly into a discussion on economic impacts.

6 A couple of things that have been mentioned to me
7 in the lunch break are one, it would be helpful to enumerate
8 at some point, to understand a little bit better some of the
9 elements of the various alternatives, and for you to take
10 the opportunity to hone in on particular alternatives you'd
11 like to describe in more depth, understand better yourself
12 if you have a question across the table about what somebody
13 means by a research-and-release scenario of some sort or
14 some other scenario.

15 The other thing is we have focused a lot in each
16 of the meetings actually but in this meeting as well on
17 steel as a material, and yet we hear that the impact of the
18 steel it's, you know, it's 5 percent of the overall amount
19 of material that's going to be available from
20 decommissioning and other facilities if a standard is set.

21 Well, what about all those other materials? Four
22 are mentioned, four are analyzed in NUREG-1640. Are there
23 others? What others? You know, certainly there's going to
24 be additional analysis by NRC as to volume of these other
25 materials, but it would be helpful in the course of our

1 discussion over the next two hours to hit a little bit on
2 some of the other materials as well.
3 And there has been the suggestion made that
4 segregation of materials is possible, it's going to be
5 useful, treating materials perhaps in a regulatory fashion
6 differentially, how would that really work? It kind of fits
7 in with the alternatives discussion. So those are a few
8 things to leaven the loaf for the next couple of hours.
9 I'd like to suggest that we by three o'clock at
10 the latest be moving into a discussion of next steps, which
11 really means what -- how can we best make use of the next
12 workshop that is scheduled. There's a workshop in Chicago
13 December 5 and 6. We could try to produce exactly the same
14 type of discussion, hit exactly the same presentations, same
15 issues, or we could try to do something else and make the
16 discussion advance itself a little bit. So I want you to be
17 thinking about that, because we're going to spend a little
18 time at that starting about three o'clock. If you're going
19 to be leaving, you can weigh in on that earlier.
20 Mike?
21 MR. LESNICK: Yes. Just also as you go in the
22 afternoon, and you may get into some of these details in
23 expounding on things, there might be -- you should always
24 obviously feel free and should ask questions, pose issues
25 for NRC staff around the table. But we're starting to get

1 to a point where some of the issues you are raising are
2 issues not just probably for the agency or questions, but
3 probably for each other as well. So think about drawing
4 upon the resources in the whole room and not just the
5 agency's. You start thinking about topics and issues and
6 components of perhaps getting an answer to something that's
7 in the back of your mind on this.
8 Thanks.
9 MS. STINSON: Okay. Let's pick up where we left
10 off before we go into our presentation.
11 Giorgio, if you don't mind. Terry.
12 MR. JOHNSON: Okay, thank you. Thank you,
13 Barbara.
14 I wanted to follow immediately up on what Judy
15 said, one thing she said, which was about genetic effects.
16 We have this one enormous research group that we've been
17 studying in the Hiroshima-Nagasaki survivors. Now these
18 people have had thousands and thousands of children,
19 grandchildren, great-grandchildren. The total number of
20 what we would call, you know, offspring of the study group,
21 the ones that got the large doses is -- I believe it's over
22 200,000 people now.
23 MS. STINSON: This is what you referred to
24 yesterday, Terry, already, or maybe that --
25 MR. JOHNSON: No, no, no. I'm talking about

1 genetics now.

2 MS. STINSON: Okay.

3 MR. JOHNSON: I'm talking about genetics now,

4 because we have the issue of genetics here. Among the

5 progeny or offspring, children, grandchildren,

6 great-grandchildren, of the Hiroshima and Nagasaki

7 survivors, there's no evidence whatsoever of any genetic

8 effect, gross abnormality, subtle abnormality, there's just

9 simply no evidence of a genetic effect having appeared. And

10 I think that's noteworthy.

11 MS. STINSON: Okay.

12 MR. JOHNSON: It's one of those things where we're

13 relying on a hypothesis.

14 MS. STINSON: Thank you.

15 MR. JOHNSON: Incidentally, I don't have any

16 unique knowledge about the linear nonthreshold hypothesis.

17 It may be true; it may not be true. I don't profess to

18 know. But I think we should keep in mind we're operating on

19 the basis of a hypothesis.

20 When we outlaw lead in paint, it's not because of

21 some hypothesis. When we outlaw asbestos in building

22 materials, that's not a hypothesis. When we outlaw

23 sodium -- I mean sulfur dioxide in the air, you know,

24 certain levels, that's not a hypothesis. The children in

25 this country are going through an alarming increase of

1 asthma, as we speak.

2 So if the resources, and more than resources, the

3 national attention that is devoted to radiation, if some of

4 this were diverted to something in our society that actually

5 is hazardous, this would save lives.

6 MS. STINSON: John Karhnak?

7 Yes, thank you.

8 MR. KARHNAK: Yes, Bob Senseny mentioned

9 international work this morning, and I just wanted to bring

10 to your attention of the folks here, in case they're

11 interested, that the IAEA puts out a quarterly journal, and

12 the latest one was dealing with sensors and detection and

13 all those other issues that are in the international arena,

14 and it also has some of the information on the deaths due to

15 mishandled sources and that sort of thing, in case anybody's

16 interested in looking at that, some of the information I

17 mentioned earlier. IAEA.org/worldatom -- world,

18 w-o-r-l-d-a-t-o-m, all is one word -- /periodicals/bulletin,

19 and if you didn't catch it, come by here or you can just

20 copy it off my page.

21 MS. STINSON: Thank you, John.

22 Joe?

23 MR. RING: I also wanted to have a followup with

24 Dr. Johnsrud's comment. She made a very impassioned

25 statement about radiation health effects. In the past I've

1 had experience working with her and really hoped she was
2 here to have this discussion. I recommended a Dr. Stephen
3 Wing to a public hearing in Massachusetts on her
4 recommendation that he was an epidemiologist that really
5 knew the very-low-level radiation health effects, and at
6 that public hearing I asked Dr. Wing what the health effects
7 of 1 millirem radiation exposure were. He very clearly said
8 zero, there are none.
9 Thank you.
10 MS. STINSON: Okay, anything else specifically
11 related to environmental health impacts?
12 Can we move on to the economic impact discussion
13 and further discussion of alternatives?
14 Giorgio?
15 We're getting there.
16 MR. GNUGNOLI: The companion topic that goes with
17 the previous session, looking at the impacts, health
18 impacts, safety and environmental, is to sort of provide a
19 way of in effect comparing the results of one alternative or
20 a number of alternatives with others. So this is sort of a
21 natural follow-on from the previous presentation.
22 For those of you who are following this in the
23 issues paper, this is issue 2, item B. The question is why
24 consider economics and cost-benefit.
25 Basically the Federal agencies must consider

1 cost-benefit in their evaluations of alternatives for major
2 rules. Executive Order 12291 directs all executive agencies
3 to prepare a regulatory impact analysis for all major
4 regulatory actions. It should be noted that in the
5 executive order, it clearly directs that actions should not
6 be undertaken unless they resulted in a positive net value
7 to society. So that's what we're looking for in terms of
8 doing the cost-benefit analysis. This helps us identify
9 this.
10 NRC guidance for conducting a cost-benefit
11 analysis is documented in a NUREG brochure document, 0058,
12 titled "Regulatory Analysis Guidelines of the USNRC." This
13 document goes into some detail addressing attributes and
14 preparing environmental analyses.
15 Basically this provides a tool to help balance
16 health, safety, and environmental impacts with the costs
17 required to achieve or preserve them.
18 The next slide addresses some of these economic
19 impacts. Just as a note applying to this presentation and
20 the previous one is that these items are presented as an aid
21 to help focus our discussions today. They're not meant to
22 be exhaustive or with respect to what constitutes a complete
23 cumulative environmental cost-benefit risk assessment.
24 Radiological surveys will play a role in verifying
25 that permissible levels have been met. The costs include

1 instrumentation, labor, training, analysis of results,
2 monitoring time. I'm sorry.
3 MR. LESNICK: The man behind the curtain's telling
4 us what to do in reality.
5 MR. GNUGNOLI: You can come down here and get a
6 piece of candy if you want.
7 The lower the dose or concentration number, the
8 higher the cost associated with necessary accuracy for the
9 readings.
10 I mean, obviously in this -- it's a
11 generalization, if a prohibition kind of approach takes
12 place where you basically don't have to worry about
13 monitoring because everything in this controlled area is
14 going to be dealt with as low-level waste, you can in effect
15 dispense with necessary confirmatory measurements. This is
16 all low-level waste, and it's going to be treated as that.
17 Many of the alternatives will have an economic
18 impact on certain commercial sectors. Scrap dealers and
19 other industries would need to tailor their operations
20 accordingly. If total prohibition were the ultimate
21 regulatory strategy, then generators would certainly need to
22 consider a strong investment in detection technology to
23 preserve the radiological clean bill of health. The cost
24 impact may affect the manufacturing process as well.
25 This is most keenly observed in the potential for

1 responding to fake contamination alarms or for rejection of
2 materials at melters, scrap yards, et cetera. You don't
3 want to bear this liability. In order to minimize the
4 liability, the scrap dealers and remelters and such will
5 need to weight the costs associated with more precise
6 monitoring for both incoming and outgoing monitoring
7 locations. Again, the metal replacement production costs
8 need to be addressed in this analysis.
9 We continue with a list of potential cost impacts
10 on the next slide. Depending on the alternative, this would
11 impact the cost of disposal as well. The tradeoff is
12 whether we send these materials to a public landfill or to a
13 low-level waste disposal facility or neither. In other
14 words, recycle or storage.
15 There are also costs for other industries such as
16 producers of film and certain electronic products which
17 might have to retool to avoid sensitivity problems. You
18 could almost look at these folks as sort of being victims of
19 the process really not having benefited from the use in the
20 nuclear area.
21 One of the concerns that came up in San Francisco
22 and has been repeated is the potential for buildup of
23 radioactivity in commerce over time. In other words, if we
24 continue recycling and recycling and more material is
25 entering in. But some folks voiced that this might be

1 something that might go the other way, that the buildup
2 thing may sort of be a red herring of sorts. But we'll have
3 to look at that and see whether it merits further analysis
4 on this. But it is one of the things we are considering.
5 The socioeconomic impacts have to be weighed as
6 well. Generally you look at things like jobs lost, created,
7 quality of life in communities, increased noise and traffic,
8 accidents -- so, you know, at this point this sort of
9 finishes a very brief listing of the possible costs that
10 might be considered. And, again, costs can be considered
11 not just as money, although generally in doing a
12 cost-benefit analysis you start using some equating
13 mechanism to say what this cost can be equated to in terms
14 of money. But, you know, detriments are basically what
15 we're looking at.
16 In the next slide we sort of have a fairly short
17 mantra in terms of what's involved in cost-benefit analysis,
18 simply, and although it isn't a simple process, it's -- you
19 evaluate the potential health, safety, and environmental
20 impacts against the costs required to achieve or preserve
21 them, what benefits come from each alternative, and what
22 detriments, including costs, result from each alternative.
23 But effectively we needed to look at the
24 alternatives, and we're seeking those that provide a net
25 positive value to society. And so that's really what we're

1 looking for when we do all the calculations, when we do the
2 considerations, when we factor in the qualitative aspects as
3 well, and it's bottom line, and it's really what is the best
4 or what is the better option in terms of what we're doing.
5 If there isn't a net positive value, then one would question
6 why even do this.
7 Effectively that's pretty much it. At this point
8 we can open it up. And I appreciate the fact that it may be
9 kind of difficult to talk about cost-benefit without going
10 back to the previous discussion talking about impacts.
11 MS. STINSON: Well, in tying it to specific
12 alternatives, because the impacts could be -- there may be
13 different considerations, impacts that you would consider
14 for different alternatives. What do you all think of the
15 alternatives in the approach that Giorgio has laid out? Any
16 suggestions that you'd have would be appreciated.
17 Felix?
18 MR. KILLAR: I think we're a little bit of a
19 misnomer here when we talk about cost-benefits, and I want
20 to make sure that we put this in the right character, at
21 least from my perspective, put it in the right character.
22 When people start talking about a cost-benefit,
23 they start talking about dollars versus benefit and stuff.
24 And certainly that's an important attribute. From our
25 perspective, what we feel is the benefits of the technology

1 versus what's being given up for, when you start looking at
2 nuclear power and the advantage that nuclear power has as
3 far as the emissions in air and pollution and stuff as we're
4 not burning fossil fuels as an alternative. Are you looking
5 at medical applications and using nuclear medicine
6 procedures versus surgical invasive procedures to do the
7 determinations of diseases and treatments of diseases? In
8 your own home, looking at the uses of smoke detectors and
9 stuff in your home, the benefits that you get from that, the
10 number of lives that are saved, what have you?
11 So I think we start looking at cost-benefit, you
12 have to look at the second- and third-order effects, that if
13 you end up with regulations that are such a burden that the
14 industry will cease manufacturing this particular product
15 because they feel that there's no way they'll be able to
16 dispose of their waste or there's no way they'll be able to
17 close down their facilities once they get into this, and the
18 long-term liabilities, although you never brought that term
19 up, but that certainly was something we want to talk about,
20 long-term liabilities of being able to sort of get out of
21 the game and the inability to do that because of such
22 stringent, tight, controlled regulations basically says I'll
23 never get into the game. And so basically you lost that
24 benefit. And there was no dollars expended and no cost in
25 financial, but there's the loss of the benefit to society

1 from that.

2 Nuclear technology provides a lot of benefits to
3 society, and people I don't think realize those benefits
4 fully to society. And we have to be very careful when we
5 start looking at cost-benefits that we look at these effects
6 in the negative impact they may have if we start putting
7 regulations that just don't make sense.

8 MR. GNUGNOLI: No, we fully appreciate that. It's
9 just generally what you would do is you would look at the
10 threshold where if it costs in terms of time, energy,
11 burdens the medical practitioner more than this much, they
12 won't pursue that. So in effect then that gives you a sort
13 of a linch point for that threshold. And then that can be
14 expressed in terms of a monetary sum. That's simply just to
15 allow you to do a calculation to incorporate all these
16 things that you've talked about. Because somehow all those
17 things, whether you're talking about the nuclear industry,
18 medical, detriments of other forms of benefits in other
19 forms, all have to be brought into some sort of common
20 process of being evaluated. And so that's generally what's
21 done.

22 You have this equation process. And some people
23 take issue with what's the basis for, you know, $2,000 for a
24 human life kind of thing. And so -- but somewhere along the
25 line in order to do the calculation and so you can compare

1 how those various alternatives come out, you basically have
2 to reduce it to some sort of indicator, whether it's cost in
3 terms of money or, you know, if you want to do it in terms
4 of risk, in terms of premature cancer deaths or whatever,
5 somewhere you have to find some way you can bring it all
6 into a common denominator format. And that's all I was
7 saying. Not that you would ignore these other benefits of
8 something that might at first be thought of as dangerous,
9 like nuclear materials, but yet they have so many beneficial
10 uses in a society.
11 MS. STINSON: This is going to be one extensive
12 analysis.
13 John, are you passing? Are you passing?
14 Paul? Paul Genoa, and then Mike Veiluva.
15 A little closer, Paul?
16 MR. GENOA: Yes.
17 MS. STINSON: Thank you.
18 MR. GENOA: Sorry. I'm trying to capture that
19 lost opportunity cost, and that is a challenge. I don't
20 know how you deal with that. I mean, we already see it in
21 this country, the nuclear engineering programs are
22 diminished, the number of students going into the field are
23 diminished, you know, technology is going overseas. So
24 that's another issue.
25 But I wanted to sort of challenge one of your

1 assumptions early on, which is if the clearance doesn't go
2 forward, then they'll merely be disposed -- more low-level
3 waste disposed or more disposal in another facility. And
4 while that may be true, it's a bigger picture than that.
5 Fundamentally these facilities to operate need to move
6 materials in and out every day. Have to do it. So it can't
7 just go away. In other words, you either stop the use of
8 all this technology tomorrow, or you have to come to terms
9 with allowing some materials to come out. It's physically
10 impractical to do otherwise.
11 Now you can section off what materials you're
12 talking about. We've spent an awful lot of time talking
13 about recycle. We've talked about disposal. We haven't
14 talked much about reuse, but the vast majority of the
15 material, scaffolding, tools, welders, computers, you name
16 it, you know, have to come out of these facilities. They
17 have reuse value. Some can stay within the industry, but
18 some can't. And if they're clean, why should they.
19 But I guess the point is there are other practical
20 implications that you have to consider if you take away the
21 clearance option, so to speak, the idea of being able to
22 reuse material. The reason, and someone talked about it
23 before, fundamentally this is a balloon, you know. There is
24 a certain number of facilities using material today. That
25 material is out there. You can push on the balloon. It's

1 going to pop out somewhere else.

2 So back in the late seventies and early eighties,
3 when low-level waste disposal was not a critical problem, it
4 was dirt cheap, a couple dollars a cubic foot to dispose of
5 waste, there was no one worried about entombment. There was
6 no one worried about clearance. There was no one worried
7 about leaving residual activity on site. They just throw it
8 in a box and send it out there and you're done with it.

9 Well, when society selectively takes away
10 opportunities, like low-level-waste disposal, the fact that
11 no new facilities have been opened, to a large degree
12 because of dedicated opposition to those facilities, then
13 you have to look for other options. And those options, you
14 know, fundamentally society has to deal with it. So now
15 you're starting to look at issues like entombment, starting
16 to look at issues like leaving residual activity on site.
17 And fundamentally the material can't go away. So you can,
18 you know, help shape where it goes, but you need to give
19 some real consideration to what the health implications are
20 under those scenarios. And that should have to be factored
21 into the equation.

22 So I guess my point is if the clearance isn't
23 there, one of the other options other than just disposal, is
24 ultimately the material stays on site, the facility either
25 operates its routine life or goes out of operation sooner,

1 and ultimately perhaps the material stays there forever.
2 There's probably safe ways to do it, but is it the right
3 thing to do, and what are the costs associated with it?
4 MS. STINSON: Mike, and then Eric.
5 MR. VEILUVA: This really is the heart of the
6 problem, because this analysis by definition can't be
7 objective. There are many subjective values built into
8 this, and if there's an overriding need for public
9 participation and democratization of this entire process,
10 other than the health impacts, it is that necessarily built
11 into any rule is going to be a societal choice of values.
12 One possibility is user discrimination. In other
13 words, you discriminate on how the rule applies to a
14 specific class of licensees by the value that society places
15 on it. Perhaps there is an emerging consensus that medical
16 users will enjoy a high level of consensus as far as their
17 license status and how they use these materials, and then as
18 you go down the chain, I may offend some people, but until
19 you get to nuclear power, and that there will be a different
20 societal value attached to that.
21 What's been happening with the case-by-case
22 approach is we've allowed a small circle of people to decide
23 those societal values for us. Now having said that, that
24 doesn't diminish criticisms of attempting to fashion a
25 uniform rule. Economic perception is going to play a huge

1 role here. If there is a steel recycling rule, I can almost
2 assure everyone that a Christmas catalogue will arrive at
3 their house two years from now which boasts that this
4 particular skateboard is made only from virgin steel, and
5 with a little radioactive symbol with a line drawn through
6 it. That's what we're facing. Economics is a study of
7 perception.
8 Lastly, there are probably wide-ranging economic
9 impacts on the current system of disposal and contracting.
10 Are we going to set up a whole new network of people who are
11 quasi-licensed or less licensed than others? Are municipal
12 landfills going to compete with companies like Envirocare?
13 All of this argues for casting the widest possible net of
14 participants in this process, for not pushing the time line
15 too closely and to allow the widest number of interests into
16 this process.
17 So if anything, this discussion dovetails into a
18 discussion of what's the rush, because the more we rush, the
19 more we are -- we're giving short shrift to these very
20 important bedrock discussions of societal values.
21 MS. STINSON: Eric, and then Steve.
22 MR. GOLDIN: Well, I'm not going to -- my comments
23 are not quite so lofty as Paul and Mike's, but I'm -- and
24 I'm not an instrument person, but I want to mention a couple
25 of things regarding a topic of a meeting that was held a

1 number of years ago, I believe it was during the license
2 termination workshops. The title of the conference was "How
3 Clean Is Clean?" And that for the powerplants is one of the
4 key elements of all this discussion is to determine, you
5 know, when is something contaminated and when is it not.
6 And right now, in the absence of any generally applicable
7 standard, it is not contaminated when it is not detectable.
8 And how hard do you look for that not detectable?
9 I think I mentioned this before, and the benefit
10 of having the NRC establish some kind of a standard is that
11 we can then go on and use some of the newer instrumentation
12 that provides automated equipment, reduce human errors that
13 I'm sure that the public would like to hear that we are more
14 effective in ensuring that radioactive material is not
15 released inappropriately. And it makes our process for
16 releasing people, trucks, and materials from the plant more
17 efficient and more thorough.
18 MS. STINSON: Good. Steve, and then Dan.
19 MR. LARICK: I think one of the issues that I've
20 always had concerns with is the value that is assigned to
21 contaminated steel, and I think from what -- based on what
22 you've heard at previous meetings and from people here at
23 this meeting, there's a debate about whether or not the
24 steel mill systems will pick that material up that's
25 slightly contaminated that's coming out of DOE facilities.

1 We've run tests ourselves and we know that it will. We
2 already know that.
3 And there's people on the other side of the fence
4 say well, we're not sure if you can or not, but we know
5 that. If that's true, and you've heard from people in the
6 steel industry that if it does alarm their facility that's
7 being turned around, at that point that material has no
8 value. If 99 percent of the steel mills in the country say
9 we don't want this if it sets off our alarm, and we know
10 that it sets off our alarm, then that material has zero
11 value. It actually has a negative value at that point.
12 And you may even have to look at what the costs
13 would be associated with abandoned material, because there
14 has been a problem in Texas where this happened with some
15 NORM material that got rejected from a steel mill that
16 actually got dumped in a ditch several miles down the road
17 from that steel mill, all right? Rather than incur the
18 costs of trying to handle that material, once it got
19 rejected, it had not only no value, but it had a negative
20 value, and it was illegally disposed of in a ditch, and the
21 health department got involved with that. So the cost of
22 materials is critical.
23 The other thing is, is I keep going back to this
24 idea of trying to cut things up into littler pieces. If you
25 have something that's overly complex, the best way to try

1 and deal with it is to cut it up in little pieces and deal
2 with it one at a time.
3 The comment that was made earlier this morning by
4 the folks that are in the nuclear industry is that they have
5 no intention of sending steel for recycling. And you all
6 can correct me if I'm wrong, but they said that's not an
7 issue for us. And so if that's true, then you've got 1.8
8 million at DOE, you've got 600,000 at the nuclear
9 facilities, well, 25 percent of your material is off the
10 table at this point. They say they're not going to send it
11 to us, so that doesn't really factor into the cost-benefit
12 analysis anymore, unless they change their mind and they do
13 want to send it to us.
14 But right now, now we're not dealing with 2.4
15 million, we're only dealing with the 1.8 million from DOE.
16 If you look at that material and DOE people say themselves
17 that portions of that are at background or are not
18 contaminated, and you take that out of the mix, I think it's
19 going to change all the cost-benefit analysis that's been
20 done to date, because you're going to be dealing with a lot
21 smaller amount of material. And at that point it may show
22 that it's cost-effective to go to a landfill versus trying
23 to force this on people who don't want it.
24 So if you look at the value of the material, the
25 real value, not the perceived value, but the real value, and

1 you look at actually how much material we're talking about,
2 then it's going to help you in coming up with your costs, I
3 think.
4 MS. STINSON: Do you want to just respond to that
5 quickly?
6 MR. GENOA: If I could, Steve, just very quickly.
7 I want to be clear about it. There are very limited
8 applications where the value of our metal would be a
9 significant driver in trying to recycle it from utility
10 waste, which I'm very familiar with. And those have to do
11 with the secondary condenser in BWR's where it's, you know,
12 a valuable metal and generally is clean.
13 And when I say we don't have any intention, I
14 mean, that's not what I said. What I said was there is
15 really no economic driver. Right now, though, when we
16 release material, if it is no longer of value and it's
17 metal, it gets treated the same coming out of our nuclear
18 plant as it comes out of the coal plant next to it. It goes
19 into a recycling bin just like everybody else does. And so
20 it currently does go to you, has gone to you, and will
21 continue to unless a rule changes that in some way.
22 But what I want to make clear is that there is
23 really not a big economic driver. There's no significant
24 advantage to the industry to recycle that scrap steel which
25 has minimal value as opposed to dispose of it in industrial

1 landfill or some other adequate facility.

2 MS. STINSON: Thank you for that clarification.

3 MR. KILLAR: I'd like to clarify it, because I was

4 the one that made the comment.

5 MS. STINSON: Oh, it was you. Okay.

6 MR. KILLAR: And basically I want to reiterate

7 what Paul has said, is that we are not out there advocating

8 recycling, but once we free release this material it doesn't

9 prohibit it from who we free released it to from recycling.

10 And so that's where the issue comes from. It's not from us

11 driving the issue, it's from the secondary effects of

12 whoever we released it to may determine to recycle it, and

13 then if they get rejected, what have you, the

14 finger-pointing comes back to us.

15 MS. STINSON: Right.

16 Okay, thank you.

17 Dan.

18 MR. GUTTMAN: Yes. Just as a preliminary

19 question, I assume these -- are these contractors involved

20 in this? Is it the same as -- is this all part of the thing

21 you were discussing in the last session, or --

22 MR. GNUGNOLI: A number of them; yes.

23 MR. GUTTMAN: Anybody else?

24 MR. GNUGNOLI: There's only one other contractor

25 besides what I mentioned, that was talked about earlier, is

1 the USDA doing the work on the soil. So that basically is
2 the fullest range.
3 MR. GUTTMAN: Yes, and I'm trying to give what
4 limited real-world examples I think are relevant to this to
5 see if I can understand the cost-benefit stuff. This is not
6 a hypothetical. It's a real-world.
7 It turns out that, you know, DOE is driving this
8 whole recycling business, at least from the waste point.
9 It's got the Center for Recycling Excellence, and it's
10 trying to get this stuff out there. And in the lead case,
11 which I hate to say Mike happens to be the BNFL case, and
12 SAIC of course is responsible for the regulatory compliance,
13 it appears, it turns out, as a Federal judge found, to get
14 that going, they had to get a modification for the Federal
15 facility agreement among EPA, Tennessee, and DOE. And it
16 was, without getting into the technical details, a
17 requirement for public notice and participation where we
18 could have raised issues.
19 That was not followed. The judge found that there
20 was no good explanation. We finally got access to the
21 document codifying that federal facilities agreement, I
22 think October 30th, 1996. It turns out that that was not an
23 undertaking, this whole recycling, done on the basis of
24 human health and safety. It was done for bucks. The
25 document says this is purported to be a reindustrialization,

1 Reinventing Government, exercise -- there are many higher
2 risk reduction programs, and Tennessee pointed it up.
3 The question I am asking you is -- I don't assume
4 you know about it -- but now that you do, is SAIC going to
5 analyze this carefully and when they do, how are they going
6 to cost out the distortion of the political process that has
7 taken place already in recycling, the unlawful departure
8 from public processes that EPA participated in with DOE and
9 with TDEC and how are they going to cost out the balance
10 between getting the recycling industry going and protecting
11 risk according to the normal Superfund national protection
12 plan that already -- we thought as members of the public --
13 was in effect? Where will these things, will you assure us
14 that in the document you will look at this example and cost
15 out distortion through violation of the law and avoidance of
16 the normal risk scheme?
17 MS. STINSON: Okay. Let me answer the questions.
18 MR. GUTTMAN: Who is going to do that for us in
19 this document?
20 MR. GNUGNOLI: I am not exactly sure how I can
21 cost out political distortion. What we are going to do is we
22 are going to look at the health impacts, the potential
23 health impacts and the various alternatives.
24 How one particular instance of how material was
25 recycled figures into the logic and rationale to come up

1 with a regulation that would serve for all purposes I am not
2 exactly sure how far that is going to go, but the idea -- I
3 don't know that anyone is really comfortable with a lot of
4 the examples that you have brought up in terms of misuse,
5 improper behavior, and such, and we are going to work in a
6 situation where we are going to look at normal
7 operational -- I guess reasons in terms of how these
8 facilities will operate.
9 We are not going to assume that every single
10 facility is going to engage in certain things that would
11 come out to be improper and inappropriate.
12 Of course, there is room for that when you look in
13 terms of the accident or that kind of realm of the analysis
14 when you do the cost benefit analysis, so all I am saying is
15 that we are not going to go and assume everybody is going to
16 be doing bad things. We are just going to look at normal
17 operations and see how those work and then we are going to
18 look at disruptions in terms of accidents.
19 MR. GUTTMAN: My brief response is that is why I
20 just want to make sure we all understand. This notion of
21 cost benefits sounds fine in the abstract. All the costs
22 and all the benefits -- love -- you know, security -- need
23 for a nice blanket factored in. You tell us we'll quantify
24 it. In reality, having different experiences in the real
25 world, you automatically write off what I see is the only

1 experience in front of us.

2 If I were looking at this or if my contractor,

3 maybe NRDC, were looking at it, since that is the entire

4 universe the index case, as they say in the medical

5 business -- correct, the index case? -- the index case and

6 there is no other index case. They would look at that,

7 since SAIC is looking at it and since they were in the

8 middle of it, I could understand it would make sense for

9 them to avoid looking at it. That is where we are talking

10 about conflict of interest and biased biting.

11 MR. GNUGNOLI: Well, it is not just going to be

12 SAIC. A lot of the --

13 MR. GUTTMAN: Other people have got interests too.

14 I understand that.

15 MR. GNUGNOLI: No, I understand that but certainly

16 that information is not going to be ignored, okay? It plays

17 a part of the role, but on the other hand one would hope

18 that once we set up a standard that that will not be

19 standard operating procedure either.

20 MS. STINSON: Okay --

21 MR. GUTTMAN: We had a standard and that was

22 violated. The standard was you go by risk not by bucks and

23 this was violated by the people you have got employed --

24 MS. STINSON: Okay, let's move on here. Robert

25 Senseny and then John Wittenborn.

1 MR. SENSENY: Thank you. Just a couple of
2 thoughts. To follow up actually on what Eric had said, I
3 was also going to talk about the benefits of NRC
4 establishing a standard, and I saw that the international
5 standard was important for two reasons.
6 As pointed out in the Federal Register notice, it
7 does talk a little bit about the confusion of the economic
8 disparities or confusion and economic disparities which
9 could result from NRC not adopting a standard when others
10 are moving ahead in this direction.
11 I hadn't seen that highlighted in your slides and
12 I think that this is an important point that needs to be
13 carried through in the analysis.
14 I am sorry that Mike Mattia wasn't here today
15 because he raised a point yesterday about the discussions
16 with some of the Europeans and it seemed to echo what we are
17 hearing here today from U.S. manufacturers of, well, you can
18 set whatever standards you want but we are not going to rise
19 to that level, so to speak -- no pun intended.
20 I don't think that anyone is saying that they must
21 rise to that level but there are other countries out there
22 that are less fortunate than the United States in our
23 ability to mine new materials. These other countries will
24 look to what I guess you would call this a secondary source
25 for materials. That will occur. I think that it is

1 important for the United States to show leadership in
2 establishing a standard which is technically, scientifically
3 based and one which does match the international community
4 if not lead the international community. Thank you.
5 MS. STINSON: Thank you, Robert. John Wittenborn
6 and then David and then Terry.
7 MR. WITTENBORN: I agree with Robert that it is
8 important that we attempt to set a standard, but I think it
9 is important for everybody to understand that that standard
10 is not going to govern --
11 MS. STINSON: A little closer, John.
12 MR. WITTENBORN: That standard is not going to
13 govern the steel industry's decision of whether or not to
14 take the material for the reasons that we have outlined
15 before.
16 I want to make another comment as well. There is
17 a public perception issue, and I don't know how we are going
18 to factor this into the cost benefit analysis, but somehow
19 it has to be looked at, and that is how do you cost out the
20 lost market, potential lost market for materials that come
21 out of the recycling process?
22 Let me give you an example. I represent the
23 stainless steel industry and stainless steel in many cases
24 consists of 12 to 20 percent chromium and perhaps 6 to 12
25 percent nickel. Typical stainless steel may be 18 percent

1 chrome and 8 percent nickel. In Europe nickel is perceived
2 to be a skin sensitizer. It has been regulated as such.
3 Therefore it ends up on a list. Now because it is on a
4 list, the people who purchase any nickel containing material
5 want to know whether or not they are buying something that
6 is on a list. They don't care what the concentration is.
7 They just want to know whether or not they are buying
8 something that has nickel on the list.
9 We have had Ford Motor Company deselect stainless
10 steel in automobile manufacturing application because it
11 contained nickel and nickel was only on the list because of
12 concern about skin sensitization. I can understand why
13 somebody might not want to buy nickel for use in a jewelry
14 application where you might have a skin sensitization
15 effect, but stainless steel for use in an automobile muffler
16 is not going to have that impact, but they don't care.
17 They are looking at a list and it doesn't matter
18 what the concentration is. Even if you set a safe level, a
19 buyer only looks to see what chemicals are on the list and
20 if it is a bad chemical, they don't buy it. That is going
21 to have an impact on us not when it gets to nickel being a
22 skin sensitizer but when the people we sell our material to
23 start asking us does this have any radioactivity in it? Did
24 you buy your steel from a source that can guarantee that
25 there is no radioactivity in the scrap?

1 If we can't answer those questions affirmatively,
2 we are going to have a hard time selling our material, and
3 they are going to look for some alternative and that is
4 something that you are going to have to factor into this
5 analysis. If this material becomes commercially available,
6 it is going to have a market impact.
7 I can't begin to quantify it for you right now.
8 It may not be known for years to come, but it is going to be
9 significant.
10 MS. STINSON: David and then Terry.
11 MR. ADELMAN: I think a lot of questions here have
12 revolved around public perception and I think what the steel
13 industry and the other metal industry representatives are
14 identifying is just how critical it is that if NRDC or NRC
15 proceeds with a rulemaking that it have public buy-in. I
16 think some of the issues that Mike raised and Dan has been
17 raising, ensuring that the process is objective, ensuring
18 that it is not perceived as being prejudged, are critical.
19 One thing I would just like to point out is that
20 there have been a couple NRC reports recently that have
21 explicitly stated, particularly one concerning the
22 decommissioning of the gaseous diffusion plants within DOE,
23 that have said that it is essential to have a credible
24 public process. I hope that NRC in how it decides to
25 proceed takes that into account, that if it goes forward

1 with a rulemaking without adequate public buy-in, I think
2 there are a lot of other elements of the process that are
3 going to fall away and it is unclear whether the rulemaking
4 could proceed in an effective manner.
5 MS. STINSON: On that point, David, can you just
6 identify, take the opportunity to identify any specific
7 suggestions you would make to NRC to be perhaps again
8 gaining public confidence or transparent in the way that you
9 think is appropriate?
10 MR. ADELMAN: Sure. I mean there have been a
11 number of things that have been suggested -- first,
12 suggesting smaller meeting groups where people could get
13 together to discuss these issues from the various
14 stakeholders; second, an NRC point-person; third, obtaining
15 an independent analysis of the current DOE report and maybe
16 even looking at some of the other reports that are out
17 there, and some kind of NRC report; and then I think
18 ensuring that there is a good mechanism for addressing a
19 number of the questions that have been raised here. Again a
20 point-person could do that, but make sure that there is good
21 follow-up. Those are some things.
22 Then just a couple of other issues with regard to
23 the assessment itself. I think one of the concerns that
24 public interest groups have is that you have what I think
25 many, I think almost everyone agrees is a bad status quo,

1 and I think one concern is that you have -- if you use that
2 as your baseline you could establish or change things such
3 that you use a baseline to justify a standard or a
4 rulemaking that is maybe marginally better than the status
5 quo but still unacceptable to a large number of parties, so
6 I think in terms of establishing a baseline for the
7 alternatives analysis that is going to be part of the EIS
8 process, that is going to be a critical thing to consider.
9 That is just sort of a general question.
10 The other related issue is in terms of
11 establishing the alternatives, one thing that we have
12 encountered is you can fix the process to a certain degree
13 by choosing certain types of alternatives, packaging them in
14 a particular way, so that the ultimate alternative you
15 choose is almost fore-ordained because of the selection you
16 have made at the outset of the process, so I think in terms
17 of the different alternatives that you consider at the
18 outset, that is something that ought to really be hashed out
19 a lot among the various stakeholder groups and in particular
20 given just the complexity of the regulatory issues here
21 there are a wide range of risks associated with potential
22 rulemaking based on different media, whether it is going to
23 be recycled, whether it is going to be disposed of, and then
24 the different types of radionuclides.
25 MS. STINSON: Thank you. Terry?

1 MR. JOHNSON: I got the answer at lunchtime why
2 there's so many metal interests here. I was talking to a
3 gentleman that said that if only 1 percent of the steel in
4 the United States were rejected by the end-user, in a baby
5 carriage or whatever, that is $50 million worth of steel.
6 That is a pretty impressive figure, but I don't think that
7 the NRC can really help the steel industry. I certainly
8 don't think they can.
9 If a scrap metal dealer is required to detect a
10 certain radiation level in the steel they may or they may
11 not do it. If they don't do it, the NRC will give them a
12 $5000 fine -- maybe a $2000 fine. The steel mill may lose
13 $10 million worth of steel. There is a little bit of a
14 disproportionality there.
15 Furthermore, the scrap metal dealers are kind of
16 small outfits, whereas the steel mills are very big outfits.
17 They have got a lot to lose. I think the steel mills if
18 they are really worried about this issue they have got to
19 get together and get their own industry standard and it has
20 to be an industry standard that they themselves can detect
21 with their own equipment and then they should reject the
22 materials coming into their steel mills that's
23 inappropriate.
24 This instrumentation shouldn't be too expensive,
25 but if it is outrageously expensive then it is obvious again

1 that the scrap metal dealers aren't going to be able to buy
2 it either.
3 It all boils down to the steel industry should
4 protect themselves and if they do that they won't need the
5 NRC and I don't think the NRC will help them in any case.
6 MS. STINSON: I bet Tom has a response to that.
7 [Laughter.]
8 MR. CIVIC: I would like to respond to that.
9 Almost every major steel plant in the United States has
10 portal monitors to detect radiation in their incoming scrap.
11 This is because materials have been released or have been
12 lost from regulatory control. That orphan source problem
13 that I had mentioned before is probably a key issue.
14 We are spending a lot of time here discussing
15 these issues relating to releasing scrap metal when perhaps
16 the most dangerous and significant issue that the NRC needs
17 to be addressing is the orphan source problem.
18 But in answer to your question, our monitors were
19 installed as a responsible effort by the steel industry to
20 deal with a problem that we didn't create. We don't need
21 anything more coming into the system to create any more
22 problems for us in dealing, in protecting the integrity and
23 safety of steel. This is a significant issue for us and the
24 fact that this contaminated metal coming in is going to be
25 stopped by portal monitors, our position on our portal

1 monitors are they are a backstop. They are not the control
2 mechanism.
3 The people who have the radiation at the source --
4 you have got to stop the problem at the source, and while I
5 have the opportunity I would like to almost again follow up
6 on Mr. Robert Senseny's comment regarding leadership, and I
7 had mentioned that issue earlier in my comments about
8 leadership.
9 What we do here, what the NRC does is going to
10 send a signal to the rest of the world. If the NRC says
11 that it is okay to release contaminated scrap metal into the
12 public supply you can bet that the rest of the world is
13 going to say that's okay. We have a problem with that
14 because I think, as Mr. Senseny will understand -- he is
15 probably more knowledgeable on this than I am at this
16 point -- but the problem with the decommissioned facilities
17 in the Soviet bloc and in the black marketing of radioactive
18 steel and the like, so let's not set dangerous precedents by
19 some -- and set some policies about free release and
20 clearance that are short-sighted and passing on the problems
21 to further users downstream.
22 MS. STINSON: Okay, thank you. Kathleen.
23 MS. McALLISTER: Just through the conversations,
24 we have been discussing alternatives and I wondered if a
25 viable alternative would be to look at a clearance rule with

1 the exclusion of metals that might make it into a mill.
2 MS. STINSON: Well, let's turn to that
3 conversation now. There's really two aspects to this. One
4 is the idea of segregation of materials and, correct me if I
5 am wrong, there's several elements to this. There is one of
6 keeping it segregated and not diluting and all of that whole
7 range of issues that was raised, but also treatment of
8 materials differentially through a regulatory process, which
9 is more towards what you are suggesting, and I want to get
10 on the table what materials we are really talking about
11 because I have heard Paul mention -- I am going to put you
12 on the spot a little bit here, Paul.
13 I have heard Paul mention in the past all
14 materials, you know, NEI's perspective, all materials should
15 be examined and considered for this regulatory process, and
16 that there are four materials that are examined in
17 NUREG-1640. That suggests maybe there are other materials
18 that you have in mind that might be coming from
19 decommissioned facilities, maybe other licensees here have
20 other materials, so I want to get out on the table what
21 other materials other than the four that have been looked at
22 are we talking about and then what about this concept of
23 segregation vis-a-vis alternatives and other new
24 alternatives?
25 Paul, can you speak to that, and maybe other?

1 MR. GENOA: Yes, sure. Very briefly I mean the
2 range of materials we deal with include everything from just
3 institutional trash that would go to a municipal landfill to
4 waste and scrap metals that currently are cleared and
5 recycled to soil and concrete and asphalt and roof gravel
6 and other debris which I guess --
7 MS. STINSON: Soil, concrete, asphalt, roof
8 gravel --
9 MR. GENOA: Yes. I guess that is all, that is
10 typical industrial waste.
11 MS. STINSON: Right.
12 MR. GENOA: So just say typical industrial waste,
13 and as I say, there is not a huge economic driver on
14 recycling the scrap steel because of its value and the more
15 valuable steel like stainless is highly contaminated. It is
16 never going to be suitable for this kind of release, but it
17 does need to be disposed of. It does need to be managed,
18 so, you know, industrial and for whatever, but beyond that
19 you have to deal with the issue of reuse of materials, so
20 there are trucks and vehicles and computers and forklifts
21 and scaffolding and a whole range of products that are
22 useful that have to come out of these facilities.
23 Some can stay within the industry, some need to go
24 outside. If they are clean they should be allowed to, and
25 the question is while they have a valuable life, I mean

1 ultimately there is nothing to stop a piece of scaffolding
2 that is released for use somewhere else to ultimately end up
3 at a scrap-yard, but my sense is that at the levels that we
4 currently control things that is not going to be a problem
5 to anyone. I don't believe it's going to set off anybody's
6 monitors. It's not going to be a problem because we are
7 doing a good job detecting it.
8 Now if you set a very high standard, well then it
9 could start to become a problem, but anyway the range of
10 materials include industrial wastes, metals, soils,
11 concrete, asphalt, that sort of thing.
12 But there is this whole issue of reuse of
13 equipment -- you know, equipment, tools, trucks and cranes
14 and you name it that every day those things are used and
15 released and reused either within the industry or outside
16 the industry and that needs to continue.
17 Laboratories would be slightly different but they
18 would have similar wastes as non-radiological laboratories
19 to get handled.
20 MS. STINSON: Steve?
21 MR. LARICK: I really like that idea. Having a
22 clearance standard for everything except steel.
23 [Laughter.]
24 MS. STINSON: It solves your problem, eh?
25 MR. LARICK: Well, it does solve the problem or I

1 would take it a step further and say that the problem is the
2 material that is contaminated, and when I say contaminated
3 it doesn't really matter whether it has residual surface
4 contamination, which means it is still contaminated, or that
5 it has volumetric contamination, which means it is actually
6 in the material, but it is a subset of everything that we
7 are talking about and there is a lot of logic in what is
8 being discussed now is that if this is the sticking point,
9 and it is making up a smaller and smaller percentage of what
10 you are trying to get rid of or dispose of, maybe isolate
11 that, take it out of the discussion and treat it separately.
12 If you try to come up with one number, it's a
13 one-size-fits-all, and then jam everything through that,
14 what people are saying is that is going to cause problems,
15 and so if you maybe take that out of the discussion and
16 treat it separately that is an option.
17 MR. GENOA: Are we saying take it out of the
18 option of recycling? The material still could be cleared
19 for reuse or disposal. Is that what I understand?
20 MS. STINSON: And when you say reuse, Paul, are
21 you focusing on reuse on site, or as you say within the
22 industrial system or are you saying reuse more into a
23 broader commerce?
24 MR. GENOA: If I rent Joe's crane from down the
25 road and want to use Joe's crane, when I am done with it I

1 need to release it. I can't buy the crane. I have got to
2 release it. It's still a crane. Still valuable.
3 MR. LESNICK: And that is what you are currently
4 doing?
5 MR. GENOA: Sure.
6 MR. LESNICK: You just want to make sure there is
7 a number or some standard that is consistent and clear so
8 that you know, excuse the pun but so that you understand
9 where that line is and isn't, is that correct?
10 MR. GENOA: Yes.
11 MR. LESNICK: Okay.
12 MS. STINSON: Felix -- oh, I'm sorry, it was Steve
13 and then Felix. No, you just went --
14 MR. LARICK: Yes, that was my comment. I would
15 like to also hear from John since he represents part of the
16 steel business also about this issue of treating steel
17 separately than all this other material.
18 MR. WITTENBORN: I think it's a good idea also and
19 for a couple of reasons.
20 One, I have already indicated a couple times -- we
21 are going to have our own standard anyway, because our
22 standard is going to be based upon what our detectors can or
23 cannot read, and I am assuming that maybe three, four, five
24 years from now our standard is also going to be based upon
25 not just what the detectors read but also of what our

1 suppliers are willing to certify to us.

2 I can see it going there. It has for a lot of

3 other materials.

4 In terms of whether or not -- I would like to know

5 what standard you use now for Joe's crane that you rent. I

6 am assuming that it is basically --

7 MR. NELSON: It is a nondetect standard --

8 MR. WITTENBORN: -- and we don't have any problem

9 with a nondetect standard. Maybe that is part of the

10 problem we have been dealing with here. There really are two

11 standards that we can talk about. one is whether or not

12 something is radioactive -- nondetect standard -- and that

13 is a technology determination, and then the second question

14 is whether or not something is safe, and that is a public

15 policy question.

16 It is going to be much harder to resolve that

17 public policy question when you talk about a range of

18 materials and a range of potential uses and exposures. It

19 is a lot easier I think to deal with a technology issue of

20 what is or is not radioactive, and the things that you are

21 clearing now because they are not radioactive -- don't have

22 a problem with those.

23 MS. STINSON: Did you want to jump in here, Bob?

24 MR. NELSON: Yes. This nondetect is a clearance

25 standard. That is a standard. That doesn't mean there is

1 no radioactivity on that material. That means you did not
2 detect the radioactivity on that material, okay?
3 That doesn't mean that that is uncontaminated.
4 There is no detector that will detect every atom of
5 radioactive material, so we are still talking I think about
6 what do you mean by clearance, and in the Joe's crane
7 scenario you said you wouldn't have a problem with a
8 nondetect standard. That is still a clearance level. That
9 could be, currently is, but if we went and put it in
10 rulemaking that could be the standard that is used, but it
11 is still a clearance level. It is still the decision tool
12 you make to decide whether it goes from regulatory control
13 to nonregulatory control and that is what we are talking
14 about, what is that decision tool, that decision framework
15 you use to make that decision, and if you say we have to
16 take steel out of it then what do you do with the Joe's
17 crane? What do you do with the hammer? What do you do with
18 the hand-truck that transports something into a contaminated
19 area? What do you do with the scaffolding after you are
20 done using it?
21 Does all of that stuff simply because it went into
22 the contaminated area need to be disposed of as low level
23 waste? Does the chair in the rad lab need to be disposed of
24 or do you have a decision measurement protocol that allows
25 you to clear some of this material out as currently we are

1 doing today?

2 MR. WITTENBORN: I am assuming there is a certain
3 amount of material that comes into the facilities that never
4 has to be screened because it is never used in an area of
5 the facility that would come into contact with radioactivity
6 and therefore you don't need to clear it. It is already
7 essentially clean by definition.

8 MS. STINSON: Is that right? There is a certain
9 amount of material -- right?

10 MR. NELSON: Yes.

11 MR. WITTENBORN: The question is whether the
12 material, as far as I am concerned is just material. You
13 can do anything with it you want to but if the material is
14 in a part of the facility where it is presumed to be
15 contaminated then I don't think it should ever leave
16 Government control, at least as far as scrap metal goes. I
17 don't care what you do with concrete and soil. Maybe you
18 will need a clearance level for those given the volumes of
19 the material that you have to handle but for scrap metal
20 given the discussion I have heard around here today, it
21 doesn't seem to be an issue and if it is not driving the
22 economics of the need to produce this standard it certainly
23 is driving the economic of our industry to oppose the
24 release of it, so if there is some way that we can carve
25 recycled metals out of that group I think it would benefit

1 all of us.

2 MS. STINSON: Just so we understand, John, isn't
3 that -- so you are saying that not to release the material
4 away from Government control even if it is surveyed and
5 determined to be there's no detectable radiation? Even if
6 it is a nondetect then --

7 MR. WITTENBORN: Well, if nondetect means it is
8 potentially contaminated then the answer to that is it
9 cannot leave Government control. We do not want any
10 radioactive scrap metal entering the steel mill
11 manufacturing process.

12 MS. STINSON: Okay -- just trying to clarify. Who
13 has got something down here? Don? And we will get back to
14 you, Felix.

15 MR. COOL: I would like to two things really
16 quickly as this goes around because I guess I ended up
17 having a little bit of confusion. The first point of
18 confusion is a little bit of uncertainty of what kind of
19 protocol everyone would find acceptable for segregating
20 certain kinds of materials. The only one that I have heard
21 that I think sort of got nodding of heads was an area which
22 was absolutely, positively known not to have any radioactive
23 material associated in it. But I have heard references to
24 some other segregations, and so I think that would be
25 explored a little bit.

1 But I want to come back to the particular point we
2 had here, and just to clarify what I thought I heard, and I
3 will use what might be a little bit of a far out example,
4 but it would apply if I did this for all the materials.
5 That would mean that if I took a screwdriver in to adjust
6 the instrument in the counting laboratory at the local
7 university where Terry works, which is an area which is
8 known to have radioactive material because they count the
9 samples there, that screwdriver could never leave the
10 control of the facility again. Is that what we are
11 intending?
12 MR. GENOA: Or your eyeglasses.
13 MR. CIVIC: Or the person himself.
14 MS. STINSON: We are getting into the practicality
15 issues, I think, for consideration. And let's keep going
16 around the table, but this is --
17 MR. WALLO: It is a definitional answer --
18 MR. LESNICK: Can you use the microphone?
19 MR. BURKLIN: Can I make one clarification? I am
20 sorry to but in from the audience here, but --
21 MS. STINSON: No, I am sorry. We are going to
22 have to wait for the public comment period. I'm sorry. You
23 are really going to have to --
24 MR. BURKLIN: You are making an error.
25 MS. STINSON: Giorgio. Giorgio, go ahead.

1 MR. GNUGNOLI: I would wish also to remind folks
2 that what we are trying to do is look at our licensees and
3 what they can release. Now, I mean from their perspective,
4 if there is a no-recyclability for steel that has been in an
5 area that was a controlled area, that is not helping the
6 regulatory burden from their perspective. Just keep that in
7 mind, is that we have heard a lot from the steel interests
8 and such, but, you know, are licensees are sort of sitting
9 there going, this isn't helping us. So we have got to
10 consider that side.
11 Is there anything that we could say for the
12 licensees, or the ones who are, in effect, if you want to
13 call them generators of this material, where there would be
14 some sort of way of then dealing with stuff that isn't, you
15 know, or is non-detectable, or possibly could have been
16 located at some point in time in the contaminated area? I
17 think we have sort of lost that voice.
18 MS. STINSON: Felix and then Joe.
19 MR. KILLAR: Yeah, the only thing I wanted to
20 point out is that certainly we are talking about large bulk
21 quantities when you talk about the steel and concrete, and
22 what-have-you. But there are a lot of other things that
23 there are practical benefits for recycling right now. In
24 the fuel fab industry, we are recovering a lot of the
25 fluorine and reusing that fluorine.

1 What the fabricators have had to do was, on a case
2 by case, justify recycling that fluorine because there isn't
3 a regulation right now for that. And, so, basically, you
4 set up, the NRC is doing this four or five times, the same
5 thing, because each licensee is coming in for this same
6 request, so. There are some quantities of materials that
7 are some of the more exotic materials, some TEDE, titanium
8 and things like that, that there is some interest in doing
9 that, and there is interest, some especially manufacturers
10 in getting this material back and stuff.
11 Once again, we don't have a clearance rule for it,
12 so that material ends up either going to low level waste or
13 sitting in a warehouse somewhere waiting for a clearance as
14 to what can be done with it. So I think we need this rule
15 to move forward with trying to clear some of these
16 materials.
17 MS. STINSON: I want to throw in at this point
18 also that we have not talked a lot about concrete, and we
19 heard that, I think from Jill earlier, it can be reused into
20 and made into concrete blocks, more exposure. We tried to,
21 Meridian, bring the concrete industry to this table for this
22 discussion, to explore with them what the potential impacts
23 are for their industry. And I think Mike may have
24 eventually been successful speaking with them and convincing
25 them that it is worthwhile for them to weigh in on this

1 issue. But I don't think there is a lot of awareness.
2 Maybe we are not talking about a lot of volume either, so it
3 would be helpful to hear that as part of the mix.
4 Joe, and then Terry, and maybe you can capture the
5 comment that Rich wanted to make as well. But let's --
6 yeah, Joe, go ahead.
7 MR. RING: It seems to me that we are missing part
8 of what has to happen through this. On an operational
9 basis, licensees have stuff they have to get rid of, and we
10 are asking a practical question and tieing it up with
11 recycling. Licensees have things that exist. In a
12 biomedical research laboratory, space is very, very
13 expensive. They have to use space for whatever they can.
14 They take and they bring their printers into the
15 laboratories. In one way we are saying that printer is now
16 going off as radioactive waste. We can't afford that as a
17 population, we simply can't afford it. We all think medical
18 expenses are too high, try doing that.
19 Let's take and make it more practical and tie in
20 Barbara's comment about cement. I have a cyclotron that has
21 been operational for medical treatments for 45 years, and I
22 have got to decommission that facility. I need guidance on
23 what level that concrete is no longer radioactive at.
24 From a practical standpoint, I can measure the
25 natural radioactivity in that concrete, and I can measure

1 variations in that concrete's natural radioactivity,
2 depending upon when it was poured and which manufacturer
3 provided that. Which criteria do I use to decide that is
4 not radioactive? Do I take the lowest one, or do I take the
5 highest one? I have to get rid of the concrete.
6 This particular cyclotron treats patients that
7 have inoperable brain and eye tumors. Prior to the
8 operation at the cyclotron, they had a fatality rate of near
9 100 percent within six months. After treatment, they have a
10 five year survival rate of 97 percent. Okay. We are all
11 going to agree that was a valuable treatment, but now they
12 are replacing it because the machine is 45 years old. I
13 have to get rid of it.
14 We need criteria. I can put pieces of instrument
15 or this cyclotron into an accounting system and I can tell
16 you the variations. I need to know what to get rid of it
17 at. And that is really where we are going. We are not
18 saying let's recycle this concrete. I have got to get rid
19 of it because they are putting in a new one and I can't fit
20 two in one spot. I can't fit a new science building in the
21 same spot as a radioactive concrete -- maybe not radioactive
22 concrete shell.
23 MR. LESNICK: That is a good real world example,
24 Joe. One of the great things about these workshops is an
25 opportunity to try on for size different ideas, right, and

1 just see what happens in a room like this with these kinds
2 of participants.
3 I would like to -- David Adelman. This is
4 starting to go down a path that I think you raised either
5 yesterday or today, or both about maybe a way to address
6 this has to do with differentiation of materials, or in
7 radionuclides. And we started off the conversation, I think
8 Kathleen was talking about, what if you took metals out of
9 the recycle component, potentially, right. Just try that on
10 for size.
11 I guess hearing this conversation, then hearing
12 Joe's example, how does this fit then with what you were
13 trying to lay out in terms of broad terms of maybe the NRC
14 should consider differentiating either materials, by
15 materials or some other mechanism? How does this then fit
16 to this level of detail?
17 MR. ADELMAN: Well, I think there is an obvious
18 division between whether the material is going to be
19 disposed of, so -- and disposed of doesn't -- I mean --
20 MR. LESNICK: Can you get closer to the
21 microphone?
22 MR. ADELMAN: There are at least two forms of
23 disposal. There is the typical form which would be at a low
24 level waste site. But I am presuming that what the nuclear
25 industry is talking about is just general disposal of the

1 material versus whether or not it is going to be recycled.
2 So that is an obvious division in terms of the alternatives
3 that NRC might consider. But for some materials, disposal
4 may be the only option, but it is not going to be -- you are
5 not going to require disposal at a low level waste site. So
6 that would be I think one area where you could
7 differentiate.
8 Other factors that I think can be taken into
9 account are certainly the radionuclides, so their lifetime,
10 what kind -- whether they are alpha, beta, or gamma emitter,
11 and where they are partitioned, for example, if you are
12 recycling steel or other metals. Do they partition directly
13 into the product, or do they partition into the slag? So I
14 think those are a number of different factors that you can
15 take into account.
16 I agree with the steel industry's concerns,
17 though, about the lack of public trust in terms of
18 recycling, and I think that it is something that merits a
19 great deal of consideration on the NRC's part.
20 MS. STINSON: Okay. Great. Terry, you have been
21 waiting. Thanks.
22 MR. JOHNSON: Oh, yes. Thank you, Barbara. I
23 want to comment on something about what I think I just
24 heard, because it is hard for me to understand what I just
25 heard, that we would have a standard that involved

1 everything but steel. It seems to me that steel is the only
2 real issue here that anybody has mentioned any economic
3 impact regarding. What should be excluded from any
4 consideration of any new rulemaking regarding the level of
5 contamination in solid waste should be everything but steel,
6 or certainly should be everything that comes out a medical
7 facility, because I am not aware of any complaint, any
8 hazard, anything that has surfaced anywhere involving
9 something from a hospital where there has been a real
10 hazard.
11 Now, that doesn't mean I haven't heard of
12 problems. One of my sister institutions in town has had
13 three different trucks, on different occasions, that went to
14 a dump site, come back from the dump site, and they had to
15 unload the truck on their loading dock, because they had one
16 of those big scintillators, you know, plastic scintillators,
17 maybe a meter in diameter and 10 centimeters thick or
18 something like that, and it was able to detect an
19 excruciatingly low level of radioactivity. So they had a
20 problem. And it is not a health problem, there is no health
21 problem from the radioactive "waste" that comes from medical
22 facilities, the way it is disposed of within the regulations
23 we now have.
24 And about this standard, making a standard as to
25 what you can detect, that is the very height of

1 irrationality. It is irrational enough to talk about one
2 millirem, which is over 10 orders of magnitude lower than
3 where we have seen any demonstrable health effects. But if
4 you say it is what you can detect, that means that if a new
5 detector is invented tomorrow, we suddenly have a lower
6 standard, and we suddenly have whole tons and tons of
7 material that was safe before, now is unsafe.
8 MS. STINSON: Which is I think the reason why we
9 are here having this discussion. I think that is exactly
10 some of the issues that have been raised. I think the point
11 was --
12 MR. JOHNSON: But there is a standard --
13 MS. STINSON: The point in terms of the steel
14 exemption was not exemption from control. It was, in fact,
15 continuing indefinite regulatory control for steel and
16 setting a release standard for everything else. So don't be
17 confused when we say exemption. Thank you.
18 MR. JOHNSON: Well, please set a release standard
19 for everything else, but except hospitals. We already have
20 a release standard. For decay in storage, we store for 10
21 half-lives, then we survey with the best instrumentation we
22 have available, and then we release it. We have release
23 standards for sewage. We have release standards for
24 assimilation fluids that we can throw in cold trash. We
25 have release standards for the effluents that go up the

1 stacks. We have release standards.

2 There is nothing wrong with any of our release

3 standards, and I think the NRC should leave them alone, or

4 else consider the economic impact on hospitals. You know,

5 ultimately, the steel industry can straighten things out.

6 The scrap metal industry can straighten things out because

7 they can increase their prices. Now, we will increase our

8 prices, too. Oh, wait a minute, that takes an act of

9 Congress.

10 MS. STINSON: Okay.

11 MR. JOHNSON: And furthermore, the insurance

12 companies and HMOs are harder to get adequate compensation

13 from than even the federal government through Medicare.

14 MS. STINSON: Now, we have really traveled a

15 distance here. Thank you, Terry.

16 MR. JOHNSON: But we have no way of recovering any

17 extra costs that we get from regulation.

18 MS. STINSON: Jill.

19 MS. LIPOTI: I absolutely have a hard time

20 listening to Terry, especially when he talks about how there

21 has never been anything released from a medical institution

22 when we have a brachytherapy source that was discovered

23 after a patient had died and then it was removed and put in

24 trash, and it happened in Indiana, Pennsylvania. So I

25 really have trouble listening to that one.

1 I think, in getting back to the issue which is at
2 hand, it is whether or not we have enough information to go
3 forward with the rulemaking. And I think in concrete,
4 steel, copper and aluminum, we have gotten a lot of
5 information, and you have also gotten information from this
6 group. But for nickel, we don't have the information, and I
7 am not sure that the Department of Energy has a rulemaking
8 process that would involve a group of stakeholders like
9 this. For titanium, we certainly don't have the
10 information. And for soil, you are still in the process of
11 gathering the information. And for sewage sludge, we still
12 have an ongoing process which is sampling.
13 So if there was a rulemaking to proceed at least
14 with concrete, steel, copper and aluminum, we have got a
15 base of information. We have no database to deal with soil,
16 sewage sludge, nickel or titanium.
17 MS. STINSON: Thank you.
18 MR. JOHNSON: I think I should be able to respond
19 to that direct comment made to me personally. That
20 situation was not --
21 MS. STINSON: She said she was uncomfortable with
22 the comment you made. I think that is allowable. She has a
23 different example to give, and you guys are just going to
24 have to disagree. Maybe you can take it up with each other
25 outside the room.

1 MR. JOHNSON: In that situation they violated the
2 rules that now exist. Several people should be in jail
3 because of that situation in Indiana, Pennsylvania --
4 MS. LIPOTI: Sure. Thank you.
5 MR. JOHNSON: -- because they violated the
6 existing regulations. I said when we followed regulations
7 it would have been a problem.
8 MS. STINSON: Okay. Thanks for the clarification.
9 Bob Nelson, did you have something you wanted to
10 say earlier? Okay. Great. Andy, we are going to let you
11 throw in another comment and then I want to ask you all to
12 begin to think about what do you think would be most useful
13 for the NRC for next steps and activities to advance this
14 discussion and bring about sort of further information and
15 further deliberation on these issues, given that we have
16 more time in the next four weeks, at least for this workshop
17 process. Andy.
18 MR. WALLO: Yes. Let me just comment on Jill's
19 comment about what is out there and what is available. What
20 you are looking at is NRC's draft document which
21 concentrated on four materials. There is an awful lot more
22 out there. It is not just Department of Energy material.
23 There is a lot of published information and data analysis on
24 various types of metal processes and information. And I
25 think NRC and EPA published their reports to set up

1 procedures and get public comment on the analyses they did.
2 So I think Jill painted that a little bit -- recognizing
3 that NRC's material is just draft, there is other material
4 out there as well. The department's is out there, and
5 anything we publish, too, and NRC will look at that, EPA
6 will look at that.
7 Anyway, just the comment, it is like we have to
8 generate it here for there to be scientific information out
9 there. That is not case, it is in the literature.
10 MS. STINSON: Okay. Let we just keep this up a
11 little bit in terms of some of the things that I have heard
12 throughout this discussion, and this is, again, preparation
13 for Chicago, the next meeting. And maybe you have
14 suggestions for beyond that as well. But what we have done
15 in this meeting, for the first time really in this process,
16 is have a discussion, have a dialogue that is a bit of a
17 back and forth between the parties, including the NRC, on
18 some of these issues. There has been new information that
19 is brought to the table. There is maybe some new
20 understanding. There is certainly a lot of questions
21 raised, and there has been an exchange of ideas about what
22 additional information is coming and is needed.
23 All of that is typical for a first meeting of this
24 type. The question is, how do you take it to the next step,
25 to the next generation of discussion, if you will? I think

1 one of the things we have heard quite clearly, there are a
2 lot of important topics. Many of them deserve much deeper
3 discussion than was possible at this meeting. One hour is
4 just not enough time to deal with some of the worker
5 exposure issues or really to look, examine carefully the
6 various alternatives and how they might be structured.
7 There is also a lot of information that has been
8 requested from the NRC, information that might be available,
9 some it might be available and be able to be answered in the
10 next four weeks. Much of it takes a much longer timeframe
11 than that. There is analysis that is going on by the NRC
12 for, you know, it sounds like, if they decide to proceed
13 with the rulemaking, the next several years, at least a
14 couple of years. And the whole process of how that
15 information will unfold, sort of a timeline of that sounds
16 like something that might be useful to begin to scope out,
17 to have an understanding of by those interested stakeholders
18 around the table.
19 Let me suggest that -- a couple of things that
20 have come up. We do have a list server that is now up and
21 running. It provides an opportunity for sort of the
22 equivalent of chat rooms, specific topics that might be
23 addressed at the Chicago meeting, perhaps in work group
24 settings, smaller group settings, where more people,
25 including the observers, could participate in those

1 discussions. And starting that off by posing some questions
2 on a list server so that people could sort of interact back
3 and forth to get warmed up for those work group discussions.
4 That is an idea of how to use that technology.
5 Development of alternatives, one of the
6 suggestions that I heard early yesterday was the
7 alternatives that NRC has proposed are good. They cover a
8 certain breadth, many have not been treated to a whole of
9 lot definition. We have focused on sort of one set of
10 alternatives more than the rest of them. There are new
11 ideas that have come forward out of this meeting. Wouldn't
12 it be helpful to develop, refine and further discuss the
13 alternatives in a smaller group setting between this meeting
14 and the next meeting? So that is another possibility for
15 activity. And then really get some focused attention on it
16 Chicago.
17 And then, thirdly, getting to the information and
18 questions for NRC, there is a range of things that have been
19 raised by people. Some will be able to be announced -- or
20 answered and dealt with in the next four weeks. Many not be
21 able to be. But what can be answered, perhaps should be
22 answered by NRC and brought forward at the Chicago meeting
23 is additional information. I mean we have to go through the
24 record to find out, and NRC would have to sort, sort of on
25 what timeframe could you answer what questions.

1 So that is a third item and a fourth item would be
2 overall what is the schedule of activities for NRC if you
3 decide to proceed with the rulemaking process or rather what
4 is the schedule of activities for at least the contracts
5 that have been let and the information that is going to be
6 generated and I am a little bit out there because I haven't
7 conferred with NRC Staff in making these recommendations but
8 just knowing how public processes work and hearing the
9 suggestions that you all are making, that is a fourth item.
10 I would suggest if anyone supports that it would
11 be helpful for the NRC to know that and perhaps they could
12 answer to that timeline question, so those are a few ideas
13 and I would like to hear comments on those if you have any
14 or any other suggestions that folks might have for making
15 the next gathering most effective.
16 We will just go down the line -- here they go.
17 Jeffrey?
18 MR. DECKLER: I don't want to speak for public
19 interest groups but when you mention things like a timeline
20 that discusses all of the activities that are going to
21 happen towards the proposed rule, I would say that that
22 feeds into the whole discussion we have had about whether
23 this is a predetermined process.
24 MS. STINSON: I said "if" -- I said "if." I said
25 "if" every single time.

1 MR. DECKLER: I understand but just the fact that
2 a schedule would come out, I don't think it would be
3 interpreted as an "if" -- I think maybe what we need to
4 concentrate on is again the fundamental question of should
5 there be a rule and it sounded like there was I won't say
6 consensus but some coming towards a central idea of that
7 there might be able to be a rule if that rule was a little
8 less universal, maybe excluded some types of materials, and
9 maybe was there for other types of materials that needed it,
10 maybe the rule dealt with only disposal, you know, clearance
11 for disposal and not clearance for use in consumer
12 products -- you know, those kinds of ideas that started to
13 be developed.
14 There might be something that could be worked out
15 that people could say okay, we can do this much of a rule
16 and have it be relatively noncontroversial and then we will
17 worry about the controversial parts, you know, years down
18 the road or something.
19 Now granted, whatever that limited rule might be
20 would have to meet the needs of the nuclear industry and
21 their moving material in and out, like they do now, but it
22 sounded like we were moving towards something and obviously
23 are not there yet that there could be some level of
24 agreement on.
25 Maybe NRC should kind of focus on that first and

1 say, okay, is there a portion of a rule that we could get
2 general agreement on and then take care of what we need to
3 do to get that done, rather than continue on a more global,
4 universal approach that has a whole lot of issues that
5 there's significant disagreement on.
6 MS. STINSON: Let the public interest
7 representative -- one -- answer to that himself. Felix?
8 MR. KILLAR: I don't disagree with what you said,
9 Barbara. What I suggest though is that --
10 MS. STINSON: In terms of the four different --
11 MR. KILLAR: Four different things.
12 MS. STINSON: -- activities?
13 MR. KILLAR: What I would suggest though is that
14 you accomplish these as much as you can prior to the meeting
15 and you publish those results on the website so that there
16 isn't new information being decided and presented at the
17 meeting and then people are reacting to it.
18 If people see that information prior to the
19 meeting, then when they come into the meeting they have got
20 their thoughts laid out well.
21 Additionally, questions that have come up maybe
22 that aren't answered prior to that meeting that people want
23 to have addressed at that meeting should be able to provide
24 those also on the website so that everybody could see those
25 and stuff, so that when you come in we can maybe take care

1 of some of the basic issues before we get into a detailed
2 discussion, so I think using the website as a way of
3 facilitating information also is a way of gathering
4 information to set up for the meeting.
5 MS. STINSON: Steve?
6 MR. LARICK: I think that one good thing that we
7 could do -- I am not planning on being in Chicago -- but if
8 someone from our industry could visit with the people who
9 are involved in making some of these assumptions about cost,
10 risk, things like that, we could probably help them realize
11 better what we are up against and it would be similar to me
12 trying to write something on the NRC rulemaking process. I
13 mean I am not the guy to do that, but I can tell them quite
14 a bit about how a steel mill operates.
15 In fact, I could probably even invite them over
16 one of these days and they could see what it is like to work
17 there. They may come back at that point and say we
18 shouldn't be sending this stuff to these guys.
19 I think we could probably help in that way.
20 The idea of trying to come up with better numbers
21 I think is important. I don't know that you could do that
22 within the next few weeks but there's been a lot of options
23 that have been put up. If you could try and assign some
24 numbers and values to some of these options, what I have in
25 mind is if you were to do what we said and take recycling

1 steel off the table and then what does that mean?

2 You have "x" number of tons. One of the ideas is

3 restricted release, all right? Assign some numbers to that

4 so that you can have a value for what that would mean.

5 I think trying to come up with data even though

6 you have got a short timeframe would be beneficial if you

7 can.

8 MS. STINSON: Paul.

9 MR. GENOA: Yes, sure. Actually I think that

10 while it is necessary and this is a good first step, to get

11 us all together to share ideas, that the size of the group

12 has been a little bit cumbersome and it's been difficult.

13 You sort of have a natural flow in dialogue so I would

14 support any approach to multiple smaller groups or

15 repetitive or anything we can do to have submeetings to try

16 to get a better understanding of what each other's needs are

17 or any other approach to that, and again I think you offered

18 just then for the NRC to come see how your steel mill is

19 run. You know, I offered yesterday and I would extend that

20 offer again -- if people want to understand how -- what we

21 need to do day to day to operate these power plants that

22 produce 20 percent of your electricity so that light goes on

23 when you flip it on, I would welcome you to come.

24 We have had one request. Get in touch with me if

25 you really want to do that, because I think it would be

1 important, and I guess I would definitely support a
2 discussion on different alternatives and approaches to move
3 forward, but you would have to understand that you would
4 have to -- I mean the status quo is the way we operate today
5 so you can't take that away without rulemaking.
6 So I mean the status quo continues. If you want
7 to address one piece at a time, fine, but the status quo
8 continues while you address one piece at a time.
9 MS. STINSON: John and then David.
10 MR. WITTENBORN: I just wanted to say that I have
11 actually learned a great deal here in the last couple days
12 about the scope of the problem and some I have learned just
13 within the last hour and it's been very informational and I
14 will take that information back to my clients and we will
15 talk about it and maybe that will help us adjust our
16 position at the next meeting. We all want to work towards a
17 solution and I think generally the discussion in the last
18 couple days has been a very productive and helpful
19 discussion from my perspective and I hope from everybody
20 else's as well.
21 I would also echo Paul's suggestion that when we
22 get together in Chicago we look at maybe some breakout
23 sessions where we can get four to six to eight people around
24 a table instead of 30 -- whatever it is that we have here --
25 not that this hasn't been a good discussion but I think we

1 could really get into the details of some issues and more
2 back and forth dialogue between the real stakeholders with
3 fewer people participating in those discussions and we can
4 report back to the group as a whole the results of those
5 discussions, if you want to work it out that way.
6 I don't know if this is the right time, but I
7 would also like to suggest another topic for discussion.
8 The very first thing we did going around the table yesterday
9 was throw out the issues we wanted to see discussed at this
10 meeting and the one I mentioned was the legal authority of
11 NRC to undertake this rulemaking and it was very quickly
12 apparent that that is an issue under discussion within NRC
13 in response to the letter that Congressman Dingell and
14 others sent, and therefore we didn't have anybody here at
15 the table to discuss it, but I would sure like to make that
16 discussion open for everybody to listen to at the meeting in
17 Chicago because I think it is important to make sure that
18 NRC actually has the authority to do what they are proposing
19 to do, not to telegraph our position on this, but 20.2002 --
20 MR. LESNICK: A little closer, John. We are
21 getting --
22 MR. WITTENBORN: 20.2002 is really a release for
23 disposal provision. It is difficult for me to understand
24 how we are trying to take that legal authority and turn it
25 into a release for commercial use purposes. I will have to

1 learn a little bit more about NRC's authority to undertake
2 this entire effort.
3 MS. STINSON: David?
4 MR. ADELMAN: I guess my sense is that there are
5 several issues that have to be dealt with initially. I
6 think that the public, the general public confidence
7 concerns that people have raised, the question about
8 credibility of the studies that have been done and also the
9 NRC regulatory authority issue, I think each of those it is
10 essential that we address those upfront before we move on.
11 I think that looking into narrowing or potentially
12 narrowing the scope of the rule that NRC is considering is
13 potentially a good way to go but I would like to say that
14 for a lot of the public interest groups looking at this
15 rulemaking I think one of the challenges is that the status
16 quo isn't something that is acceptable to a lot of people.
17 So on the one hand you feel pressured into entering into a
18 discussion on the rulemaking because of what exists right
19 now is not acceptable to people, but you may not be terribly
20 comfortable with what is being proposed.
21 I think that is one of the challenges and
22 weaknesses of narrowing the scope of the rule. I think one
23 of the concerns that the public interest groups have just at
24 a general level is can you really have a fair discussion
25 when your alternatives -- neither of the central

1 alternatives that is being considered right now is really
2 all that acceptable to people.
3 I do think, though, that looking at the problem
4 along different dimensions like dividing between whether or
5 not you are going to permit recycling or you are just going
6 to focus on disposal is potentially a good way to proceed,
7 and also taking into account some of the other factors like
8 the different types of radionuclides, the risks that they
9 raise because of where they partition and the radiation that
10 they emit.
11 MS. STINSON: Thank you. Terry and then Dan.
12 MR. JOHNSON: Thank you, Barbara.
13 First of all, I want to retract the remarks I made
14 that several people should be in jail. Please strike that
15 from the record. It was a violation of NRC regs though.
16 That was clear.
17 I think that there should be further meetings with
18 more representation from medical facilities, a lot more,
19 from clinical laboratories -- not just nuclear medicine
20 facilities, and from medical research facilities. Medical
21 research is different than medicine in many respects but we
22 have radioactive waste, and not just medical research
23 facilities but physical chemical research, because that is
24 the type of research that not a lot of it takes place at
25 G.W. but they do use radioactive materials, and also

1 physical chemical analytical labs that actually do analyses
2 for profit, you know. Those institutions I think could be
3 impacted by this and they may not be aware of it.
4 Now this general group I have just outlined
5 doesn't have much to do with metals. There's no common
6 interest there or very little. It would seem to me it
7 wouldn't be illogical to have separate meetings with the
8 groups that have that sort of waste, very, very low level
9 waste that is very benign by and large from medical
10 facilities and medical research but that could be impacted
11 by a new rulemaking. It is so much different than metal I
12 don't know how the two discussions can be merged together
13 effectively.
14 MS. STINSON: Dan and then Joe.
15 MR. GUTTMAN: First of all, I would really like to
16 thank the NRC Staff for being here. I am not sure what it
17 will get me at this point, but my defense is like many of us
18 here -- I have been on the other side of the table.
19 Unfortunately, I have reverted to the form of this side of
20 the table.
21 MS. STINSON: Dan, just a little closer.
22 MR. LESNICK: We need you closer, please.
23 MR. GUTTMAN: Yes. Second, I am also amazed to
24 see the state that Jill and --
25 MS. STINSON: A little bit closer. Just pull it

1 right towards you.

2 MR. GUTTMAN: Second, I'm also amazed to see that

3 in two days you were actually able to come up with

4 penetrating and independent insights is really a tribute --

5 and I am not currying any points here, but it was really

6 nice. It think we all saw that.

7 Having said that, I really think -- I think the

8 gentleman from Kerr-McGee said the proof is in the pudding

9 here and our interest is not -- I hope I haven't said

10 radiation is good or bad for you -- it is good and it's bad

11 depending, right? -- but we are terribly concerned based on

12 our experience about process and right now it is a process

13 here that has got a double taint that has to be dispelled

14 before anybody can go through and further --

15 MR. LESNICK: Excuse me. You are really going to

16 need to pull that mike up.

17 MR. GUTTMAN: A double taint -- one is the

18 question that John was raising, the legality of what has

19 gone on now, what has been blessed pretty much tacitly by

20 this Commission, the legality of all this stuff that I am --

21 personally I haven't been feigning or posturing surprise

22 here, but I am flabbergasted that what to most of America is

23 a good chunk of the problem we are talking about, the

24 nuclear weapons complex waste, is somehow assumed to be not

25 related to what we are talking about, and that is a shocker,

1 and the idea that DOE wouldn't be relevant when what we see
2 is there has been a calculation by -- I hate to use the
3 word -- SAIC -- but SAIC and BNFL, to avoid DOE, to get into
4 your jurisdiction sub rosa through delegation.
5 I mean it is not credible for you people not to
6 deal squarely and honestly with the ongoing failure to
7 comply with environmental regulations and the serious legal
8 questions that John and Chairman Dingell and others with
9 much more knowledge than I have.
10 The second is the real conflict of interest
11 problem. That is serious. This is a real stinker. You
12 have got two possibilities under the law, and you can
13 research it yourself and I am real surprised that you
14 haven't been able to do it so far. One possibility is say
15 SAIC, how the hell could you have put us in this -- excuse
16 me, how the heck could you have permitted us --
17 MS. STINSON: Thank you.
18 MR. GUTTMAN: -- to be in the situation, we'll get
19 someone else. That might be costly and it is true that data
20 can be looked at at great cost to us because it is out
21 there. The only other way to cure this is you open this up
22 like a goldfish bowl, that if Judy Johnsrud or David or any
23 of these folks -- Terry -- wants to come in, any meeting you
24 got with SAIC, anybody else is permitted. Any time SAIC
25 talks to BNFL or one of its other contractors that has got

1 an interest in this regulation, we get on the phone. You
2 give money, the same amount of money that you are giving to
3 SAIC goes to anybody else that can claim credible expertise,
4 and as Judy Johnsrud said, there are a lot of other people
5 out there.
6 Thirdly, you get to examine SAIC about all the
7 stuff that has been into this -- who knows what kind of
8 stuff, why it is that nickel, which is now seen to be the
9 critical issue here and is the critical issue in Tennessee,
10 somehow didn't get studied in this particular SAIC report.
11 So you've got two things you have got to do by
12 Chicago -- one, you have got to fish or cut bait on whether
13 you are going to deal with your present situation,
14 unlawfulness and questioned about lawfulness, and two, you
15 either stick with SAIC and you are not going to find anybody
16 that I can convince that this is not a tainted proceeding,
17 or you say, well, you know, it is a big city, it's tough,
18 it's real life -- after all, they are part of the Beltway
19 club, we really can't get rid of them, they got these famous
20 guys on the board, they will never speak to the Commissioner
21 when he goes out of the Commission and gets another job --
22 what we have got to do is then mitigate.
23 That is the term of art in your statutory
24 obligations. You mitigate by disclosure -- mea culpa -- we
25 really meant to tell about all these other things these

1 folks were doing. We are going to permit these SAIC people
2 to be cross examined. We are going to give money to anybody
3 who wants to to catch up and we are going to open up every
4 conversation, every piece of e-mail, and let me tell you, I
5 am not telling you things we haven't done ourselves in the
6 United States Government.
7 When I ran the President's Advisory Commission on
8 Human Radiation Experiments, that was open. Folks from the
9 DOD and the Air Force, and it was wonderful to hear the
10 military comments. Every time I wrote something Captain
11 George from the Navy, Colonel Green from the Air Force, they
12 were on my back saying Dan -- before I completed the
13 sentence they were saying this is wrong, and you guys were
14 in there too, so it is a real embarrassment for you after
15 President Clinton has opened up our nuclear weapons secrets
16 for you guys to close it down and reinvent secrecy after Al
17 Gore has proclaimed that what you are doing is opening this
18 up. It's not going to look good in the year 2000 if you
19 keep this up.
20 So you got your choices, and by Chicago you should
21 let us know what you are going to do.
22 MS. STINSON: Joe and then Dan -- glad to see your
23 card go up -- we will take your comment next.
24 MR. RING: Thank you. I think in the next meeting
25 one of the things that would be very helpful, as others have

1 said, is to have smaller groups, and then to bring the
2 groups back together so that they can talk about what the
3 individual groups found. That would be very helpful to
4 increase discussion and hopefully understanding amongst the
5 groups.
6 One thing also I would really like to go back and
7 try to support here at the end is that you have a big task
8 ahead of you. Having served as the writing group chairman
9 and then the chairman of ANSI Committee N-13 that finally
10 approved a consensus standard on this subject, it took us
11 over 35 years to come up with --
12 [Laughter.]
13 MR. RING: -- with an acceptable document.
14 MS. STINSON: Go ahead.
15 MR. RING: This document actually goes through and
16 looks at a number of scenarios. It picks the limiting
17 scenario for each radionuclide. It looks at multiple
18 references and intercompares them with the data that was
19 done by the writing group. It addresses the averaging over
20 localized issues. It addresses the size of the components.
21 It looks at the uncertainty. It considers it ALARA. It
22 compares the results to other studies and to international
23 levels and it sets very clear and measurable criteria. I
24 think that is one thing that you have got to come up with is
25 clear and measurable criteria that you can regulate against.

1 If anybody is interested in seeing this
2 document -- unfortunately, right now I don't have it because
3 it is in publication -- it was approved by ANSI around Labor
4 Day and it is in the publisher. If you would like it,
5 please let me know and I will try to get you a copy.
6 MS. STINSON: Thank you. Dan, then Jill.
7 MR. KING: Okay, first I would like to thank the
8 NRC for inviting me here. This is all relatively new to a
9 lot of the tribes and other people that I spoke to within
10 the tribal councils and everything, but spending the last
11 two days here I learned quite a bit and learned about the
12 need for rules.
13 Thinking back, as a kid I remember back on the
14 reservation when several of the tribal people did find
15 barrels of radioactive material or that stuff on there, and
16 everybody just didn't know what to do. We didn't know where
17 it came from and through history reservations have been
18 dumping grounds for hazardous materials and all kinds of
19 stuff and we don't know what it is.
20 So coming forward now to be included on a lot of
21 the rulemaking decisions and looking down the future,
22 because our culture looks seven generations down the road
23 before we make a major decision, and what we mean by that is
24 seven generations from my generation who aren't even born
25 yet. That is how far our tribal council has to look down,

1 looking back when that happened.

2 Still today we still find things on our

3 reservation and other reservations that are remote, a lot of

4 times the haulers or the vendors or whatever you call them

5 that haul that stuff, once it leaves an area who knows where

6 it goes and usually a lot of times it was found on different

7 reservations throughout the country because we don't have

8 the tribal police, we don't have the federal FBI patrolling

9 reservations.

10 We always looked at the BIA as an avenue to help

11 us, but now that attitude of the BIA is gone because their

12 attitude was you guys handle it, it's your reservation.

13 Well, now we have our sovereignty issue and jurisdictions

14 and writing our own laws, environmental, all that down the

15 line, but now we are at this point where we are not included

16 in a lot of the rulemaking. We are always included after

17 the fact, so now when things come up there is always

18 roadblocks there, and so that is why I say now it's good

19 that I am here and passing the word on to other tribes, but

20 also don't forget to look at those tribal liaison officers

21 within the departments and their jobs -- why aren't they

22 here? They are the ones who should have been here pushing

23 our issues forward that have been going on for years.

24 That is the same attitude like we always say, it

25 was always the BIA telling us what to do -- instead of the

1 Bureau of Indian Affairs we used to call them Boss Indians
2 Around -- so that was our acronym for them.
3 So I was glad to be here this last couple days and
4 everything and learning a lot and hopefully I can be in
5 Chicago again and again thanks a lot.
6 MS. STINSON: And Dan, if you can suggest any
7 liaisons that would be interested and available to attend,
8 it would be great to have more representation in Chicago.
9 Jill and then Tom I think will wind it up for us.
10 MS. LIPOTI: I did learn a lot over the last two
11 days and I think we all did, Dan.
12 One of the things that I learned is that there
13 appears to be meeting groupies that they go to all of your
14 meetings and there's repeat folks that are at the table
15 giving you lots more things, so I think when you structure
16 your meeting in Chicago you really have to consider whether
17 you are getting new people at the table and you need to
18 bring them up to this level of understanding that we all
19 have after two days, or if they are experienced with the
20 issues and are up to this level and now want to go the next
21 step.
22 One of the things that was brought up was the idea
23 of whether you break into groups according to different
24 kinds of material, like the medical or the research or the
25 power reactors.

1 You might have different groups because the items
2 that you have for recycle or disposal for clearance in
3 general are different. I would say that States have to deal
4 with all of these issues once they make it out of the gates
5 and into our public's area, and we have concerns for our
6 citizens. And so the difficulty for us is when you break up
7 into groups like that, which one do we go to, because we
8 have an interest in every single one of those.
9 We care very deeply about our citizens in our
10 State, and so we want to be involved in everything, but
11 we're only finite too.
12 Thanks.
13 MS. STINSON: Thank you. Tom?
14 MR. CIVIC: I guess I'd like to thank Kathleen for
15 trying to -- breaking the roadblock here in terms of what
16 we're trying to do here. I think the problem is it's this
17 eating this elephant again, and how are you going to do
18 this, and that's -- what was old adage, one bite at a time.
19 And I think -- and as Mike Veiluva once said,
20 we're trying to paint everybody with the same brush. And
21 perhaps the idea about putting together a regulatory plan
22 that addresses all these issues and perhaps puts some
23 priorities to this, and in fact if the medical issue is not
24 a problem, they would be at the last part of what standards
25 or regulations that you can develop around that specific

1 issue.

2 I think there's some guidance already that other
3 regulatory agencies have done, and I'm familiar with the
4 Occupational Safety and Health Administration. When they
5 proposed a hazard communications standard, they have it in
6 different levels, one for laboratories, one for general
7 industry, and so on and so forth. So you can accomplish the
8 same thing at the end of a certain time period without
9 trying to get everything all at one time. So the idea of
10 segregating steel and leaving that out and dealing with the
11 soil and all these -- in 90 percent of the problem might be
12 where you want to put your focus.

13 The other part of the thing is you've got to
14 start looking at what happens when you start pulling --
15 breaking these things apart. I think your risk assessment's
16 going to change in terms of what can be released at what
17 levels if the risk assessments are based on somebody being
18 exposed to a steel product for, you know, for 16 hours a day
19 versus something that's going to be in a landfill. That
20 certainly changes the clearance levels to begin with.

21 So I think that ought to be looked at, and perhaps
22 may be a more innovative way, as opposed to just this
23 one-size-fits-all type thing, and I think picking off of
24 what Kathleen had said, maybe that's what we ought to be
25 looking at, some sort of a plan, and maybe Meridian could

1 help develop that plan.

2 MS. STINSON: Okay. Thank you.

3 And thank you all for your wisdom and your

4 patience, putting up with this format and really trying to

5 target your comments, conducting a civil discussion. It's

6 difficult to do. It's a difficult set of issues. It's

7 cumbersome to have so many people around the table. And yet

8 how do you exclude a particular interest group and suggest

9 that, you know, their interest is less than some other

10 interest group? So I really appreciate your suggestions for

11 going forward in Chicago.

12 We, Meridian, will take responsibility for

13 summarizing not only the entire meeting, but particularly

14 this last part, and do this very quickly as to how things

15 will proceed in Chicago, you know, based on the feedback

16 from you all and what NRC staff are able to do. We'll

17 formulate a plan and get it all out to you so you can

18 identify participants for the Chicago meeting, et cetera,

19 and hopefully we'll be able to have as diverse a discussion

20 as possible.

21 We have three people signed up for public comment,

22 and I just want to check with them. Peter Hernandez? He's

23 still here? Peter, do you want to make a comment? I

24 don't -- I think he must have left.

25 Hans Honerlah? Okay. And Ernest Fuller? Is

1 Ernest still here? He was here earlier.

2 Okay, great. So two comments. Go ahead.

3 MR. HONERLAH: Okay. Just real short. I just

4 want to see how this might impact the -- Hans Honerlah. I'm

5 with the Army Corps of Engineers. And I'd just like to kind

6 of keep everybody in mind here that this may impact the new

7 decommissioning rule that was recently passed at 25 millirem

8 per year, and if so, can we make sure we kind of understand

9 what the potential impacts of that may be?

10 Kind of an example, say you come up with a

11 calculation to free release your site at 25 millirem per

12 year, yet for the past few years you've been free releasing

13 specific material or waste streams at 1 millirem per year.

14 How would those two different standards impact what you

15 finally have to do for your decommissioning? Just to kind

16 of keep that in mind as you proceed forward.

17 The second point is I heard a lot of the

18 discussion about the different steel issues and soil,

19 concrete, different things. There wasn't a whole lot of

20 discussion about the 1-millirem-per-year standard that's

21 kind of the international thing that's coming about and what

22 not, and I think it may be interesting to try to focus

23 future discussions on the specific risk base or the specific

24 pathway analysis done for each specific waste stream, i.e.,

25 for steel you're probably going to have three or four

1 different release numbers for steel, from what I've seen out
2 of the guidance in 1640.
3 You're going to have one for recycling of
4 material. You're going to have one for reuse of material.
5 You're going to have a different number that's going to
6 allow you to dispose of certain materials in an unregulated
7 or a RCRA-type D or C facility. And then you're going to
8 have another number with anything above that that's going to
9 require you to take all that material to an LLRW facility.
10 So we're not just talking about one specific
11 number for each specific waste stream. We're talking about
12 one dose-based standard that has to have concentration
13 values calculated based on the specific scenario for that
14 type of material.
15 MS. STINSON: Thank you.
16 Ernest, and then Peter Hernandez, you returned.
17 Do you want to make a comment still?
18 Okay.
19 Yes, go ahead.
20 MR. FULLER: Hi. My name is Ernest Fuller. I'm
21 from Pennsylvania. I'm here as a citizen, but I have some
22 experience as a local official in both siting a landfill,
23 municipal landfill, and also being a local official in the
24 township where the landfill was put.
25 MR. LESNICK: Could you get closer to the

1 microphone?

2 MR. FULLER: Sorry. And when we were trying to
3 site a landfill, this was a public good that I think you
4 probably would not be figuring in your cost analysis, our
5 ability to site that landfill and to site it in a relatively
6 quick period of time, which we were able to do. We were
7 doing that roughly at the same time as the NRC was going
8 through a BRC process that has some similarities to what's
9 going on now.

10 That process that the NRC started going through
11 created difficulties for us in siting a new landfill for our
12 three counties. People were very concerned about what was
13 going to wind up at the landfill, irregardless of what might
14 be recycled.

15 We were able to work out a private agreement with
16 the local township where basically we had to do two things.
17 One, that we would use the standards, and it's written into
18 the host agreement that the NRC had at that time, before any
19 changes, or any stricter standards, to keep any waste, you
20 know, out of the landfill. We had to agree to that.

21 We also, since there was a nuclear powerplant
22 relatively near, a small decommissioned one, partially
23 decommissioned one, had to agree that we would not take any
24 waste from that place, not just, you know, radioactive
25 waste, but any waste. And luckily the company was willing

1 to agree to that, so we were able to make that agreement.
2 But that meant they had to truck their regular household
3 waste at one point anyway 100 miles instead of 15 miles.
4 It's those kinds of things that, you know, at
5 least as I heard here today, you're not taking into account
6 in your costs and benefits. It's clear that there would be
7 benefits to the users of radioactive materials, but there
8 are a lot of costs to other people who are not directly
9 getting those benefits -- I mean, indirectly we all receive
10 those benefits -- but are not really getting those benefits.
11 And I just think you need to somehow broaden your analysis
12 if you're going to really get the scope of this taken care
13 of.
14 You know, if we hadn't been able to do that, you
15 know, the area would have been without a landfill for
16 several more years if we hadn't been able to convince people
17 we were going to do it safely, from their perspective, and
18 the cost to everybody, you know, their garbage bills
19 probably would have doubled for several years.
20 MS. STINSON: One minute.
21 MR. FULLER: You need to somehow figure that in.
22 MS. STINSON: You have a minute.
23 Peter?
24 MR. HERNANDEZ: Thank you. Good afternoon.
25 The metal industry -- I represent American Iron

1 and Steel Institute, and my name is Peter Hernandez.

2 The metal industries are among the Nation's

3 largest recyclers, and it's the high rate of recycling that

4 renders the free release of metal from nuclear facilities

5 into the stream of commerce inequitable and short-sighted.

6 We believe such action could develop into a

7 public-policy disaster. Radioactively contaminated metal

8 originating from the NRC-licensed fuel cycle and Department

9 of Energy-operated facilities should not be released for

10 unrestricted recycling or reuse as products in commerce.

11 NRC should adopt a policy of restricted release of metals

12 from nuclear facilities, providing the metals meet specified

13 health standards. Restricted release should be specifically

14 limited to recycling or recovery at a dedicated licensed

15 facility for use only at an NRC-licensed fuel cycle

16 facility, or at nuclear facilities operated by the DOE or

17 disposal in licensed radioactive waste landfills or other

18 appropriate landfills, as long as the metal meets specified

19 health-based levels.

20 NRC must emphasize to other agencies, notably DOE,

21 that these restrictions should also apply to releases of

22 scrap from nuclear facilities not under NRC's jurisdiction.

23 NRC must work with DOE to ensure that the release criteria

24 and restrictions adopted by the two agencies are congruent.

25 The release of radioactively contaminated metal

1 from nuclear facilities for unrestricted recycling into
2 industrial and consumer products could adversely affect the
3 marketability of metal products made from recycled scrap and
4 the marketability more broadly of all metal products.
5 Official assurances to the contrary
6 notwithstanding, several media reports have already
7 generated public concern. Metal recycling industries have
8 worked hard to build public confidence in the safety and
9 utility of products made from the recycled metal. This
10 confidence would be lost if the public rightly or wrongly
11 perceives such products to be unsafe. For this reason,
12 metal companies have not and will not accept scrap that is
13 known or perceived to be radioactively contaminated.
14 U.S. metal producers are already burdened by the
15 problem of shielded radioactive sources that have escaped
16 NRC's licensing program and have made their way into
17 shipments of ferrous and nonferrous scrap. Metal producers
18 have adopted a zero-tolerance policy towards incoming
19 shipments of scrap that trigger radiation detectors because
20 of the potential health and significant economic risks that
21 result from accidental breach or melting of shielded
22 sources.
23 MS. STINSON: Thirty seconds, Peter.
24 MR. HERNANDEZ: The unrestricted release of metal
25 from nuclear fuel cycle and DOE-operated facilities will

1 pose a serious problem for scrap suppliers, and transporters
2 will have to manage and arrange for the ultimate disposition
3 of recycled scrap.
4 Thank you for considering these comments. We do
5 intend to submit more full comments for the record.
6 MS. STINSON: Thank you, Peter.
7 Final comments? Don?
8 MR. COOL: I have to convince this microphone to
9 stay now.
10 Okay. I want to take just a moment or two to
11 thank each of you for your participation over the last two
12 days. It's been very interesting, very lively, very
13 animated discussions. That's been good. I want to thank
14 you for the ideas that you've put forward, for the
15 information that you've brought to our attention, for
16 getting down to some of the practical issues and some of the
17 pros and cons associated with those, and just for being
18 willing to engage in the discussions, because these are
19 rather complicated discussions.
20 I want to take a moment and publicly thank Mike
21 and Barbara for putting up with all of us and facilitating
22 this, and the excellent job which they did. Our
23 transcriptionists, we've had one each day. For Bob, who's
24 been up in the sound booth reminding us that we need to try
25 and swallow the microphones. And busily taking our picture

1 with his little cameras hanging here on the wall.

2 We spent the last little while talking about where

3 we go from here, and I guess it's my right to sort of put in

4 my two cents here at the end and just to encourage you to

5 really think about what we've discussed here, what your

6 colleagues have put forward, and over the next couple weeks,

7 as you drive back home or fly back home or ride the train or

8 whatever it may be, to think about the implications to some

9 of the ideas.

10 And let me challenge you to go ahead and attempt

11 to put pen to paper or fingers to keyboard, mouse to

12 whatever, and actually try to put down some words and ideas,

13 because one of the things that I've found is that it's

14 fairly easy to talk about things and to throw the ideas back

15 and forth, and it gets a lot more difficult when you attempt

16 to ensconce them on a piece of paper or some other media for

17 people to take a look at.

18 I think that also would prove to be very

19 interesting, both in the context of comments sent to us, and

20 I'd like to encourage you if you do that to go ahead and

21 send them to us. We have that as part of our record. And

22 to provide that and make it available to the list server so

23 that we can use that as a way of continuing the discussions

24 between now and the meeting that we have in Chicago.

25 I think a great deal of good information has been

1 circulated today. I hope that we can continue to build upon
2 that over the next few weeks before the next meeting that
3 will allow us to put together some good information to try
4 and capture all of the different flavors and bits that go
5 into this in order to provide the report to the Commission
6 in March of next year.
7 Thank you very much for each of your participation
8 throughout the last two days.
9 MS. STINSON: Okay. Thanks everybody. Safe
10 travels.
11 [Whereupon, at 3:43 p.m., the workshop was
12 concluded.]
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REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before the United States Nuclear Regulatory Commission in the matter of:

NAME OF PROCEEDING: RELEASE OF RADIOACTIVE MATERIAL WORKSHOP

CASE NUMBER:

PLACE OF PROCEEDING: Rockville, MD

were held as herein appears, and that this is the original transcript thereof for the file of the United States Nuclear Regulatory Commission taken by me and thereafter reduced to typewriting by me or under the direction of the court reporting company, and that the transcript is a true and accurate record of the foregoing proceedings.

Mark Mahoney

Mark Mahoney

Official Reporter

Ann Riley & Associates, Ltd.

Statement to the Nuclear Regulatory Commission OPPOSING ATOMIC WASTE RELEASE/CLEARANCE/RECYCLING INTO THE MARKETPLACE

Our call to the Nuclear Regulatory Commission is to fully regulate and isolate radioactive wastes and materials and anything they contaminate, no matter what level. The radioactive legacy of atomic weapons and energy production should be isolated from the public and the environment.

We don't want nuclear power and weapons wastes "released," "cleared," deregulated, exempted, generally licensed, designated "de minimis," "unimportant," or BRC-below regulatory concern, or by any other creative, direct or deceptive means, allowed out of nuclear facilities and into the marketplace or the environment, at any level.

The current methods of releasing radioactive wastes from commercial licensees and weapons facilities must immediately cease. No future radioactive releases should be permitted and a full accounting and recapture of that which has already been released should commence.

Using radioactive wastes in consumer products poses unnecessary, avoidable, involuntary, uninformed risks. The consumers, the producers, the raw materials industries don't want these radioactive wastes or risks.

It is not credible to believe computer models can calculate and accurately predict any or ALL of the doses to the public and the environment from all of the potential radioactivity that could be released over time. Projections of "acceptable" or "reasonable" risks from some amount of contamination being released are meaningless and provide no assurance.

Monitoring for the specific types and forms of radioactivity that could get out can be very expensive and tricky to perform. Hot spots can sneak through. We can't trust the nuclear generators to monitor their own releases. No matter what level the NRC sets for allowable radiation risk, dose or concentration, it will be difficult to impossible to measure, verify and enforce. Who is liable if the "legal" standards NRC intends to set are violated? For decades the public has clearly opposed releasing radioactive materials into commerce. We continue to do so.

Naturally occurring background radiation cannot be avoided (except in some instances for example, reducing radon in homes) but its presence in no way justifies additional, unnecessary, involuntary radiation exposures, even if those exposures might be equal to or less than background. Nor does it justify shifting the economic liability from the generators of radioactive wastes and materials to the economic and health liability of the recycling industries, the public and the environment.

We fully support the complete opposition and "zero tolerance" policies of the metal and recycling industries, the management and the unions. We appreciate their efforts, not

only in opposition to legalization of radioactive releases, but in their investment in detection equipment and literally holding the line against the radioactive threat to the public. They should not have to be our de-facto protectors. The NRC, DOE and EPA must act to prevent the dissemination of radioactive wastes into recycled materials and general commerce.

The problems that have been experienced by the steel recycling industry with "generally-licensed sealed sources" getting into their facilities and costing tens of millions of dollars to clean up should serve as a warning not to let any other radioactive wastes and materials out of regulatory control.

The fact that radioactive waste is already getting out should not be used to justify legal levels allowing more out. The NRC, EPA and DOE should prevent future and correct past releases.

The fact that other countries are releasing radioactive materials into the marketplace is no excuse for us to legalize it. The United States should take the lead in preventing contamination of the international marketplace. We protect ourselves best by not facilitating international radioactive commerce.

The fact that it is difficult and expensive to monitor and detect radiation does not justify its release. It is all the more reason to prevent any wastes getting out, so we don't have to check routinely for contamination. The nuclear industry and regulators should be aware of what materials at reactor and weapons sites are wastes and which have been contaminated. Those materials must be isolated, not released, at any level.

The mindset of the NRC appears convinced that it should legalize radioactive wastes being recycled into the marketplace. Our demand for prohibiting releases has been considered unreasonable. That is why many of us are refusing to spend 2 days at this meeting. Until the logical public positions that radiation exposures should be prevented and that radioactive waste should be isolated, not recycled into daily-use items, are considered reasonable, our time is better spent educating the public on what you are planning than here debating levels we will never accept and methodologies we will never trust.

Sincerely,

Nuclear Information and Resource Service

Safe Energy Communication Council

Friends of the Earth. US

Alliance for Nuclear Accountability

Peace Action

Public Citizen

Friends of the Earth, UK

Greenpeace

Low Level Radiation Campaign

Clean Water Action

on major issues associated with release of solid materials. The NRC will also utilize its website to disseminate information and solicit input.

As a first step, the NRC has prepared an issues paper that describes issues and alternatives related to release of solid materials. The intent of this paper is to foster discussion about these issues and alternatives before a rulemaking to set standards would begin. The content of the issues paper is contained in Section III. It is noted in Section III that NRC would evaluate environmental impacts of alternative courses of action in an EIS in any rulemaking conducted. To assist in that process, this notice is also announcing a process for developing the scope of an EIS, i.e., a "scoping process." Specific discussion of the scoping process is contained in Section IV of this notice. The principal issues discussed in the issues paper and in regard to the scoping process are the same and the Commission believes that it is beneficial to seek comment and hold discussions on both at the same time to best utilize and coordinate available expertise and input. The discussions presented in Sections III and IV provide background and topics of discussion that will be the subject of the public meetings.

II. Request for Written and Electronic Comments and Plans for Public Meetings

The NRC is soliciting comments on the items presented in the issues paper in Section III and the scoping process in Section IV. Comments may be submitted either in writing or electronically as indicated under the ADDRESSES heading. In addition to providing an opportunity for written comments, the NRC is holding facilitated public meetings at four different geographical locations on the issues discussed in Sections III and IV between August and November 1999 (see the DATES heading of this notice for the dates and locations of these meetings). The written public comment period will extend until after the last public meeting is held.

Based on the comments received both in written and electronic form, and at the public meetings, the Commission will decide whether to proceed with development of a proposed rule or take some other regulatory action. If the Commission decides to proceed further with a proposed rulemaking, any proposed rules will be published in the **Federal Register** for public review and comment.

III. Issues Paper on Release of Solid Materials at Licensed Facilities

Introduction

To provide consistency in its regulatory framework for releases of materials, the Commission is considering a rulemaking that would set specific requirements for release of solid materials. This section describes issues and alternatives related to the release of solid materials and is intended to foster discussion about these issues and alternatives before a rulemaking would begin.

Section A of this section describes some general considerations related to rulemaking, potential Commission actions, and the enhanced participatory process. Section B of this section discusses the major issues that would be associated with a rulemaking and also discusses various alternatives for proceeding.

A. Background

A.1 Current NRC Policies

A.1.1 Inconsistency of NRC regulations covering releases from licensed facilities

The NRC has the statutory responsibility for the protection of health and safety related to the use of source, byproduct, and special nuclear material under the Atomic Energy Act. A principal method of meeting this responsibility is through the body of regulations codified in Title 10, Chapter I, of the Code of Federal Regulations (10 CFR, Chapter I). The regulations in 10 CFR, Chapter I, have been developed using a rulemaking process that provides the opportunity for public review and comment under the Administrative Procedure Act and includes the analysis of costs and benefits and environmental impacts, and considers factors related to paperwork reduction. Agreement States administer equivalent programs applying equivalent regulations.

The Commission's regulations that set standards for protection of the public against radiation appear in 10 CFR Part 20. These regulations limit the radiation exposure (or "dose") that a member of the public can receive from the operation and decommissioning of an NRC-licensed activity, and also require that doses received are "as low as is reasonably achievable (ALARA)". The NRC has used the criteria on public dose limits and ALARA requirements in Part 20 (Sections 20.1301 and 20.1101, respectively) to establish limits in Table 2 of Appendix B of Part 20 on the amount of radioactivity in gaseous and liquid releases that may be released from a nuclear facility to the environment.

However, unlike the regulations applicable to gaseous and liquid releases from a licensed nuclear facility, there are no current specific criteria in Part 20 governing releases of solid materials by licensees, although there are some regulations [1] that cover the release of certain materials. Therefore, if a licensee requests approval of release of solid material, the NRC must consider the request on a case-by-case basis using existing regulatory guidance, license conditions, NRC Branch Technical Positions, etc.

The Commission recently amended its regulations in Part 20 (Subpart E) to establish criteria for unrestricted use of facility structures and lands at a decommissioned site (July 21, 1997; 62 FR 39058). Subpart E of Part 20 is focused on protection of persons entering and using decommissioned structures and lands at a site after a nuclear facility terminates its NRC license, but does not otherwise address release of solid material.

A.1.2 Solid materials potentially available for release

Solid materials include metals, building concrete, onsite soils, equipment, furniture, etc., that are present at, and/or used in, licensed nuclear facilities during routine operations. Most of this material will have no radioactive contamination, although some materials can have radioactive contamination either on their surfaces or distributed within their volumes. Contamination can be distributed in the volume of materials because: (1) they are relatively porous (e.g., soil) allowing contamination to spread into the material; (2) they become radioactive through activation; or (3) a recycling process (e.g., metal melting) can cause contamination that was previously on the surface of a piece of equipment to become distributed throughout its volume. The amount of contamination that a material has, if any, depends largely on the type of licensee involved and its location in the facility:

(a) For most NRC licensees, solid materials have no contamination because these licensees use sealed sources in which the radioactive material is encapsulated. These include small research and development facilities and industrial use of various

[1] For example, 10 CFR 20.2005, 35.92, and 36.57(e). In addition, 10 CFR 40.51 and 40.13 contain transfer or unimportant quantities provisions, respectively, which are the subject of a separate Commission-directed initiative on Part 40 and are outside the scope of this effort.

devices including gauges, measuring devices, and radiography.

(b) For other licensees (which includes nuclear reactors, manufacturing facilities, larger educational or health care facilities including laboratories, etc.), material generally falls into one of three groups based on its location or use in the facility:

(1) *Clean or unaffected areas of a facility*—The solid material in these areas would likely have no radioactive contamination resulting from licensed activities. These areas could include hospital waiting rooms, university office space in a laboratory, or metal ventilation ducts in the control room of a reactor facility.

(2) *Areas where licensed radioactive material is used or stored*—The material in these areas can become contaminated although the levels may likely be very low, or it may have none, because of contamination control procedures required at facilities licensed by the NRC. This could include material in certain laboratory areas in a university or hospital, or in certain buildings of a reactor facility.

(3) *Material used for radioactive service in the facility, or located in contaminated areas or in areas where activation can occur*—These materials generally have levels of contamination that would not allow them to be candidates for release unless they are decontaminated.

A.1.3 *Current NRC case-by case review of licensee requests for release of solid material*

Even though the NRC does not currently have specific criteria in Part 20 covering release of solid materials, licensees have made, and will likely continue to make, requests for release of solid material when it becomes obsolete or defective or when their facility is decommissioned. For material from clean or unaffected areas, knowledge of site radiological history is an important factor in determining whether the material is contaminated. The NRC evaluates requests for release on a case-by-case basis using either the table of surface contamination criteria in Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors," or other case-specific criteria for compliance with Part 20 requirements.

(a) *Regulatory Guide 1.86.* This guide, which was developed by the Atomic Energy Commission in 1974, provides a table of *Acceptable Surface Contamination Levels* for various radionuclides, including natural and enriched uranium, transuranics, and fission products. These surface contamination levels are stated in terms of measurable radioactivity levels (observed disintegrations per minute per 100 square centimeters of surface area), the values of which were based principally on the detection capabilities of readily available instrumentation at the time the guide was developed. The surface contamination levels were not based on the potential dose to an individual that may result from coming in contact with the released materials although such exposure is estimated to be low. Regulatory Guide 1.86 does not contain dose criteria. For some situations, the NRC will incorporate the values in the table in Regulatory Guide 1.86 into the license conditions of a facility.

(b) *Allowance of release if there are no detectable levels of radioactive contamination from licensed activities above background in the material.* Regulatory Guide 1.86 only addresses materials having surface contamination; it does not cover volumetric contamination. For some situations, the NRC allows release of volumetrically contaminated solid material if survey instrumentation does not detect radioactivity levels above background. This does not mean that the material is released without any radioactive contamination present on or in it; instead, it means that the material may be released with very low amounts of contamination that is not detectable with appropriate survey instruments. This method provides inconsistent and generally unsatisfactory licensing guidance because different survey instruments have different levels of detection. This can lead to disagreements and confusion over permissible levels of release and nonuniform levels of protection.

(c) *Use of 10 CFR 20.2002.* Licensees may request specific approval to dispose of materials containing low levels of licensed material in other than a licensed low-level waste disposal site in accordance with requirements in 10 CFR 20.2002. Section 20.2002 requires licensees to describe the material to be released and evaluate the doses that would result. Use of this approach requires case-specific NRC review and evaluation of the situation, which in the past has been used to authorize various releases of contaminated material.

A.2 NRC Actions To Address Inconsistency in Release Standards by Considering Rulemaking on Release of Solid Materials

A.2.1 Commission direction to consider rulemaking

Based on the issues and concerns described in Section A.1, the Commission, on June 30, 1998, directed the staff to consider rulemaking to establish a dose-based standard for release of solid materials so that licensee considerations and NRC review of the disposition of slightly contaminated solid materials are conducted in a consistent manner that protects public health and safety. The Commission also directed the NRC staff to include an opportunity for enhanced public participation, including use of NRC's Internet home page to solicit comments. This issues paper is the first step in soliciting views on major issues in this area.

A.2.2 Potential Alternative Courses of Action

Before conducting a rulemaking, the NRC generally considers alternative courses of action. Two broad alternatives that the NRC could consider are not doing a rulemaking (i.e., continue with the current practice of case-by case reviews) or developing a rulemaking for release of solid materials. If the NRC decided to proceed with rulemaking, it could:

(1) Permit release of solid materials for unrestricted use if the potential doses to the public from unrestricted use of the material were less than a specified level determined during the rulemaking process. Unrestricted use could result in recycle or reuse of the material in consumer products or industrial products, or disposal of the material as waste in landfills. Release of solid materials for unrestricted use is also referred to as "clearance", but for the purposes of this issues paper, the term "release for unrestricted use" is generally used.

(2) Restrict release of solid materials to only certain authorized uses. For example, future use of the material could be restricted to only certain industrial uses where the potential for public exposure is small.

(3) Do not permit either unrestricted or restricted release of solid material that has been in an area where radioactive material has been used or stored, and instead require all such materials to go to a licensed low-level waste (LLW) disposal facility.

In evaluating these alternatives, the NRC would consider potential human health and environmental impacts and

economic aspects associated with each alternative.

A.3 Current Policies of International Agencies, Other Federal Agencies, State Governments and Other Standards Setting Bodies Regarding Releases of Solid Materials

In considering rulemaking alternatives, the NRC would consider policies and precedents set by other nations and international agencies, by other Federal agencies, by States, and by other standards setting bodies.

International Efforts. There is considerable effort by other nations and by international agencies, such as the International Atomic Energy Agency (IAEA), to set standards in this area. Consistency with standards set by other nations and international agencies is important because materials can be both imported and exported between the U.S. and other countries and differing standards could create confusion and economic disparities in commerce. The generally accepted term in the international community for release of materials for unrestricted use is "clearance."

Individual countries, including Germany, France, Finland, Sweden, Taiwan, and the United Kingdom, have developed national guidance for clearance of materials. The standards in these guidance documents correspond fairly well. Two major international radiation protection organizations, the IAEA and the Commission of European Communities (CEC) have developed draft standards containing clearance levels for individual radionuclides. The NRC, the Environmental Protection Agency (EPA), and the Department of Energy (DOE) generally provide input and review on behalf of the U.S. in development of IAEA and CEC standards. Both sets of standards are based on a 0.01 millisievert (mSv) per year (1millirem (mrem) per year) annual dose which is broadly accepted as a trivial dose. Documents published by IAEA that document the development of their draft standards include Safety Series 89, "Principles for the Exemption of Radiation Sources and Practices from Regulatory Control," (1998), and IAEA-TECDOC–855, "Clearance Levels for Radionuclides in Solid Materials (Interim Report)."

One intended application of IAEA's proposed clearance levels is related to international trade, for example the import and export of scrap metals.

U.S. Environmental Protection Agency. The EPA, although not a regulator of licensees, is responsible for setting generally applicable environmental standards for radioactive materials under the Atomic Energy Act. The NRC, in regulating its licensees, implements environmental standards that EPA promulgates in the area of radiation protection. In the absence of EPA standards in a particular area, for example in the area of release of solid materials, the NRC has the authority to set radiation protection standards for its licensees. This can cause potential problems with the finality of NRC licensing decisions if EPA later issues standards in a particular area that are different from regulations that NRC has previously issued. Thus, it is important for the NRC to involve EPA closely in developing its standards.

In addition, as noted later in Section B (Issue No.2, under "Factors in decisionmaking"), the EPA has completed studies on environmental impacts of clearance of materials. The NRC and EPA have, and plan to continue to have, coordinated efforts in this area to ensure that effective and consistent release standards are established, while minimizing duplication of effort. In particular, the NRC and EPA, along with other Federal agencies, work together on the Interagency Steering Committee on Radiation Standards to coordinate their efforts on issues associated with establishing criteria for radiation protection. Accordingly, the EPA will not only be an important participant in the NRC rulemaking public meetings, but the NRC also plans to consult extensively with EPA throughout the rulemaking process and has invited EPA to be a member of the NRC working group.

In setting generally applicable environmental standards, EPA sets standards for a wide range of materials, including some which contain naturally occurring radioactive materials that have been enhanced as a result of man-made processes. A material that has been made exempt from regulation (see 40 CFR 261.4(b)(4)) is the ash from burning coal in power plants that has concentrated levels of radioactive materials (e.g., uranium, radium, thorium). Under this exemption, coal ash is allowed to be used in building materials; the radioactive material in the coal ash can result in small radiation doses to the general public as a result of its use. The dose level from use of exempted coal ash could be viewed as a precedent or benchmark for possible NRC release levels.

EPA is currently active in the development of screening guidelines for import into the U.S. of materials cleared in other countries. EPA has been working with the NRC and other Federal and international agencies. The importing of contaminated materials cleared by other countries into the U.S., which does not have in place generally applicable standards for this purpose, raises questions about the regulatory status of these materials after they enter the U.S.

U.S. Department of Energy. The DOE operates a number of nuclear facilities. Although generally not licensed by the NRC, the DOE faces issues concerning the disposition of materials from its facilities similar to those faced by NRC licensees.

In response to these needs, DOE has developed criteria for release of solid materials. These criteria generally endorse the numerical criteria of Regulatory Guide 1.86. The DOE criteria are contained in DOE Order 5400.5, Radiation Protection of the Public and the Environment, dated February 8, 1990 (and revised in 1993) and in the *Draft Handbook for Controlling Release for Reuse or Recycle of Non-Real Property Containing Residual Radioactive Material* (June 1997).

If the NRC issues a regulation containing criteria for release of solid materials, decisions would have to be made by DOE as to whether DOE would in the interest of consistency adopt the standards in the NRC regulation, or if DOE decides to release solid materials would NRC be required to authorize distribution of that material.

State governments. States face the same issues and needs that the NRC does and must also consider issues associated with release of naturally-occurring and accelerator produced materials (NARM). The Conference of Radiation Control Program Directors (CRCPD), an organization of state radiation agencies that develops suggested regulations, has established a committee to look into issues associated with release of solid materials.

Thirty States have entered into agreements with the NRC to assume regulatory authority over byproduct, source, and small quantities of special nuclear material. These "Agreement States" generally use NRC guidance such as that contained in Regulatory Guide 1.86 or similar guidance, in their regulatory programs.

In a related matter, Section 2901(a) of the Energy Policy Act of 1992 (Section 276(a) of the Atomic Energy Act) grants State governments (Agreement and non-Agreement States alike) the authority to regulate the disposal of low-level radioactive waste if the NRC exempts such waste after the enactment of Act. Several States and locales have, both prior to and subsequent to, passage of the Act established prohibitions against the disposal of radioactive material in

landfills. The implications of Sec. 276(a) on NRC's potential alternative courses of action noted in Section A.2 above are unclear and may depend on the ultimate nature of any rulemaking that NRC undertakes.

Other standards setting bodies. Various other organizations are involved in setting standards which can impact decisions related to alternative courses of action for release of solid materials.

One of those organizations is the National Council on Radiation Protection and Measurements (NCRP). The NCRP is a nonprofit corporation chartered by the U.S. Congress to review current significant studies made by other health research bodies, to develop and disseminate information and recommendations about protection against radiation, and to cooperate with national and international organizations with regard to these recommendations. The NCRP has made recommendations in its report NCRP No. 116 regarding acceptable levels of radiation exposure to the public, including levels considered to present trivial health risk.

In addition, various industry groups (e.g., the American National Standards Institute (ANSI)) set standards regarding a variety of areas including equipment design and operation, facility maintenance, and contamination levels in radioactive effluents. NRC must be cognizant of activities in these areas because Public Law 104–113 (passed by Congress in 1995) requires Federal agencies to use technical standards that are developed or adopted by voluntary consensus standards bodies unless the use of such a standard is inconsistent with applicable law or otherwise impractical.

A.4 Previous Commission Efforts to Address Release of Solid Materials

The Commission previously sought to address considerations related to release of solid materials as a part of its issuance of a Below Regulatory Concern (BRC) Policy Statement on July 3, 1990 (55 FR 27522). BRC was an approach proposed by NRC to address a Congressional directive in the Low-Level Radioactive Waste Policy Amendments Act of 1985. The BRC Policy was a general statement of Commission policy and was intended to provide a broad decision framework for formulating rules or making licensing decisions to exempt from regulatory control certain practices involving small quantities of radioactive material. The BRC Policy was envisioned to have applicability in NRC rulemaking and guidance in four principal areas, one of which was setting a standard for release of solid materials for recycle. The Commission decided that a more extensive public involvement process in establishing these areas would be beneficial and hence instituted a moratorium on the BRC Policy in July 1991. Subsequently, in October 1992, the U.S. Congress enacted the Energy Policy Act of 1992 which revoked the BRC Policy Statement.

The NRC's current efforts differ from those associated with the BRC Policy in several ways. Unlike the broad policy-setting approach of the BRC policy, the NRC's current effort is focused on considering establishment of specific requirements for release of solid materials, which protect public health and safety, consistent with the existing framework of requirements in Part 20 for gaseous and liquid releases. As discussed in Section A.2, this would include a full assessment of potential scenarios and pathways for radiation exposure and an evaluation of the environmental impacts and cost-benefit basis of alternative approaches. In addition, the NRC would enhance participation in the rulemaking process through public meetings for interested parties. Any decisions made regarding release of solid materials at this time would be made through rulemaking and not through a policy statement.

A.5 Potential NRC Actions, Enhanced Public Participation and Public Meetings, and Preparation of Issues Paper

Generally, NRC's procedure in rulemaking is the NRC staff development of a proposed rule, Commission consideration, publication of the proposed rule for public comment, consideration of the comments by the NRC staff, preparation of a final rule, Commission review and approval, and publication of the final rule. As directed by the Commission, the NRC staff plans to enhance public participation in this process by conducting public meetings before any rulemaking would begin. The public meetings are planned to elicit informed discussions of options and approaches and the rationale for them. Although these public meetings are not designed to seek "consensus" in the sense that there is agreement on the issues, the public meetings are to be conducted at a very early stage of rulemaking to involve interested parties and the public with the following objectives: (a) to ensure that the relevant issues have been identified; (b) to exchange information on these issues; (c) to identify underlying concerns and areas of disagreement, and (d) where possible, approaches for resolution. The NRC staff also plans to enhance participation by providing website access to this issues paper and the ability to submit comments on the issues paper by e-mail.

If, following this early exchange of ideas (including comments from the public meetings and comments filed by other means such as Internet responses and written comments), the Commission decides to proceed with rulemaking, other rulemaking documents will be prepared. Specifically, the NRC will evaluate the implications of a rule with regard to the National Environmental Policy Act (NEPA). NRC will conduct these evaluations as specified in 10 CFR Part 51, which contains requirements on preparing environmental analyses, including the content of an environmental statement and the public process involved in developing the scope of an environmental statement. In addition, the NRC will prepare a Regulatory Analysis to evaluate costs versus benefits of a rule consistent with Executive Order 12291 and the Commission's regulatory analysis guidelines in NUREG/BR–0058. The NRC will also publish guidance to provide licensees with information on how to demonstrate compliance with the regulation. These documents would be made available on NRC's website.

B. Issues for Discussion

The Commission believes that the issues and alternatives discussed below provide a broad look at matters related to the consistency of its regulations on standards for release of solid materials from nuclear facilities. Therefore, the Commission is soliciting comments and information on these issues before proceeding. These issues, and other relevant and substantial issues identified by interested parties, will serve as the basis of discussion at the public meetings. The discussions at the public meetings will be used by the NRC staff in deciding upon an appropriate course of action.

Issue No. 1—Should the NRC Address Inconsistency in its Release Standards by Considering Rulemaking on Release of Solid Materials?

As discussed in Section A.1.1, NRC generally uses the public dose limits and ALARA requirements in Part 20 to establish limits on releases from nuclear facilities during routine operations and decommissioning. Currently, Part 20 contains specific criteria on the amount of radioactivity in gaseous and liquid releases that may be released from a nuclear facility to the environment. NRC also has requirements in Subpart E of Part 20 on unrestricted use of decommissioned lands and structures. However, NRC currently has no specific

requirement in its regulations on limits for release of solid materials.

Alternatives

The NRC has the following two broad options related to the issue of inconsistency of its regulations on release standards and licensee requests for release of solid materials: (1) continue the current practice of handling of licensee requests for release of solid materials on a case-by-case basis; or (2) include requirements in Part 20, as part of a consistent regulatory framework for evaluating releases of all materials, that would allow it to make decisions on licensee requests for release of solid materials that are protective of public health and safety.

(1) No NRC Rulemaking: Continue Current Practice of Handling Licensee Requests for Release on a Case-by-Case Basis

Under this option, no NRC rule would be prepared. Licensees will still continue to make requests for release of solid materials. As discussed in Section A.1.3, in order to comply with the requirements of Part 20, NRC evaluates licensee requests on a case-by case basis using regulatory guidance, branch positions, license conditions, etc. One basis for review has been NRC staff guidance in Regulatory Guide 1.86, which was originally published in June 1974 by the Atomic Energy Commission (AEC). Regulatory Guide 1.86 contains a table of acceptable total and removable surface levels for various radionuclides, including natural and enriched uranium, transuranics, and fission products, which are stated in terms of measurable radioactivity levels, but does not contain specific dose criteria. Regulatory Guide 1.86 has been used to evaluate unrestricted release of solid materials whose surfaces are slightly radioactive; it does not cover material with volumetric contamination. In addition to Regulatory Guide 1.86, Section A.1.3 notes that NRC also uses other case-specific criteria, such as the detection capability of instrumentation, and certain specific rule sections, in its evaluation of requests for release of solid materials.

(2) Develop a Proposed Rule

In this option, the NRC would proceed with rulemaking to supplement its gaseous and liquid release standards in Part 20 by developing dose-based regulations limiting releases of solid material to provide a consistent regulatory framework protective of public health and safety. This would involve conducting a rulemaking under the Administrative Procedure Act, and developing, as regulatory bases, an environmental analysis under NEPA and an analysis of costs and benefits in a Regulatory Analysis. Based on Commission direction discussed in Section A.2.3, a rulemaking would use an enhanced participatory process involving early public input and website access to rulemaking documents.

Specific Items for Discussion

Should the NRC continue with the current practice of making decisions on a case-by-case basis, or should it proceed to develop a proposed rule that would establish generic criteria for release of solid materials? What are the considerations that should go into making this a decision?

(1) Does the current system of NRC case-by-case decisions on release of solid materials, using existing guidance, provide an adequate regulatory framework? Can volumetric contamination in small amounts be released in a manner similar to that done for small amounts of surface contamination on materials that have been released to unrestricted areas under the criteria in Regulatory Guide 1.86? If a rule is not issued, should Regulatory Guide 1.86 be updated with a set of dose-based values?

(2) Should the NRC develop dose-based regulations on release of solid material? Would a rule allow the NRC to better address volumetric contamination in solid materials in an explicit and consistent regulatory manner that meets both licensee needs and public concerns? Would a rule also meet additional specific regulatory needs such as the specific types of material to be covered, restricted vs. unrestricted use, etc?

(3) To what extent would such a rule contribute to maintaining public safety, enhancing the effectiveness and efficiency of the NRC, building public confidence, and reducing unnecessary regulatory burden?

(4) Would issuance of an NRC rule on release of solid material definitively resolve licensee questions regarding finality of NRC release decisions if EPA, which has authority to set generally applicable environmental standards in this area, promulgates a rule at a later date?

(5) Substantial NRC resources would be needed to conduct the complex safety, environmental, and regulatory analyses required to support a rulemaking. Without a regulation, the NRC will have to review the anticipated increase in requests for release of solid materials on a case-by-case basis which could mean less efficient and less consistent reviews. Would potential savings in resources by having a regulation in place offset the resources spent on rulemaking?

Issue No. 2—If NRC Decides to Develop a Proposed Rule, What are the Principal Alternatives for Rulemaking that Should be Considered, and What Factors Should be Used in Making Decisions Between Alternatives?

If the answer to Issue No.1 is to conduct a rulemaking to include requirements in Part 20 on release of solid material, a rulemaking (including the development of technical basis information, evaluation of environmental impacts and cost-benefit analyses, and the public review and comment process) would be conducted to evaluate potential rulemaking alternatives.

Rulemaking Alternatives

Potential alternatives for rulemaking in this area are:

(1) *Permit release of materials for unrestricted use if the potential dose to the public from the material are less than a specified level determined during the rulemaking process*—In this alternative, a licensee could release for unrestricted use ("clearance") material that meets the permissible level in the standards. Potential alternative dose levels resulting from unrestricted use of the material could include doses of 0.1 mSv/yr (10 mrem/yr), 0.01 mSv/yr (1 mrem/yr), 0.001 mSv/yr (0.1 mrem/yr) above background, as well as no dose above background. To provide some perspective on these levels: (a) the dose from natural background to people in the U.S. can vary widely based on the area of the country where people live, lifestyle, and other factors, and averages about 3 mSv/yr (300 mrem/yr) but may vary from 1 to 10 mSv/yr (100 to 1000 mrem/yr); (b) NRC's public dose limit is 1 mSv/yr (100 mrem/yr), (c) the dose from use of recycled coal ash in concrete block as permitted by EPA can be about 3 percent of natural background (about 0.1 mSv/yr (10 mrem/yr)), (d) a person receives 0.1 mSv (10 mrem) on a round-trip coast-to-coast flight, and (e) 0.01 mSv/yr (1 mrem/yr) is a level which the National Council of Radiation Protection and Measurements (NCRP) considers a trivial risk. In addition, a 0.01 mSv/yr (1 mrem/yr) value is also the level being considered for release for unrestricted use (or "clearance") in the European community.

(2) *Restrict release of solid materials to only certain authorized uses* (see more detail in Issue No. 3).

(3) *Do not permit either unrestricted or restricted release of solid material that has been in an area where radioactive material has been used or stored*—In this alternative, all such materials in the facility would be required to go to a licensed LLW disposal facility.

(4) *Other alternative(s)*—Other appropriate alternatives may be determined during the rulemaking process.

(5) *Other decisionmaking factors*, (i.e., non-dose based criteria).

Factors in Decisionmaking

Principal factors in making decisions regarding the alternatives include human health and environmental impacts, cost-benefit considerations, impacts on other industries, resource conservation, the capability to survey the material to assure that it meets permissible levels, existing international, national, and State standards, and other factors raised during the rulemaking process.

Human health and environmental impacts: In assessing potential rulemaking alternatives, NRC would consider a broad range of possible impacts, both radiological and non-radiological. These could include evaluation of radiation dose to individuals from release of solid materials, assessment of collective doses to different population groups from the release, transportation, processing and disposal impacts, impacts on biota, land use impacts, impacts on radiation sensitive industries, and societal impacts. Some of these impacts may be competing. For example, a lower dose criterion would result in less material available for release (and instead sent to a LLW disposal site) which, in turn, would lower the radiation dose impact to the public from exposure to that material. However, the lower dose criterion could cause an increase in other impacts, for example those impacts associated with mining, fabrication, and transport of fresh metal to replace that sent to a LLW disposal site. Because these impacts would take place over different time periods and expose different populations, a precise comparison is difficult. Nevertheless, the decisionmaking process could consider these impacts separately and also consider the net collective impact for these disparate factors.

NRC recently published a draft report for comment on radiological assessments for clearance of equipment and materials from nuclear facilities, NUREG–1640 (2 volumes). The report provides dose factors for both surficial and volumetric radioactivity and compares them with results from Regulatory Guide 1.86 and from EPA values, European Community recommended clearance levels and IAEA draft clearance levels.

Most of the aforementioned policies, guidelines, recommendations and standards are dose based and thus are intended to be protective of public health and safety. In addition to protection of public health and safety, the U.S. Atomic Energy Act, as amended, also charges the NRC with protection of property. Some industries may be adversely affected by materials that are cleared based upon dose based standards because of sensitivity to radiation effects from the cleared material e.g., the film and electronic industries and the metal recycling industry which performs radiation monitoring of metal scrap to detect and protect itself from radioactive sources accidentally mixed with scrap.

As a first step in assessment of impacts, the NRC has issued a draft report for comment that provides a technical basis for determining potential doses to individuals from a wide range of potential scenarios by which members of the public could come in contact with material that had been released for unrestricted use (or "cleared") from licensees ("Radiological Assessment for Clearance of Equipment and Material from Nuclear Facilities", NUREG–1640, February 1999). The report contains an analysis of material flow models based on an evaluation of the recycle/reuse industry in the U.S. and of potential scenarios by which a member of the public could reasonably expect to be exposed. Solid materials that are candidates for release that are evaluated in the report include iron/steel, copper, aluminum, and concrete. The EPA has issued a report similar to NUREG–1640 which is accessible on EPA's website at http://www.epa.gov/radiation/cleanmetals/publications.htm. While some of the analysis and approaches in the EPA report are different from NRC's report, the overall results from the EPA and the NRC reports are similar.

Cost-benefit considerations: Executive Order 12291 contains provisions that require Federal agencies, in their rulemakings, to consider cost-benefit evaluations of alternative courses of action. Consistent with Executive Order 12291, NRC has established guidelines for preparing regulatory analyses of alternative courses of action in support of its rulemaking decisions (NUREG/BR–0058). Benefits would generally derive from the net reduction in environmental impacts discussed above. Costs which could be included in a regulatory analysis could include: (1) the costs of alternative courses of action including surveys at licensed facilities, as well as surveys at non-licensed facilities that may use or receive released solid materials, to verify that permissible release levels have been met; (2) the potential for having to respond to contamination alarms at facilities handling released material; (3) economic impact on recycle/scrap/manufacturing processes; (4) replacement metal production; and (5) alternative options for disposing of the material.

Implementation considerations: A potential concern with implementation of a proposed rule is the capability to measure radioactive contamination corresponding to the very low alternative dose levels discussed above. The ability to measure radioactivity depends on both the amount and type of radioactive material. In particular, a rulemaking alternative that would require survey instrumentation to verify that there is *no* dose above natural background could be extremely difficult, if not impossible, to implement because of the variation in natural background and the limited capability of field survey instruments to detect such low levels.

Other international, national, and State standards: In considering rulemaking alternatives, the NRC would also consider requirements, guidelines, policies and precedents set by international agencies, other Federal agencies, or States. Consistency with standards set by other countries and international agencies is important because materials can be both imported and exported between the U.S. and other countries and differing standards could create confusion and economic disparities in commerce.

Items for Discussion

(A) Human Health and Environmental Impacts

(1) What individual dose level is acceptable regarding release of solid materials from licensed facilities for unrestricted use? Should release of solid materials for unrestricted use be permitted at a dose level (for example, 0.1, 0.01, or 0.001 mSv/yr [10, 1.0, or 0.1 mrem/yr], or no dose, above background (or other dose)) which is established in rulemaking based on a balancing of risks from various alternatives? Or, should release of solid materials not be permitted if they are potentially contaminated from the use of licensed radioactive material?

(2) How should environmental impacts be balanced and what types of

impacts should be considered in decisionmaking?

(i) In considering radiological impacts from materials released for unrestricted use in the public sector, what pathways of exposure to people, such as those already considered in NUREG–1640, should be considered? As noted above, NUREG–1640 contains a technical basis for determining potential doses to individuals from a wide range of potential scenarios by which members of the public could come in contact with material that had been released for unrestricted use. The report contains an analysis of material flow models based on an evaluation of the recycle/reuse industry in the U.S. and of potential scenarios by which a member of the public could reasonably be exposed.

(ii) In considering other environmental impacts, what impacts, both radiological and non-radiological, should be considered? Such impacts could include mining of new metals to replace metals that could be potentially released but which are sent to a LLW disposal site, production of metal products, transportation of materials, etc.

(iii) How should net environmental impacts from all the radiological and non-radiological impacts be balanced?

(3) What is the potential for exposures to multiple sources of material released for unrestricted use, and what are ways in which persons could be exposed to multiple sources? How should potential for exposure to multiple sources be considered in setting an acceptable dose level? To what extent is there a potential that a single scrap facility would handle inputs of released solid materials from several different licensed facilities?

(4) What societal impacts should be considered and how should they be factored into the environmental evaluation? For example, material released for unrestricted use from nuclear facilities could result in concern, confusion, or fear if the public either does not clearly understand that the risk is small or does not accept the risk.

(5) How should the impacts upon industries that have special concerns about the presence of radioactivity in materials, e.g., film, electronic, and metal recycling, be considered and factored into decisionmaking?

(B) Cost-benefit Considerations

(1) As noted above, Executive Order 12291 requires Federal Agencies to consider cost-benefit in its consideration of rulemaking alternatives. NRC uses NUREG/BR–0058 as its guideline in analysis of the cost-benefit of regulatory alternatives. In using NUREG/BR–0058:

(i) How should economic factors be incorporated into rulemaking decisions, including costs of survey methods and appropriate instruments to measure very low levels of volumetrically contaminated material, economic risks associated with release of solid materials, costs of decontamination, ALARA issues, etc.

(ii) How should economic impacts be balanced against net environmental impacts?

(2) What are the major economic costs associated with release of solid materials into commerce?

(3) What are the major economic costs associated with landfill disposal of material released for unrestricted use? Would problems be encountered in this material going to a landfill?

(4) What economic risks are associated with release of solid materials for unrestricted use? For example, what are the risks (and associated costs) that materials released from a nuclear facility could be rejected at a melter or scrap yard based on a radiation survey at that point? What means could minimize such economic risks?

(5) What is the potential for buildup of radioactivity in commerce as a result of continued release of solid material for unrestricted use over time? How should such a buildup be estimated? What is the potential that this buildup could contribute significantly to either the net environmental impact, to economic impacts on general commerce, or to public concern?

(C) Implementation Considerations

(1) What is the capability of surveying materials (both for surface and volumetric contamination) at the different alternative dose levels being considered, and what effect would that have on setting a standard? Are these survey capabilities readily available to licensees? Should there also be provisions for survey capability at receiving facilities and what should be the nature of those provisions? What economic impact would the use of different or advanced survey techniques have on the facilities releasing the material and the facilities accepting the material for reuse or recycle? How can surveys be designed to prevent releasing material in excess of permissible levels? Over what volume or mass of material should surveys be performed in assessing compliance with release levels? Should materials of varying concentration levels be combined, and, if so, how?

(2) What different survey methods should be used for assuring that materials from different areas of a facility, and having different potential for contamination, meet the criteria of a dose-based standard? For example, should the survey of solid materials from areas known to be free of contamination rely upon knowledge of facility radiological history and knowledge of plant processes, and, if so, how?

(3) How should criteria for release of solid material be incorporated into NRC's regulations, i.e., should they be expressed as a dose criteria and/or be expressed as concentration values in different media based on specified dose objectives and standard models for exposure?

(D) Other considerations including international, national, and State guidelines

(1) With regard to international, national, and State standards:

(a) How should guidelines on unrestricted release, or "clearance," set by international standards-setting bodies such as the IAEA and International Commission on Radiological Protection (ICRP), as well as those set by other countries, be considered in setting a level for release of material from NRC-licensed facilities in the U.S.? How should efforts by the EPA to set import screening guidelines be considered?

(b) How should guidelines of other U.S. agencies, e.g., DOE and EPA, be considered? To what degree should standards set by NRC be consistent with other EPA standards, such as those for recycled coal ash (see Section A.2.2.3)? With regard to issues of finality of NRC licensing decisions, what potential problems could occur if EPA later issues standards for release of solid materials different from an NRC regulation?

(c) How should recommendations made by U.S. standards setting bodies, such as the National Council on Radiation Protection and Measurements (NCRP), be considered?

(d) How should standards set by U.S. industry groups, such as the American National Standards Institute (ANSI), be considered? Are industry standards currently available, or anticipated during the time frame for this rulemaking, that could be adopted in lieu of or in addition to NRC requirements on release of solid materials?

(e) Should NRC simply adopt the standards in 1(a), 1(b), or 1(c), and their associated health risk level, rather than conduct analyses of its own?

(f) What are the economic and other impacts of having NRC standards different from standards that may be set by international agencies, EPA, or other national bodies?

(g) What compatibility categories, as described in NRC's "Policy Statement on Adequacy and Compatibility of Agreement State Programs," published September 3, 1997 (62 FR 46517), and in NRC's Management Directive 5.9, "Adequacy and Compatibility of Agreement State Programs," should be assigned to any rule on release of solid materials? Compatibility refers to the extent to which Agreement State radiation control programs are consistent with NRC's program for the regulation of Atomic Energy Act radioactive materials to ensure that an adequate and coherent nationwide effort is collectively established for regulation of such materials.

(2) Should existing NRC standards, including the public dose limit of 1 mSv/yr (100 mrem/yr) in 10 CFR 20.1301, and Subpart E of Part 20 which contains a dose criterion of 0.25 mSv/yr (25 mrem/yr) for release of decommissioned structures and lands, be considered in setting allowable doses for release of solid material for unrestricted use? A consideration in this question is that there are different circumstances between Subpart E and the issues being discussed in this paper. For example, Subpart E limits the dose from the single release of structures and land at a site to 0.25 mSv/yr (25 mrem/yr). In contrast, unrestricted release of the materials considered in this issues paper could involve periodic releases over the facility lifetime at a dose level to be set in the rulemaking.

Issue No. 3—If NRC Decides to Develop a Proposed Rule Containing Criteria for Release of Solid Materials, Could Some Form of Restrictions on Future Use of Solid Materials be Considered as an Alternative?

As discussed in Section A.2.2, release of solid materials for unrestricted use would allow them to be recycled or reused in consumer products or industrial products, or be disposed of in solid waste landfills. A potential alternative could involve limiting release of solid materials by restricting their future use to some authorized use.

Alternatives

Potential alternatives for restricted use of solid materials could include:

(1) Restrict the first use of solid material to certain authorized uses

In this alternative, the release of radioactive material would be restricted to certain authorized uses to ensure that it is processed into one or more specific products. For example, material could be recycled for use in an industrial product such as steel beams that would be designated for use in a foundation or structural support for a bridge or monument. Because of uncertainties related to controlling potential uses of the material after it leaves a licensee's facility, it may be necessary to require that processing of the material for the first use be done under a specific license issued by the NRC. This alternative might be beneficial for materials contaminated by nuclides having short to moderate half-lives, allowing substantial reduction in contamination due to radioactive decay within the lifetime of the structure in which it is placed. This alternative would probably not be applicable for all materials (e.g., wood products and some metals such as copper). End user certification could be difficult to enforce.

(2) Restrict release of solid material to permitted disposal

This alternative would restrict the release of slightly contaminated solid material from nuclear facilities to disposal at municipal solid waste landfills. Solid material with higher levels of radioactive contamination would continue to be handled as radioactive waste and be disposed of at licensed facilities. Municipal solid waste landfills are issued permits by State regulatory authorities in accordance with 40 CFR 258, "Criteria for Municipal Solid Waste Landfills" as well as other State and local regulations. The rationale for this alternative is that exposure pathways at landfills can be fairly well defined and quantified, and that many of the pathways of potential exposure associated with the recycling of metal into consumer products or industrial products would not be present. Additional restrictions could involve disposal at industrial solid waste facilities rather than at sanitary waste landfills.

Issues associated with this alternative include the fact that additional NRC and/or EPA rulemaking may be required to implement this alternative. For example, the definitions of solid waste and/or byproduct material (or associated regulations) might need to be revisited to allow disposal at solid waste landfills of material having residual radioactivity. Several State and local governments currently have prohibitions against the disposal of radioactive material in landfills which would make this alternative less feasible. An additional issue is the possibility that material could be sent to a landfill under a use restriction, but it could be removed from the landfill and sold as scrap or reused.

Items for Discussion

(1) Should the NRC consider restrictions on future use of solid materials as an alternative to unrestricted use (similar to the license termination rule)?

(2) If so, what types of restricted uses should be considered?

(3) What types of controls could restrict use to assure that the material would not be released for unrestricted use? Would these controls be reasonable? Would it be necessary to license processing of the material for the first use in order to assure protection of public health and safety? For example, if iron/steel were to be restricted to use in bridge support, should the company processing the steel into bridge supports be licensed by the NRC? Or could sufficient restrictions be placed on the processing company to assure that the steel went where it was supposed to without the company having an NRC license?

(4) How long would the use be restricted? What radionuclides, and associated time periods for radioactive decay, would be reasonable to consider as candidates for restricted use? What would happen to the material when it reached the end of its useful restricted life?

(5) If restrictions were placed on future use of materials, would the NRC need to be involved in continued regulation or tracking of the material? Would States need to be involved? Or could a mechanism for institutional control, similar to that used in the license termination rule be used to assure the continued restricted use of materials? Note that Subpart E of 10 CFR Part 20 (Section 20.1403) contains requirements regarding acceptable dose levels for restricted use, allowable institutional controls and financial arrangements, etc.

(6) What type of public involvement should there be in decisions concerning restricted use of materials? Should it be similar to the method used in the license termination rule where licensees are required to seek advice from affected parties when proposing a site for restricted use? Note that Subpart E of 10 CFR Part 20 (Section 20.1403) also contains requirements for licensees to seek advice on from affected parties and also the methods to be used in obtaining that advice. A potential problem in establishing a public involvement process for restricted use of materials is that (unlike license termination of buildings or a site where affected parties

in a community can be fairly readily identified for a restricted site in a community) material leaving the site could be sent for restricted use in different areas and uses. Can a meaningful public involvement process be developed for setting restrictions on future material use in specific licensing cases?

(7) How should considerations and predictions of future public uses of materials and the restrictions on those materials be developed to provide credible approaches for restricted use?

(8) What dose should be permitted for material released for restricted use? Should the same alternative dose levels as for unrestricted use (see Issue No.2) also be considered for restricted use, or should some other value, either higher or lower, be considered? By way of comparison, the allowable dose in Subpart E of Part 20 for restricted use of released lands and structures is the same as for unrestricted use, provided the controls remain effective.

(9) What specific problems are associated with restricting materials to landfill disposal?

Issue No. 4—If NRC Decides to Develop a Proposed Rule, What Materials Should be Covered?

A rule developed by the NRC could cover selected materials (for example, certain metals such as iron and steel) or could be a broad rule encompassing all materials. Any alternatives chosen for consideration would be dependent on information available on the various materials. Currently, the NRC has developed the following technical background information:

(1) An analysis of individual doses resulting from unrestricted release of steel, aluminum, copper, and concrete (draft NUREG–1640, February 1999) has recently been completed. These materials were analyzed because they were considered to represent those most likely to become available and also to represent most of the volume of slightly contaminated material available for release from NRC-licensed facilities into the public sector, other than soil.

(2) Discussions with licensees have indicated that there are large quantities of soil with very low amounts of radioactive contamination that are available for release. Although NUREG–1640 does not include specific analyses for soil, work done previously for the license termination rule provides baseline technical information on individual dose factors and environmental analysis for soil which could be adapted for use for this application. This previous work includes NUREG–1496, "Generic Environmental Impact Statement on Radiological Criteria for License Termination," NUREG/CR–5512, "Residual Radioactive Contamination from Decommissioning," and NUREG–1549, "Decision Methods for Dose Assessment to Comply with Radiological Criteria for License Termination."

(3) The NRC does not have similar analyses completed for other slightly contaminated materials potentially available for release.

Alternatives

Alternative rule approaches could be that the rule would apply to—

(1) only a select group of solid materials, including certain metals (steel, aluminum, copper) as well as concrete and soil.

(2) a wider group of materials to also include other materials under license including sludge, sewage, wood, glass, and others.

(3) a select group of materials (Alternative 1) and conduct rulemaking on other materials in Alternative 2 at a later time.

Specific Items for Discussion

(1) Should the NRC proceed with a rulemaking covering all materials, with the option of conducting further rulemaking at a later time for certain materials if the impact to all affected parties, including the regulators, is too great or the analysis too complicated or time consuming?

(i) Is it appropriate to proceed with certain materials, including steel, aluminum, copper, concrete, and soil, so that rulemaking can be done in a timely manner using the information developed for these materials in NUREG–1640, and associated analyses as described above, as input to the environmental analyses and regulatory analyses? Would experience gained with the rule on steel, aluminum, copper, concrete, and soil be useful in evaluating requirements for release of other materials later?

(ii) Would issuing a rule now for only certain materials noted in Alternative No.1 limit NRC's capability to deal effectively with requests for release that could be made in the future for other materials? Other similar materials, such as sludges, slag, asbestos, etc., could also potentially be the subject of requests for release. To help answer that question, how many and what types of materials are licensees actually requesting release for today or are anticipated over the next decade?

(iii) Should the NRC perform additional analyses at this time of individual doses resulting from other materials potentially available for release to support rulemaking decisions for these materials even if it impacts the schedule for rulemaking for release of steel, aluminum, copper, and concrete?

(2) What other materials would be the candidates for rulemaking? Do analyses for these materials currently exist or are they under development?

(3) If the NRC proceeds with rulemaking limited to certain materials indicated in Alternative 1, how should it handle requests for release of other materials, i.e., should it proceed with a subsequent rulemaking for other materials, and, if so, how and when should it proceed with this later rulemaking? Should the additional materials be released under existing guidelines until the subsequent rule is developed, or should the release of these materials be postponed until a rulemaking is conducted? If the rulemaking establishes dose objectives for release and implements those objectives through tables of values for specific materials, should the dose objective also be used to guide case-specific release of other materials through licensing actions or exemptions?

(4) What would be the associated costs, effective survey methods, and dose impacts of the alternatives?

(5) Should the NRC rulemaking be extended to cover materials that may be released from nuclear facilities operated by the DOE?

IV. Scoping Process for Environmental Impact Statement

As discussed in Section III.A.5 and III.B of this notice, if the Commission decides to proceed with a rulemaking, it will have to consider the effect of its actions on the environment in accordance with the National Environmental Policy Act (NEPA). Section 102(1) of NEPA requires that the policies, regulations, and public laws of the United States be interpreted and administered in accordance with the policies set forth in NEPA. It is the intent of NEPA to have Federal agencies incorporate consideration of environmental issues into their decisionmaking processes.

NRC regulations implementing NEPA are contained in 10 CFR Part 51. To fulfill its responsibilities under NEPA, the NRC would prepare an environmental impact statement (EIS) by analyzing alternative courses of action and the impacts and costs associated with those alternatives. In keeping with the requirements of 10 CFR Part 51, an EIS would analyze alternatives for establishing requirements for release of solid

materials. All reasonable alternatives associated with the proposed action would be analyzed to determine their impacts and costs.

The Commission's regulations in 10 CFR 51.26 contain requirements for conducting a scoping process before preparing an EIS, including preparation of a notice of intent in the **Federal Register** regarding the EIS and indication that the scoping process may include holding a scoping meeting. Requirements are contained in 10 CFR 51.27 regarding the content of the notice of intent, in particular that it should describe the proposed action and describe possible alternatives to the extent that information is available. In addition, the notice of intent is to describe the proposed scoping process, including the role of participants, whether written comments will be accepted, and whether a public scoping meeting will be held.

Participants in this scoping process on the environmental impacts of release of solid materials from licensed facilities may attend any of the four public meetings indicated under the DATES heading of this notice and provide oral comments on the proposed action and possible alternatives. The Commission will also accept written (and electronic) comments on the proposed action and alternatives from the public, as well as from meeting participants, as indicated under the DATES and ADDRESSES heading of this notice.

According to 10 CFR 51.29, the scoping process is to address the following topics:

(1) *Define the proposed action.* The NRC is considering codifying radiological criteria for release of solid materials from licensed facilities. Detailed information on the proposed action is described in Section III.A.2 and III.A.5 of this notice.

(2) *Determine EIS scope and significant issues to be analyzed in-depth.* The NRC is considering analyzing the impacts and costs associated with alternative regulatory approaches to establish radiological criteria for release of solid materials from licensed facilities. Information regarding: (a) types, and contamination levels, of solid materials present in licensed facilities potentially available for release is contained in Section III.A.1.2 and Section III.B (Issue No. 4) of this notice; (b) pathways of exposure to solid materials released from licensed facilities is contained in Section III.B (Issue No. 2) of this notice and discussed in detail in the draft NUREG–1640 and in NUREG–1496 as referenced in Section III.B; (c) regulatory alternatives and method of approach for analysis of the alternatives is contained in Section III.A.2.2 and III.B (Issue No. 2) of this notice. Principal factors in making decisions regarding the alternatives are indicated in Section III.B (Issues No. 2, 3, and 4) of this notice.

(3) *Identify and eliminate from detailed study issues which are not significant or which are peripheral or which have been covered by prior environmental review.* The NRC has not yet eliminated any non-significant issues. However, the NRC is considering elimination of the following issues from the scope because they have been analyzed in previous EIS's (NUREG–0586 and NUREG–1496) and included in earlier rulemakings (53 FR 24018, June 28, 1988, and 63 FR 84088, July 21, 1997): (i) planning necessary to conduct decommissioning operations in a safe manner; (ii) assurance that sufficient funds are available to pay for decommissioning; (iii) the time period in which decommissioning should be completed; (iv) radiological criteria for decommissioning of lands and structures; and (v) the fact that consideration is not given to an alternative in which a licensee would abandon material or equipment without some treatment or licensed disposal.

Analysis of the scope of environmental impacts for this effort would be principally intended to provide input to decisionmaking for establishing overall criteria for release of solid materials, and would not involve analysis of site-specific issues which may arise in the licensing process at specific facilities. The extent to which the environmental analysis may be applicable to a site specific NEPA process would be described in a draft EIS and draft rulemaking.

(4) *Identify any environmental assessments or environmental impact statements which are being or which will be prepared that are related but are not part of the scope of the EIS under consideration.*

None are being prepared.

(5) *Identify other environmental review or consultation requirements related to the proposed action.* The NRC has contracted with ICF to provide technical assistance in the environmental analyses. The NRC is also placing contracts to obtain specific technical assistance regarding exposure pathways, collective doses, costs, and the capability of radiation survey instruments to practically and accurately detect radioactive contamination at levels near background.

(6) *Indicate the relationship between the timing of the preparation of environmental analysis and the Commission's tentative planning and decisionmaking schedule.* The schedule for issuance of an EIS has not been developed. The NRC staff will provide to the Commission, early in the year 2000, a report on the results of the public meetings and other public comments on the issues paper and the scoping process and include a schedule for any further rulemaking in this area, including the schedule for preparation of an associated draft EIS.

(7) *Describe the means by which an EIS would be prepared.* If the NRC proceeds with rulemaking in this area, it would prepare a draft EIS in accordance with its regulations in 10 CFR Part 51. Specifically, in accord with 10 CFR Part 51.71, a draft EIS would be prepared using the considerations of the scoping process and would include a preliminary analysis that considers and balances the environmental and other effects of the proposed action and the alternatives available for reducing or avoiding adverse environmental and other effects, as well as the environmental, economic, technical and other benefits of the proposed action.

In accordance with 10 CFR 51.29, at the conclusion of the scoping process, a concise summary of the determinations and conclusions reached, including the significant issues identified, will be prepared and a copy sent to each participant in the scoping process.

Dated at Rockville, Maryland, this 22nd day of June 1999.

For the Nuclear Regulatory Commission.

William D. Travers,

Executive Director for Operations.

[FR Doc. 99–16598 Filed 6–29–99; 8:45 am]

BILLING CODE 7590–01–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Airspace Docket No. 99–ASO–9]

Proposed Amendment of Class E Airspace; Roosevelt Roads NS (Ofstie Field), PR

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: This notice proposes to amend Class E airspace at Roosevelt Roads NS (Ofstie Field), PR. A Global Positioning System (GPS) Runway (RWY) 9 Standard Instrument Approach

Workshop on Regulatory Approaches For Control of Solid Materials

Rockville, Maryland
November 1-2, 1999

Session 1

Why are we here today?

Why is NRC examining its approach for controlling solid materials with small amounts of radioactivity?

- There are solid materials at licensed facilities that will need disposition
  - Some of the solid material has small amounts of radioactivity
- Overall question, "What should be done with these materials?"
  - Should all materials be buried in licensed low level waste (LLW) disposal sites, or
  - Is there a safe way to re-use or recycle some of these materials if radioactivity levels are low enough?

Why is NRC examining its approach for controlling solid materials with small amounts of radioactivity (cont'd)?

- There are no NRC regulations for control of most of these materials
  - Licensees still seek to release solid materials when obsolete or at decommissioning
  - Decisions are being made case-by-case
  - Lack of criteria causes inconsistent release levels and nonuniform levels of protection
- NRC wants to consider all issues in an open public forum:
  - All health and environmental impacts involved with the situation
  - Related economic aspects

What is NRC's role and authority in setting standards?

- NRC authority and responsibilities established in Atomic Energy Act of 1954 (amended 1975)
  - Issues regulations for protection of public health and safety from use of radioactive material by its licensees
  - Regulates and inspects use of radioactive material by its licensees
- NRC/EPA roles
  - EPA sets generally applicable environmental standards that NRC implements
  - EPA is not currently considering rulemaking in this area
  - In the absence of EPA standards, NRC has authority to set radiation protection standards for its licensees in this area

Has NRC made any decisions to date?

- June 1998 - consider rulemaking to establish a dose-based standard and provide enhanced public participation
- June 1999 - publish Issues Paper (containing several alternative courses of action) and announcement of scoping process in Federal Register for public comment
- Sept 1999 - proceed with enhanced public process
  - Commission briefing in March 2000 on results of public meetings held Sept-Dec 1999 and recommendations for next steps
  - Additional public meetings on preliminary version of GEIS
- NUREG-1640: not a standard; a calculational tool

What is NRC's purpose in publishing the Issues Paper and holding public meetings?

- Present issues and alternatives related to control of solid materials
- Listen to and consider a broad spectrum of viewpoints on the issues and alternatives
- Based on the viewpoints expressed
  - Identify concerns with Issues Paper
  - Identify other issues and alternatives not addressed in the Issues Paper
- Conduct enhanced participation including opportunities for both early and continuing dialogue and input

What process for decision-making is being considered?

- Steps in a typical rulemaking process
  - Early and substantive input by Agreement States
  - Develop proposed rule (including as bases NEPA and E.O. 12291) and publish for public comment
  - Consider public comments and prepare final rule
- What additional steps for early and continuing input are being used in an enhanced process?
  - **Issues Paper in FRN and on web**
  - **Facilitated public meetings**
  - **Follow-on documents on website**
  - **Public comment capability by e-mail, web posting, list server, etc**
  - **Updates and briefings of Commission open to the public**
- What other approaches to enhance input could be used?

Session 2

How does what we are discussing today fit into the overall picture?

What NRC licensees and what types of solid materials are we talking about?

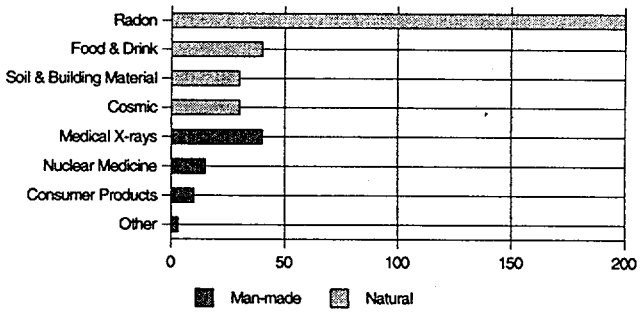
- Licensee types:
  - Most licensees are users of sealed sources
    - Typically have no contamination
  - Other licensees (e.g., reactors, research laboratories, hospitals):
    - Have areas with no contamination
    - Process/storage areas that may have materials with small amounts of radioactivity
- Metals, concrete, soils
  - Equipment, piping, furniture, etc.
- Other materials as developed in discussions

How does a potential radiation dose from a standard compare to the dose received from other radiation sources?

- One alternative in the Issues Paper discusses potential dose criteria of 0, 0.1, 1, or 10 mrem/yr
- Comparison with doses currently allowed
  - NRC's public dose limit is 100 mrem/yr
  - EPA allows use of coal ash recycled into concrete blocks at 10 mrem/yr
  - NCRP considers 1 mrem/yr a negligible individual dose
- Comparison with doses received from natural background, and from man-made sources (see graph)

Contribution of Various Radiation Doses to the Average Radiation Dose in the U.S. Population

Doses are approximate mrem per year



What are other countries, agencies, and/or States doing with regard to control of solid materials?

- U.S. EPA
  - EPA is not considering rulemaking in this area at this time.
  - Currently working with IAEA, Department of State and other Federal agencies on controlling import/export contaminated materials or products
- U.S. DOE
  - Releases material under DOE Order consistent with existing NRC guidance

What are other countries, agencies, and/or States doing with regard to control of solid materials (continued)?

- International
  - IAEA/EC/individual nations setting standards
- States
  - States have authority to approve release of NORM/NARM solid materials not regulated by NRC
  - Agreement States can also approve release of AEA solid materials

Session 3

How does NRC currently handle control of solid materials?

What is the current NRC case-by-case approach?

- Current NRC regulations do not contain dose criteria for control of solid materials generally applicable to materials and equipment
- Licensees still seek to release solid material during operations or at decommissioning
  - Licensees are required to survey materials to evaluate their radiological hazard
  - Licensees use the criteria of Regulatory Guide 1.86 or non-detectability for release of solid materials
  - NRC also evaluates specific requests for release on a case-by-case basis

What is the current NRC case-by-case approach (cont'd)?

- Regulatory Guide 1.86
  - Applicable to *surface* contamination only
  - Based principally on measurement capability of survey instruments
- Requests for approval of alternate disposal procedures
  - Allows licensees to seek NRC authorization for disposal of materials with low levels of volumetric contamination
  - Onsite burial, disposal at landfills

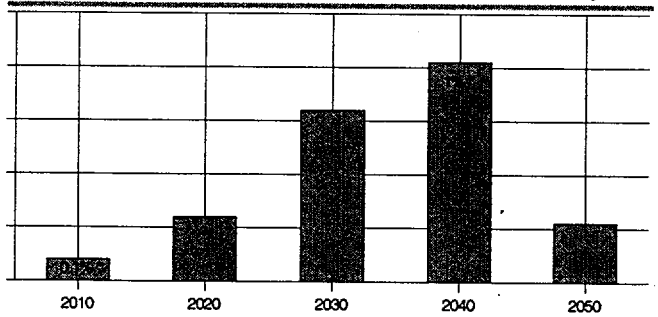
Examples of case by case approach

- Offsite disposal of septic tank waste from a power plant
  - Request for approval of disposal of very low levels of licensed material at sanitary waste treatment facility
  - Amounts - 2.33 uCi of Co-60, Mn-54, Cs-134, and Cs-137
  - Dose estimates were less than 1 mrem per year
  - Disposal approved by NRC and local Board of Health
- Decommissioning of facility which produced radionuclides for medicine, research, educational uses
  - Structures, process systems, lab equipment, pipes, soils
  - Unrestricted release of solid material that met NRC/State criteria
  - Materials above criteria sent to LLW or waste processor

How much solid material has been released so far under current practices?

- Licensees are currently required to:
  - Perform a radiation survey and record and maintain results
  - Survey records are not required to be submitted to NRC
- NRC does not track the amount of solid material released
  - NRC inspects licensee's radiation protection programs and survey records
  - Releases made in compliance with licensee programs are consistent with existing NRC regulations
  - Exposures are estimated to be low
  - Amount of metal and concrete released to date is small compared to the amount available in future decommissionings

Inventory of steel potentially available for release from nuclear power plants (EPA TSD 1997)



Total inventory is about 600,000 tons

* Percentage compared to scrap used annually by steel industry

Session 4

What are some alternatives for control of solid materials?

What are some alternatives for addressing control of solid materials?

- List of preliminary alternatives
  - Continue current practice
  - Develop a regulation that
    - does not permit release of materials that had been in an area where radioactive material was used or stored
    - establishes restrictions limiting release of solid materials to certain authorized uses
    - sets acceptable dose levels which must be met before materials could be released for unrestricted use
  - Others as developed in meetings or public comment

What are some alternatives for addressing control of solid materials (cont'd)?

- For each alternative:
  - Evaluate health and environmental impacts and economic tradeoffs between alternative approaches
  - Evaluate the ability of the alternative to control releases

Session 5

How should control of solid material be assured under various alternatives?

How should control of solid materials be assured for various alternatives?

- Surveys are required to control solid materials
  - Procedures for control
  - Radiation monitoring before any solid material could be released
- Issues with current survey programs
  - Variations in detection sensitivities and equipment
  - Existing guidance geared toward releasing solid material with surface contamination
  - Limitations for measuring volumetric contamination

How should control of solid materials be assured for various alternatives (cont'd)?

- Survey method will depend on the alternative
  - Range of alternatives requires evaluation of a variety of survey approaches
  - Dose criteria that are very low, or zero, above background may require very sensitive survey methods and equipment
- For restricted use, what other controls are needed?
  - Licensing of first user and/or processor
  - Public review process
  - Length of time for restriction
- What other types of controls should be considered?

Session 6

What studies are being done to develop information to evaluate alternatives?

Technical basis development

- Draft NUREG-1640 for comment (published March 1999)
- Analyses needed to support decision-making
  - Environmental impacts, material inventory, collective doses, potential for multiple exposures, cost-benefit of potential alternatives
  - Ability to survey at low levels
- Soil use characterization

Radiological Evaluation of the Clearance of Material and Equipment from Nuclear Facilities (NUREG-1640)

- Does not set criteria for a rule
- Rather provides a tool to evaluate alternatives

Radiological Evaluation of the Clearance of Material and Equipment from Nuclear Facilities (NUREG-1640) (cont'd)

- To identify critical group, NUREG-1640 analyzed:
  - Steel, copper, aluminum, concrete, and equipment reuse
  - 79 material flows, by-product processes, and potential uses (scenarios) for scrap and equipment
  - 85 radionuclides for external exposure and doses from inhalation and ingestion
- "Critical group" is defined by the process or use with the greatest mean dose factor for each group of materials and each radionuclide

Radiological Evaluation of Clearance of Soil

- Soil is a solid material that may need disposition
- Dose assessment of potentially recycled soil
- Interagency Agreement with USDA to conduct literature search of recycled soil use in the U.S.
  - Identify recycled soil usage scenarios
  - Estimate parameters for dose assessments
  - List relevant literature information sources for review
- Request public input to identify citable literature sources and databases on recycled soil use

Session 7

What are potential health and environmental impacts of various alternatives?

What are the potential health and environmental impacts that should be considered?

- Basis for NRC's consideration is protection of public health and safety and the environment
- Potential radiological impacts
  - Potential dose to an individual
    - Exposure to single and multiple sources
    - Scenarios and pathways of exposure, material flow models
  - Potential collective radiation doses to different population groups

What are the potential health and environmental impacts that should be considered (cont'd)?

- Impacts on biota and land use
  - Public use areas, wetlands, preserved habitats, etc
- Impacts of mining and processing of new metals to replace metals sent to LLW:
  - Pollution
  - Increased occupational injuries
  - Others

What are the potential health and environmental impacts that should be considered (cont'd)?

- Some of these impacts may be competing
  - Issues with regard to balancing impacts
- Environmental justice
- Nonradiological impacts:
  - occupational injury,
  - transportation,
  - noise,
  - road construction
- Others

Session 8

What are the potential economic and cost-benefit considerations associated with various alternatives?

Why consider economics and cost-benefit?

- Federal agencies must consider cost-benefit in their evaluations of alternatives
  - Executive Order 12291
  - NUREG/BR-0058, Rev 2. Regulatory Analysis Guidelines of the USNRC

What are the economic impacts of various alternatives?

- Radiological surveys to verify permissible levels have been met
- Economic impact on scrap metal and other industries
  - Manufacturing processes
  - Surveys of incoming materials
  - Potential for responding to "false" contamination alarms or for rejection of materials at melter, scrap yard, etc..
- Replacement metal production
  - Impacts of mining and processing of new metals to replace metals sent to LLW.

What are the economic impacts of various alternatives (cont'd)?

- Disposal costs
  - Public landfill
  - LLW disposal facility
- Costs for other industries
  - Film
  - Electronic
  - Others
- Potential for buildup of radioactivity in commerce over time
- Socio-economic impacts
- What other costs should be considered?

What is involved in a cost-benefit analysis?

- For each alternative, we evaluate potential health, safety, and environmental impacts against the costs required to achieve or preserve them
  - Benefits from each alternative
  - Detriments -- including costs -- from each alternative

Comments of the Paper, Allied-Industrial, Chemical & Energy Workers Union, ("PACE")
November 1, 1999
U.S. Nuclear Regulatory Commission
Proceeding on Release of Solid Materials At Licensed Facilities

Introduction and Summary

The Paper, Allied-Industrial, Chemical and Energy Workers International Union, ("PACE"), the successor union to the Oil, Chemical & Atomic Workers Union, has 330,000 members nationwide, and is the largest employee representative within the United States Government's nuclear complex. PACE members also work in metal processing facilities, industrial machining operations, and settings where radioactive metals can be smelted, cast, ground, plated, grit blasted, welded or otherwise processed. PACE has a long standing interest in the risks posed by exposure to radioactive materials and the protection of the public, including PACE members, their families, and the communities in which they live and work. PACE has need to understand not only the health effects of exposure to radioactive materials, but, of no less importance, the capabilities, competence, and historic and continuing shortcomings of the institutions -- public agencies and private corporations -- to whom radioactive materials have been entrusted for processing and use.

As further discussed below:

- THE INTEGRITY OF THE NRC'S RULEMAKING REQUIRES AFFIRMATIVE DEMONSTRATION THAT THE STATUS QUO POLICY --NO UNRESTRICTED RELEASE AT ALL -- WILL BE FAIRLY AND EQUALLY CONSIDERED AMONG ALTERNATIVES

- UNRESTRICTED RELEASE CANNOT BE FOUND SAFE WITHOUT A FULL FACT FINDING REGARDING THE BASIC RELIABILITY AND COMPETENCE OF ENTERPRISES--PRIVATE AND PUBLIC--TO SAFELY RECYCLE MATERIALS AND TO TELL THE TRUTH ABOUT THEIR ACTIVITIES. A RISK BASED STANDARD IS NECESSARILY UNACCEPTABLY ARBITRARY IF IT IS NOT ROOTED IN THE EXPERIENCE OF THE REAL WORLD. THE NRC MUST PROVIDE FOR:

  - Factfinding regarding a Federal court determination that an ongoing Oak Ridge radioactive metal recycling project is proceeding in violation of environmental law, and whether the Energy Department will take prompt action to require compliance with the law;

  - Factfinding regarding the State of Tennessee's recent issuance of a license for recycling of volumetrically contaminated metals in the absence of legal authority to do so, and related actions by the NRC to assure compliance by

this Agreement State with the law;

- Factfinding regarding the government and its contractors' historic policies and practices of keeping information on the public release of radioactive substances secret from the exposed public, and prompt action to assure full disclosure;

- Fact finding regarding the NRC's previous written declaration that it will rely on expertise in this proceeding that is tainted by conflict of interest, and what steps will be taken to assure corrective action;

- Fact finding regarding evidence that those entrusted with the public release of radioactive materials do not have requisite competence;

- Fact finding regarding the failure of DOE and recycling contractors to provide credible and public analysis of, and protection against, worker exposures;

- Fact finding regarding evidence that this Commission's predecessor may have historically sanctioned the commercial release of radioactively contaminated materials without any public notice.

■ THERE IS NO BASIS FOR UNRESTRICTED RELEASE OF RADIOACTIVE MATERIALS -- SUCH AS PLUTONIUM -- THAT DO NOT NATURALLY OCCUR IN NATURE.

I. The Proposed Rulemaking Lacks Integrity; the Result Has Been Prejudged and Reasonable Alternatives -- Including Maintaining the Current Prohibition on the Unrestricted Release of Volumetrically Contaminated Metals -- Will Not be Seriously Considered

The NRC casts this rulemaking as one in which the public will participate and its views be considered. However, the NRC's conduct to date shows that it has a closed mind.

Even before the onset of public participation, the Commission determined that:

(1) there will be a rule(s) permitting free release of radioactively contaminated materials for use in commerce and;

(2) the rule(s) will be based on a putative effort to determine health risk (which, as discussed below, relies on tainted analysis from the start), rather than an effort to protect the

public from all measurable exposures to radioactive substances.[1]

Any legitimate rulemaking must demonstrably give full and fair consideration -- including provision for factfinding -- to alternatives other than that which the NRC has already decided on.

These alternatives include:

(1) a conclusion that no level of unrestricted free release of radioactively contaminated materials above background levels is consistent with the public interest; and

(2) a conclusion that no level of unrestricted free release of radioactively contaminated materials above detectable levels is consistent with the public interest not some (inevitably arbitrary) health standard.

The public record (much of which is only now emerging from secrecy) shows that public and private institutions entrusted with public releases of radiation have been, and remain, incapable of managing these releases in a manner that complies with the law, the basic requirements of technical competence, and the requirements of public integrity. Therefore no rule permitting any free releases can be permitted without:

(1) means to assure that:

(a) all materials are adequately labeled for disclosure to otherwise unknowing consumers, and

(b) that the materials may not be used for consumer products that come into intimate human contact; and

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[1] See June 30, 1998 Memorandum to L. Joseph Callen, Executive Director for Operations from John C. Hoyle, Secretary re "Staff Requirements - SECY-98-028-regulatory options for setting standards on clearance of materials and equipment having residual radioactivity." The Memorandum concludes (emphasis added):

> The rulemaking should focus on the codified clearance levels above background for unrestricted use that are adequately protective of public health and safety. *This level should be based on realistic scenarios of health effects from low doses that still allows quantities of materials to be released.* The rule should be comprehensive and apply to all metals, equipment, and materials, including soil. *If problems that would delay completing the rulemaking arise in certain categories of solid materials, then a decision can be made to narrow the scope of the rule.*

(c) all materials released to the public are practicably subject to identification and recall at every stage of the recycling and reuse process.

(2) thorough accounting to the public with respect to the history of compliance by the public and private enterprises in complying with current standards governing already licensed materials, such as sealed sources.

(3) full consideration to the economic and health impacts on the metal working industries, (including those where our members are employed) from managing radiologically contaminated materials in a non licensed workplace.

II Any Rulemaking Must Permit Full Factfinding Regarding Growing Evidence that Those Entrusted with Public Releases of Radiation Cannot be Presumed to Comply with the Law, Possess Basic Competence, or Tell the Exposed Public the Truth

The NRC evidently views its central task as that of determining the ostensible level(s) at which the public can safely be exposed to the radioactive materials which will be released into commerce. However, there is no basis for presuming that those institutions entrusted with releasing radioactive materials into communities and households can be entrusted to abide by any rule, however technically plausible it might be in the abstract. To the contrary, there is serious and growing evidence that those engaged in public releases have historically, and to this date, acted unlawfully and/or incompetently and/or unethically. No further public releases can be sanctioned by the United States Government unless and until it fully considers and accounts for this evidence. No rulemaking that fails to account for this evidence can adequately protect the public.

A. No Releases Can be Sanctioned Until Ongoing Recycling is Brought into Compliance with The Law

1. A Federal Court Has Confirmed that Ongoing Recycling is in Violation of NEPA and the Public Requirements for Openness

In 1997 the U.S. Department of Energy ("DOE") entered into a quarter billion dollar noncompetitive contract with British Nuclear Fuels ("BNFL") to decontaminate and recycle approximately 100,000 tons of contaminated metals from DOE's Oak, Ridge, Tennessee "K-25" gaseous diffusion facilities. This action was taken by the government notwithstanding the warning by labor, citizen and environmental groups that the project was proceeding without regard for minimally requisite health, safety, and environmental protection requirements.

When DOE proceeded in noncompliance with the National Environmental Policy Act, PACE, joined by the Natural Resources Defense Council ("NRDC") had little recourse but to file suit seeking an order that DOE comply with NEPA and prepare an Environmental Impact Statement ("EIS").

On June 29, 1999 U.S. District Court Judge Gladys Kessler found that citizens are barred by a provision of the Superfund law ("Section 113(h)") from bringing suit to compel the DOE to follow the law during the pendency of a cleanup. However, the Judge agreed that the Department of Energy's ongoing recycling of radioactive material from Oak Ridge for "unrestricted" commercial uses poses "great" and unexamined potential for environmental harm. "In the absence of Section 113(h)," the Judge stated, "an Environmental Impact Statement would clearly have been mandated."[2]

Judge Kessler's decision stated:

> The Court acknowledges and shares the many concerns raised by [PACE and NRDC]. The potential for environmental harm is great, especially given the unprecedented amount of hazardous materials which [DOE and BNFL] seek to release.

The Judge found, "ample evidence that the proposed recycling significantly affects the quality of the human environment." Two years following the August, 1997 contract award, and following millions of taxpayer dollars expended on the project, the Judge found that "Plaintiffs allege and [DOE and BNFL] have not disputed, that there is no data regarding the process efficacy or track record with respect to safety."

Finally, the Judge termed "startling and worrisome" the absence of opportunity for "public scrutiny or input on a matter of such grave importance." She explained that "[t]he lack of public scrutiny is only compounded by the fact that the recycling process which BNFL intends to use is entirely experimental at this stage." The Judge also found "quite troubling" that DOE and BNFL "have provided no adequate explanation" for their failure to provide for public notice of the recycling project as required by the governing Federal Facilities Agreement among EPA, DOE, and the State of Tennessee.

In sum, the June 29 decision confirmed that -- as labor, citizen, and environmental groups stated prior to the 1997 contract award -- Oak Ridge recycling is proceeding in callous and knowing disregard of the public procedures required by law and the Administration's commitment to the environment and reinventing government in a manner that will enhance the public's trust -- rather than reaffirm its suspicions.

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[2] PACE notes that Commissioner McGaffigan's comments on Judge Kessler's decision indicate that he may read the decision as suggesting that the Court's decision found recycling to be appropriate if conducted through a rulemaking. PACE respectfully points out that the Court's decision did not endorse the proposition that free release, via rulemaking or otherwise, is an outcome in keeping with the law.

Required Rulemaking Action:

Therefore, as a predicate to any rule, the Commission must provide for factfinding regarding:

* Why and how did government officials permit the Oak Ridge recycling to proceed in violation of the law;

* Why and how did BNFL (and its teaming partners, including SAIC) participate in a project which was plainly being undertaken in disregard of environmental law and public participation requirements;

* What lessons does the failure of the government and its contractors to abide by environmental law and public participation requirements in this precedent setting free release project teach about the wisdom of sanctioning future free releases?

2. The State of Tennessee Is Licensing Free Releases in Evident Violation of Law and Policy

On March 26, 1999, the Tennessee Department of Environment and Conservation ("TDEC") approved a license amendment by which BNFL is proceeding to recycle contaminated waste from Oak Ridge for free release. As found by Judge Kessler, TDEC's action took place without opportunity for public scrutiny. It now appears that TDEC acted without lawful authority as well.

TDEC did not provide a public notice of the licensing amendment it was considering; nor did TDEC's license amendment itself state any basis in authority for its action.[3]

As explained in detail in the October 25, 1999 letter to Chairman Dicus [4] from Congressmen Dingell, Klink, and Markey, TDEC's licensing appears to be in violation of NRC regulations, the Atomic Energy Act, and the TDEC/NRC delegation Agreement. Among other things, the Congressmen explained:

> Such a release appears to violate numerous NRC regulations which were developed specifically to prohibit the uncontrolled release by

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[3] PACE and NRDC have, by letters of October 5 and October 18,1999, asked TDEC to provide the legal authority under which it acted, as well as further information supporting its closed decisionmaking. TDEC has not yet provided a written response to these queries.

[4] PACE presumes that this letter and its attachments will be incorporated in full in the record of the instant proceeding. (PACE would be pleased to provide a copy for the record of this, and further documents, referenced herein).

> radioactive byproduct material into general commerce. These regulations implement a decades-long and still-existing policy of the Atomic Energy Commission to keep radioactive byproduct material out of the hands of the general public for safety and national security reasons.

Moreover, as the Congressmen's letter explained in detail, Tennessee's action is at odds with the requirement that state actions be compatible with this Commission's actions. Indeed, this Commission's proposed rulemaking confirms the absence of federal standards for release of, at the least, volumetrically contaminated materials. Thus, as the Congressmen have stated: "[b]ecause the NRC has set no release standard for volumetrically contaminated materials and is in the process of beginning a rulemaking to establish that release standard, Tennessee cannot establish a standard in an individual license amendment and maintain compatability."

TDEC's issuance of a license in the evident absence of authority -- and in direct contravention of longstanding law and policy to the contrary -- raises the most serious questions about the integrity of controls on the public release of radioactive materials. Put simply, if the TDEC can act unlawfully, with the active support of the U.S. Department of Energy and the passive acquiescence of this Commission, why should any citizen have reason to credit the integrity of any future regulation of public releases of radioactively contaminated materials?

Required Rulemaking Action:

As a predicate to any consideration of NRC sanctioned future releases, therefore, the Commission must:

* confirm the unlawfulness of the BNFL/MSC TDEC license and

* provide for the development of a full record regarding how this unlawful licensing could have taken place in full view of the NRC and the DOE;

* determine what lessons are to be learned from the failure of the licensing process in the precedent setting Oak Ridge case?

B. This Commission Must Require Full Disclosure About Past and Continuing Practices of Concealment Regarding Public Releases of Radiation

As the veil of Cold War secrecy is lifted, it is increasingly apparent that this Commission, at least through its predecessor agency the Atomic Energy Commission ("AEC"), pursued a calculated and secret policy of keeping the public in the dark about radiation risk, including public releases of radiation. The recently released documentation shows the government did so not for reasons of national security, but because it feared embarrassment to itself and/or its contractors, and because it did not trust the public with information about radiation risk.

Unfortunately, recent revelations confirm that this policy did not vanish, but has continued to be the premise of ongoing Federally funded (indeed subsidized) radioactive metals recycling. Until this pattern of secrecy and deception regarding the public release of radiation is fully exhumed and evaluated, there can be no basis for a rule that provides for broad public releases of radioactively contaminated materials.

1. From its 1947 Inception this Commission's Predecessor Kept Public Radiation Releases Secret to Avoid Embarrassment to the Government and Its Contractors

In January 1994 President Clinton created the Advisory Committee on Human Radiation Experiments to retrieve and tell the full story of government-sponsored human radiation experiments conducted during the Cold War.

In October 1995 the Committee reported to the President that at its 1947 inception the Atomic Energy Commission ("AEC") – the predecessor to today's DOE and NRC– kept health and safety data and analysis secret to avoid embarrassment and liability to the government and its contractors. Remarkably, these rationale, the documents showed, were employed when officials knew that national security itself would not justify keeping the information secret.[5]

The documents uncovered and made public by the President's Committee revealed that the suppression of health and safety information was directed at the government's nuclear weapons workers and their representatives and their communities, as well as experimental subjects. Thus, a 1947 memo from the AEC Director of Oak Ridge operations to the AEC General Manager stated:

> Papers referring to levels of soil and water contamination surrounding Atomic Energy Commission installations, idle speculation on future genetic effects of radiation and papers dealing with potential process ha prejudicial to the best interests of the government. Every such release is reflected in an increase in insurance claims, increased difficulty in labor relations and adverse public sentiment.

The Committee did not find that this policy was ever formally and effectively countermanded -- by the AEC or its successors. (Indeed, the policy was only made public following the President's creation of the Committee in 1995)

2. It Now Appears That the AEC's Secret Policy Continued In Secret For Years and May Never Have Been Effectively Countermanded

Now, documentation emerging from recent revelations about Paducah and other sites

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[5] *See Final Report: Advisory Committee on Human Radiation Experiments*, at chapter 13 ("Secrecy, Human Radiation Experiments, and Intentional Releases").

shows that the policy may have continued unabated into the 1960's and later. A March 11, 1960 AEC memo ("Neptunium Contamination Problem, Paducah, Kentucky, February 4, 1960") shows that top AEC biomedical officials recognized that "possibly 300 people at Paducah should be checked out" for neptunium contamination, but that there was hesitation to "proceed to intensive studies because of the union's use of this as an excuse for hazard pay."

In short, it appears that the policy and practice of public deception engaged in by the AEC regarding public risk continued in effect; there is no public evidence as to when, if ever, it was effectively countermanded.

3. The Current Release of Oak Ridge Materials Is Now Known to Have Been Forwarded In Calculated Darkness

As quoted above, in her June, 1999 decision, Federal Judge Kessler confirmed that the ongoing recycling sponsored by DOE and conducted by BNFL has been conducted in the disturbing absence of the most elemental public review. Documents produced only in the litigation make plain that this was no accident. Thus, a previously secret BNFL strategy memo explained that quick action was needed to avoid public discussion:

> Issuance of radioactive materials licenses within the State of Tennessee has not previously involved a public consultation process. It is unlikely that this will continue to be the case for the long term...Therefore, amendment to the existing MSC license for release of a small quantity of decontaminated nickel is being pursued to establish the precedent for nickel release.

In sum, there is ample basis to presume that government sanctioned release of radioactive materials for general public use cannot be conducted by the government and its contractors with the full and fair disclosure required by the public interest.

Required Rulemaking Action:

Any proposal to permit the free release of radioactive materials cannot proceed in the absence of this Commission's provision for the full development of facts regarding:

- The extent to which the AEC and its successors and their contractors have historically kept the public uninformed regarding public releases of radiation;

- The extent to which the past policies and practices have been effectively countermanded (in particular, what role did this Commission, its Agreement State, and DOE play in BNFL's calculated design to avoid public review of its free release proposals)?

C. The Commission Must Promptly Account for Its Reliance on Experts with Undisclosed Conflict of Interest

The June 30, 1998 Memorandum recording the Commission's approval of "Option 2" (to "promulgate a dose-based regulation") states that:

> The proposed standard for clearance should...draw from the IAEA's interim report and the SAIC analysis.

The Commission has apparently failed to inform the public (assuming it were itself informed) that SAIC has a substantial interest in the outcome of this proceeding. Indeed, as part of the BNFL team, it is the beneficiary of a share of the quarter billion dollar contract under which BNFL is proceeding with the Oak Ridge recycling. Moreover, PACE understands that on August 20, 1999 SAIC sought a contract from a group at yet a further DOE uranium enrichment site to assist in further efforts to free release radioactive materials. The Commission's reliance on SAIC, particularly where it has failed to provide simultaneous public disclosure of the full range of SAIC's interests in the promotion of recycling and release of radioactive materials is inexplicable. [6]

Required Rulemaking Action:

As a predicate to any Commission reliance on SAIC analyses or data, therefore, it is imperative that the Commission:

- Provide a full public disclosure of any interests that SAIC may have in the recycling of radioactive wastes, including, but not limited to: (1) its participation

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[6] We note that the Atomic Energy Act, at 42 U.S. Code Section 2210(a) requires that the Commission shall not employ a contractor in the absence of: (1) full disclosure by that contractor of all relevant interests; (2) a determination by the Commission that:

> (1) it is unlikely that a conflict of interest would exist; or
>
> (2) such conflict has been avoided after appropriate conditions have been included in such contract...except that if the Commission determines that such conflict of interest cannot be avoided by including appropriate conditions therein, the Commission may enter into such contract...if the Commission determines that it is in the best interests of the United States to do so and includes appropriate conditions in such contract...to mitigate such conflict.

in the quarter billion dollar BNFL recycling contract; (2) any other assistance it is providing, has provided, or is seeking to provide, to entities seeking to recycle or release nuclear wastes; (3) any business or strategic plans it has to provide consulting or analyses to any entity(ies) engaged in recycling

- Provide full opportunity for critical scrutiny of SAIC's analysis, including, but not limited to: (1) provision for public disclosure of all data relied on or available to SAIC, and all SAIC drafts and workpapers; (2) provision for questioning of SAIC regarding its analyses; (3) provision of funding for alternative analyses to be performed by experts that are not possessed of the conflicting interest(s) possessed by SAIC.

D. Radioactive Metals Recycling Activity in Oak Ridge, TN Indicates that the Licensee Cannot be Presumed to Have The Competence Required to Follow Public Protection Rules

The record made public as a result of the PACE/NRDC court proceeding shows that DOE failed to investigate, and BNFL failed to disclose, BNFL's incompetent and unlawful management practices in advance of the contract award. For example:

-- BNFL did not disclose to DOE that its own review of MSC [7] management found

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[7] MSC is the BNFL subsidiary which is performing the recycling in Oak Ridge. In advance of BNFL's purchase of 100% ownership of MSC, BNFL official James McAnally performed a management audit of MSC. He concluded that as of May 1997 – just before the August, 1997 contract award – MSC suffered management weakness:

> Q. What did the report have to say about the management weaknesses of MSC?
>
> A. I don't recall the exact language, but the – basically, that the organizational structure was weak, that management did not have the professional management skills to manage an enterprise the kind of output that was needed from the BNFL assets.
>
> * * *
>
> A. . . . I rated the quality of the workforce as being extremely good, but the overall management, strategic thinking, organization, meeting goals, execution, I rated as weak.

(McAnally deposition at 49, 51-52.)

MSC's management to be incompetent;.

-- DOE did not do any analysis of MSC's past competence (even though it had been under DOE/Morgantown contract) prior to the contract award;

-- a DOE January, 1998 post-contract audit found that MSC -- which had been under DOE contract for years -- was in noncompliance with a wide array of health and safety requirements.[8]

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[8] Thus, among other things, DOE's auditors found:

> Training - a training program has not been implemented. Training and qualification records are unsatisfactory. Training did not provide personnel with an adequate understanding of work fundamentals. The training program has been identified as a recurring deficiency by MSC.
>
> Documents/Records Management - Documents/Records management have not been formally developed and thus the integrity of the records can not be ensured.
>
> Procurement Control - The present Contracts and Procurement process does not ensure that procured material or services meets the established requirements and perform as specified.
>
> Corrective Action and Problem Resolution - . . . many noted deficiencies have not been corrected in a timely manner.

The auditors found deficiencies in sampling and laboratory measurements:

> Formal sampling protocols have not been developed for various MSC sampling activities. . .Comparison of [sampling] activities with Environmental Protection Agency (EPA) standard methodology indicated several weaknesses:
>
> * * *
>
> A formal analytical laboratory logkeeping program has not been established.
>
> * * *
>
> Analytical laboratory balances have not been calibrated.

(Audit at 7;9).

It must be emphasized that the deficiencies found in 1997 and 1998 existed following years of presumed oversight by both DOE (to which MSC was under contract) and TDEC (to which it was a licensee.) It now appears that TDEC amended the BNFL (MSC) license in March, 1999 in the absence of any independent review that might show that the deficiencies found by the DOE have, in fact, been cured. [9]

Required Rulemaking Action:

As a predicate to any rulemaking, therefore, the Commission must provide for full fact

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The DOE auditors did not seek to identify OSHA deficiencies, but nonetheless found them:

> The MSC Lock Out/Tag Out (LO/TO) Program does not meet applicable regulatory requirements.
>
> * * *
>
> The MSC Respiratory Program does not meet applicable regulatory requirements.

(Audit at 10.)

[9] This failure is striking given TDEC's own recognition of the inadequacy of DOE review. Thus, the following comments from Mr. Mike Mobley, TDEC's director of the division of radiological health:

> "In years past, a lot of material went out of these [DOE] facilities that wouldn't meet commercial world standards," says Michael Mobley, the director of the division of radiological health in the Tennessee Department of Energy and Conservation. And the cavalier attitude at the DOE is no help, he says. "There's been some issue about this; 'Well, if we miss one or two spots it's no big deal because the standard is so strict.' If every once in a while stuff is going out that's hotter than standard, how much is going out that's hotter than standard? Their survey processes are just going to evolve into nothing."

See "Nuclear Spoons: Hot Metal May Find its Way to Your Dinner Table," the Progressive, October 1998, quotation, at page 26.

development regarding:

- why and how BNFL/MSC was permitted by the U.S. government to obtain a quarter billion dollar recycling contract in the absence of minimally requisite inquiry as to its ability to perform work in compliance with basic environmental, health, and safety requirements;

- why and how TDEC was permitted to license MSC in the absence of its own independent review of the findings of DOE auditors and BNFL's own management;

- what lessons must be learned from the inability of the government to assure that those employed to release radioactive metals for unrestricted public use will have an impeccable track record that is thoroughly checked out in advance of their employment;

- whether DOE, as a primary advocate for putting radioactive metals into commerce for use in every day products, has (as indicated TDEC official Mobley) permitted surface contaminated metals to be free released from its facilities that were in excess of the existing NUREG guidance 1.86, and how these releases were detected;

- whether DOE, in its recent Phase I Oversight Report on Paducah, determined that its Management and Integrating Contractor lacked adequate procedures, as already required by DOE Orders and NUREG 1.86, to assure that there was no plutonium contamination on fluorine cells that were shipped for unrestricted re-use to Pennsylvania and to DOD/CIA operations.

E. The Commission Cannot Consider Public Release of Radiation Absent Full Consideration of the Historic Failure to Fully Protect Workers Who Will Be Exposed by these Releases

The releases of radiation proposed here will effect workers in multiple respects. First, they will effect those who work in the recycling process itself. Second, they will expose workers in the innumerable settings in which the released material will be processed and employed.

The public record, as ongoing hearings and news articles regarding Paducah and other DOE sites confirms, provides abundant evidence that the government has been unable to account for the exposures of those -- including PACE members -- who work in and around government licensed nuclear weapons facilities. There is no reason to assume that the situation will be any different where those facilities are used for the recycling of waste.

To the contrary, the ongoing DOE/BNFL/Oak Ridge recycling is hallmarked by:

-- Federal government award of a quarter billion dollar recycling contract without any inquiry as to the contractor's (i.e., MSC's) compliance with worker protection requirements;

-- the belated, post contract award, DOE discovery that the contractor was in profound non-compliance with OSHA, as well as many other rules designed to protect workers;

-- the TDEC grant of a license without independent inquiry as to whether BNFL/MSC are truly capable of complying with worker safety requirements;

-- the absence of any evident analysis of the risks to workers (including analyses of exposure pathways, particularly with regard to subsequent reuse, where no radiation controls are required or exist);

-- the absence of any public opportunity for workers to comment on the (unanalyzed and undisclosed) risks to the licensing agency (TDEC).

Moreover, there is no evidence that DOE, BNFL, TDEC, or any other relevant party considered the difficult questions that must be addressed regarding worker exposures in the context of recycling. These include;

-- the routine absence of adequate characterization of the contaminated metals with which the workers must deal[10];

-- the complex exposure pathways that must considered for differing radioisotopes and differing work settings;

-- the likelihood that any protective mechanisms and sampling devices will be imperfect (even when administered by those with a basic level of competence);

-- the fact that, in the absence of labeling, the recycled materials will routinely and continually be used by unknowing workers.

Required Rulemaking Action:

As a predicate to any rulemaking, therefore, the Commission must provide:

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[10] For example, nickel from the Oak Ridge gaseous diffusion plant is contaminated with radioactive technetium, but may also contain amounts of other radioactive elements, including plutonium and neptunium. However, MSC's Valerie MacNair – who coordinates the BNFL/MSC Nickel Recovery Project – explained that MSC has had only limited access to classified documentation that might shed light on the K-25 nickel's characteristics. With regard to the nickel that was made available to MSC , Ms. McNair explained that BNFL/MSC did not sample for anything other than technetium.

- Factfinding regarding the reasons for the failure of the ongoing recycling to assure worker protections, including the failure to provide any public analysis of risk to workers (both involved in recycling and in reuses), the failure to provide full characterization of material to which workers are exposed, the failure to provide for public comments on risk analysis, the choice of a recycling contractor without regard to its compliance with worker protection rules;

- Factfinding and consideration of the government's historic inability to do what is needed to protect of radiation workers from exposures, and the basis, if any, for presuming that these deficiencies will not recur in the recycling and release of radioactive materials;

- Full opportunity to consider the adequacy of understanding regarding exposure pathways that are relevant to worker effects, limitations of measurement methods.

F. This Commission Cannot Consider Future Public Releases of Radioactive Waste until it Fully Accounts to the Public for Past Undisclosed Public Release

In the early 1990's the public was informed that the Atomic Energy Commission ("AEC"), this Commission's predecessor, had sponsored an untold number of secret intentional public releases of radiation, ostensibly for research purposes. Pursuant to the directive of the President, the President's Advisory Commission on Human Radiation Experiments determined that the number of secret and intentional environmental releases of radiation sponsored by the Commission numbered in the hundreds. [11] These releases exposed unknowing citizens in and around to radiation risks which remained undisclosed and unexamined for decades.

It now appears that the secret releases for research purposes may have been accompanied by secret releases of radioactive material for unrestricted use in commerce. Thus, in an October 9, 1953 letter a Vice President of Carbide and Carbon Chemicals Company asked the AEC for permission to release contaminated nickel for commercial use (emphasis added):

> The ingot nickel we are now selling (from uncontaminated scrap) goes to a second melting operation in the manufacture of nickel containing alloys which must be produced slag free. This second melting would insure in the present instance a cleansing operation for removal of the slightly contaminated slag and minimize the possibility of damage in specialized industrial applications which may be radiation sensitive.

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[11] *See Advisory Committee report at chapter 11* ("Intentional Releases: Lifting the Veil of Secrecy").

Since the nickel content of the stainless steels which will be made using the ingot nickel is in the maximum range of 8 to 12%, it is requested that the Commission determine if the ingots from the contaminated scrap can be disposed of through the channels used for disposal of our present ingots and establish the basis on which we can proceed to do so.

Required Rulemaking Acton:

The Carbide and Carbon Company letter raises the following questions, which must be answered as a predicate to any grant by this Commission of authority for future releases:

- Has this Commission, or its predecessor agency, ever sanctioned the release of contaminated materials for commercial use absent full and formal public notice and disclosure?

- Can this Commission provide the public with a full accounting of its disposition of the Carbide and Carbon Company's request, and any similar requests to release contaminated materials for scrap or commercial use?

- Can this Commission fully account for all the metals that became radioactively contaminated under its jurisdiction, to inform the public of the amount, if any, that is currently subject to free use in consumer products?

In short, any rulemaking must provide for full developments of the facts regarding any prior secret releases for commercial uses, as a predicate to the determination of the capacity of this agency to assure the integrity of future releases.

III. The NRC Cannot Permit Free Release of Plutonium and Other Elements or Isotopes that do not Occur in Nature as Background Radiation

Recent public revelations regarding DOE's management of the nuclear weapons complex confirm that PACE members required to work in and around radioactive materials have not been fully aware of the characteristics of the material to which the government and its contractors have exposed them. Thus, for example, it appears that radioactive wastes from the gaseous diffusion plants at Oak Ridge, Paducah, and Portsmouth --- including the materials now being recycled from Oak Ridge -- contain amounts of plutonium whose precise quantity is unknown, and may never be precisely determined. Yet it is just this material which the NRC, DOE, and their contractors now propose to release into the public's hands.

Moreover, the NRC's proposed rulemaking indicates that it is prepared to tolerate the release of amounts of radiation above and beyond that occurring in nature as background radiation. Whatever the basis for this position there is no basis for the tolerance of public release

of any amount of materials not occurring in nature (such as, but not limited to, plutonium) -- particularly in light of the historic inability of the government and its contractors to manage the public releases of radiation in keeping with the requirements of law and the public interest.

Conclusion

In the absence of a full accounting, the public record shows that there is no basis for public trust that any standards for release will of can be complied with; indeed, there is no basis for public trust that the public will even be told when its health is put at risk through violations of these standards. Therefore, and as further discussed above, above and beyond fair and serious consideration of the "no unrestricted release" alternative and the use of a detectability-based standard, rulemaking must provide for:

- full development -- including affirmative and complete disclosure by the government -- of the facts regarding the historic and current competence of official and private institutions to conduct any releases of radioactive materials in accord with the requirements of law. In the absence of such finding, no risk analysis that presumes compliance with regulatory standards can be credited.

- provision for tracking and recall of any released material based on the likelihood -- as shown by developing public record -- that government agencies and contractors cannot be presumed to release materials in keeping with the requirements of the law and the public interest.

- preclusion of any commercial uses that may permit radioactive substances to come into intimate contact with consumers and members of the public;

- preclusion of any unrestricted release of plutonium and other radioactive elements or isotopes that do not naturally occur in nature.

For clarification or amplification of these comments, please contact Richard Miller at 202-637-0400 or Dan Guttman at 202/638-6050.

Current NRC Website Addresses and other Information Related to Control of Solid Materials

- Website address for Issues Paper and other information:

http://ruleforum.llnl.gov/cgibin/rulemake?source=SM_RFC

- Website address for NUREG-1640:

http://www.nrc.gov/NRC/NUREGS/SR1640/V1&2/index.html

List server on control of solid materials in place

- To subscribe to the list server "controlsolids"
  - address e-mail to "listproc@nrc.gov"
  - the subject line should be blank
  - the message body should have the format: **subscribe controlsolids f ull name** (e.g., subscribe controlsolids John Smith)
- To unsubscribe, the message body should contain "unsubscribe controlsolids"
- The commands are not case sensitive

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- Website address for NUREG-1640:

http://www.nrc.gov/NRC/NUREGS/SR1640/V1&2/index.html

List server on control of solid materials in place

- To subscribe to the list server "controlsolids"
  - address e-mail to "listproc@nrc.gov"
  - the subject line should be blank
  - the message body should have the format: **subscribe controlsolids f ull name** (e.g., subscribe controlsolids John Smith)
- To unsubscribe, the message body should contain "unsubscribe controlsolids"
- The commands are not case sensitive

U.S. NUCLEAR REGULATORY COMMISSION

Revision 3
June 1999

REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

REGULATORY GUIDE 8.13

(Draft was issued as DG-8014)

INSTRUCTION CONCERNING PRENATAL RADIATION EXPOSURE

A. INTRODUCTION

The Code of Federal Regulations in 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," in Section 19.12, "Instructions to Workers," requires instruction in "the health protection problems associated with exposure to radiation and/or radioactive material, in precautions or procedures to minimize exposure, and in the purposes and functions of protective devices employed." The instructions must be "commensurate with potential radiological health protection problems present in the work place."

The Nuclear Regulatory Commission's (NRC's) regulations on radiation protection are specified in 10 CFR Part 20, "Standards for Protection Against Radiation"; and 10 CFR 20.1208, "Dose to an Embryo/Fetus," requires licensees to "ensure that the dose to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman, does not exceed 0.5 rem (5 mSv)." Section 20.1208 also requires licensees to "make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman." A declared pregnant woman is defined in 10 CFR 20.1003 as a woman who has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception.

This regulatory guide is intended to provide information to pregnant women, and other personnel, to help them make decisions regarding radiation exposure during pregnancy. This Regulatory Guide 8.13 supplements Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Radiation Exposure" (Ref. 1), which contains a broad discussion of the risks from exposure to ionizing radiation.

Other sections of the NRC's regulations also specify requirements for monitoring external and internal occupational dose to a declared pregnant woman. In 10 CFR 20.1502, "Conditions Requiring Individual Monitoring of External and Internal Occupational Dose," licensees are required to monitor the occupational dose to a declared pregnant woman, using an individual monitoring device, if it is likely that the declared pregnant woman will receive, from external sources, a deep dose equivalent in excess of 0.1 rem (1 mSv). According to Paragraph (e) of 10 CFR 20.2106, "Records of Individual Monitoring Results," the licensee must maintain records of dose to an embryo/fetus if monitoring was required, and the records of dose to the embryo/fetus must be kept with the records of dose to the declared pregnant woman. The declaration of pregnancy must be kept on file, but may be maintained separately from the dose records. The licensee must retain the re-

quired form or record until the Commission terminates each pertinent license requiring the record.

The information collections in this regulatory guide are covered by the requirements of 10 CFR Parts 19 or 20, which were approved by the Office of Management and Budget, approval numbers 3150-0044 and 3150-0014, respectively. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

B. DISCUSSION

As discussed in Regulatory Guide 8.29 (Ref. 1), exposure to any level of radiation is assumed to carry with it a certain amount of risk. In the absence of scientific certainty regarding the relationship between low dose exposure and health effects, and as a conservative assumption for radiation protection purposes, the scientific community generally assumes that any exposure to ionizing radiation may cause undesirable biological effects and that the likelihood of these effects increases as the dose increases. At the occupational dose limit for the whole body of 5 rem (50 mSv) per year, the risk is believed to be very low.

The magnitude of risk of childhood cancer following in utero exposure is uncertain in that both negative and positive studies have been reported. The data from these studies "are consistent with a lifetime cancer risk resulting from exposure during gestation which is two to three times that for the adult" (NCRP Report No. 116, Ref. 2). The NRC has reviewed the available scientific literature and has concluded that the 0.5 rem (5 mSv) limit specified in 10 CFR 20.1208 provides an adequate margin of protection for the embryo/fetus. This dose limit reflects the desire to limit the total lifetime risk of leukemia and other cancers associated with radiation exposure during pregnancy.

In order for a pregnant worker to take advantage of the lower exposure limit and dose monitoring provisions specified in 10 CFR Part 20, the woman must declare her pregnancy in writing to the licensee. A form letter for declaring pregnancy is provided in this guide or the licensee may use its own form letter for declaring pregnancy. A separate written declaration should be submitted for each pregnancy.

C. REGULATORY POSITION

1. Who Should Receive Instruction

Female workers who require training under 10 CFR 19.12 should be provided with the information contained in this guide. In addition to the information contained in Regulatory Guide 8.29 (Ref. 1), this information may be included as part of the training required under 10 CFR 19.12.

2. Providing Instruction

The occupational worker may be given a copy of this guide with its Appendix, an explanation of the contents of the guide, and an opportunity to ask questions and request additional information. The information in this guide and Appendix should also be provided to any worker or supervisor who may be affected by a declaration of pregnancy or who may have to take some action in response to such a declaration.

Classroom instruction may supplement the written information. If the licensee provides classroom instruction, the instructor should have some knowledge of the biological effects of radiation to be able to answer questions that may go beyond the information provided in this guide. Videotaped presentations may be used for classroom instruction. Regardless of whether the licensee provides classroom training, the licensee should give workers the opportunity to ask questions about information contained in this Regulatory Guide 8.13. The licensee may take credit for instruction that the worker has received within the past year at other licensed facilities or in other courses or training.

3. Licensee's Policy on Declared Pregnant Women

The instruction provided should describe the licensee's specific policy on declared pregnant women, including how those policies may affect a woman's work situation. In particular, the instruction should include a description of the licensee's policies, if any, that may affect the declared pregnant woman's work situation after she has filed a written declaration of pregnancy consistent with 10 CFR 20.1208.

The instruction should also identify who to contact for additional information as well as identify who should receive the written declaration of pregnancy. The recipient of the woman's declaration may be identified by name (e.g., John Smith), position (e.g., immediate supervisor, the radiation safety officer), or department (e.g., the personnel department).

4. Duration of Lower Dose Limits for the Embryo/Fetus

The lower dose limit for the embryo/fetus should remain in effect until the woman withdraws the declaration in writing or the woman is no longer pregnant. If a declaration of pregnancy is withdrawn, the dose limit for the embryo/fetus would apply only to the time from the estimated date of conception until the time the declaration is withdrawn. If the declaration is

not withdrawn, the written declaration may be considered expired one year after submission.

5. Substantial Variations Above a Uniform Monthly Dose Rate

According to 10 CFR 20.1208(b), "The licensee shall make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman so as to satisfy the limit in paragraph (a) of this section," that is, 0.5 rem (5 mSv) to the embryo/fetus. The National Council on Radiation Protection and Measurements (NCRP) recommends a monthly equivalent dose limit of 0.05 rem (0.5 mSv) to the embryo/fetus once the pregnancy is known (Ref. 2). In view of the NCRP recommendation, any monthly dose of less than 0.1 rem (1 mSv) may be considered as not a substantial variation above a uniform monthly dose rate and as such will not require licensee justification. However, a monthly dose greater than 0.1 rem (1 mSv) should be justified by the licensee.

D. IMPLEMENTATION

The purpose of this section is to provide information to licensees and applicants regarding the NRC staff's plans for using this regulatory guide.

Unless a licensee or an applicant proposes an acceptable alternative method for complying with the specified portions of the NRC's regulations, the methods described in this guide will be used by the NRC staff in the evaluation of instructions to workers on the radiation exposure of pregnant women.

REFERENCES

1. USNRC, "Instruction Concerning Risks from Occupational Radiation Exposure," Regulatory Guide 8.29, Revision 1, February 1996.

2. National Council on Radiation Protection and Measurements, *Limitation of Exposure to Ionizing Radiation*, NCRP Report No. 116, Bethesda, MD, 1993.

APPENDIX

QUESTIONS AND ANSWERS CONCERNING PRENATAL RADIATION EXPOSURE

1. Why am I receiving this information?

The NRC's regulations (in 10 CFR 19.12, "Instructions to Workers") require that licensees instruct individuals working with licensed radioactive materials in radiation protection as appropriate for the situation. The instruction below describes information that occupational workers and their supervisors should know about the radiation exposure of the embryo/fetus of pregnant women.

The regulations allow a pregnant woman to decide whether she wants to formally declare her pregnancy to take advantage of lower dose limits for the embryo/fetus. This instruction provides information to help women make an informed decision whether to declare a pregnancy.

2. If I become pregnant, am I required to declare my pregnancy?

No. The choice whether to declare your pregnancy is completely voluntary. If you choose to declare your pregnancy, you must do so in writing and a lower radiation dose limit will apply to your embryo/fetus. If you choose not to declare your pregnancy, you and your embryo/fetus will continue to be subject to the same radiation dose limits that apply to other occupational workers.

3. If I declare my pregnancy in writing, what happens?

If you choose to declare your pregnancy in writing, the licensee must take measures to limit the dose to your embryo/fetus to 0.5 rem (5 millisievert) during the entire pregnancy. This is one-tenth of the dose that an occupational worker may receive in a year. If you have already received a dose exceeding 0.5 rem (5 mSv) in the period between conception and the declaration of your pregnancy, an additional dose of 0.05 rem (0.5 mSv) is allowed during the remainder of the pregnancy. In addition, 10 CFR 20.1208, "Dose to an Embryo/Fetus," requires licensees to make efforts to avoid substantial variation above a uniform monthly dose rate so that all the 0.5 rem (5 mSv) allowed dose does not occur in a short period during the pregnancy.

This may mean that, if you declare your pregnancy, the licensee may not permit you to do some of your normal job functions if those functions would have allowed you to receive more than 0.5 rem, and you may not be able to have some emergency response responsibilities.

4. Why do the regulations have a lower dose limit for the embryo/fetus of a declared pregnant woman than for a pregnant worker who has not declared?

A lower dose limit for the embryo/fetus of a declared pregnant woman is based on a consideration of greater sensitivity to radiation of the embryo/fetus and the involuntary nature of the exposure. Several scientific advisory groups have recommended (References 1 and 2) that the dose to the embryo/fetus be limited to a fraction of the occupational dose limit.

5. What are the potentially harmful effects of radiation exposure to my embryo/fetus?

The occurrence and severity of health effects caused by ionizing radiation are dependent upon the type and total dose of radiation received, as well as the time period over which the exposure was received. See Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Exposure" (Ref. 3), for more information. The main concern is embryo/fetal susceptibility to the harmful effects of radiation such as cancer.

6. Are there any risks of genetic defects?

Although radiation injury has been induced experimentally in rodents and insects, and in the experiments was transmitted and became manifest as hereditary disorders in their offspring, radiation has not been identified as a cause of such effect in humans. Therefore, the risk of genetic effects attributable to radiation exposure is speculative. For example, no genetic effects have been documented in any of the Japanese atomic bomb survivors, their children, or their grandchildren.

7. What if I decide that I do not want any radiation exposure at all during my pregnancy?

You may ask your employer for a job that does not involve any exposure at all to occupational radiation dose, but your employer is not obligated to provide you with a job involving no radiation exposure. Even if you receive no occupational exposure at all, your embryo/fetus will receive some radiation dose (on average 75 mrem (0.75 mSv)) during your pregnancy from natural background radiation.

The NRC has reviewed the available scientific literature and concluded that the 0.5 rem (5 mSv) limit

provides an adequate margin of protection for the embryo/fetus. This dose limit reflects the desire to limit the total lifetime risk of leukemia and other cancers. If this dose limit is exceeded, the total lifetime risk of cancer to the embryo/fetus may increase incrementally. However, the decision on what level of risk to accept is yours. More detailed information on potential risk to the embryo/fetus from radiation exposure can be found in References 2-10.

8. What effect will formally declaring my pregnancy have on my job status?

Only the licensee can tell you what effect a written declaration of pregnancy will have on your job status. As part of your radiation safety training, the licensee should tell you the company's policies with respect to the job status of declared pregnant women. In addition, before you declare your pregnancy, you may want to talk to your supervisor or your radiation safety officer and ask what a declaration of pregnancy would mean specifically for you and your job status.

In many cases you can continue in your present job with no change and still meet the dose limit for the embryo/fetus. For example, most commercial power reactor workers (approximately 93%) receive, in 12 months, occupational radiation doses that are less than 0.5 rem (5 mSv) (Ref. 11). The licensee may also consider the likelihood of increased radiation exposures from accidents and abnormal events before making a decision to allow you to continue in your present job.

If your current work might cause the dose to your embryo/fetus to exceed 0.5 rem (5 mSv), the licensee has various options. It is possible that the licensee can and will make a reasonable accommodation that will allow you to continue performing your current job, for example, by having another qualified employee do a small part of the job that accounts for some of your radiation exposure.

9. What information must I provide in my written declaration of pregnancy?

You should provide, in writing, your name, a declaration that you are pregnant, the estimated date of conception (only the month and year need be given), and the date that you give the letter to the licensee. A form letter that you can use is included at the end of these questions and answers. You may use that letter, use a form letter the licensee has provided to you, or write your own letter.

10. To declare my pregnancy, do I have to have documented medical proof that I am pregnant?

NRC regulations do not require that you provide medical proof of your pregnancy. However, NRC regulations do not preclude the licensee from requesting medical documentation of your pregnancy, especially if a change in your duties is necessary in order to comply with the 0.5 rem (5 mSv) dose limit.

11. Can I tell the licensee orally rather than in writing that I am pregnant?

No. The regulations require that the declaration must be in writing.

12. If I have not declared my pregnancy in writing, but the licensee suspects that I am pregnant, do the lower dose limits apply?

No. The lower dose limits for pregnant women apply only if you have declared your pregnancy in writing. The United States Supreme Court has ruled (in *United Automobile Workers International Union v. Johnson Controls, Inc.*, 1991) that "Decisions about the welfare of future children must be left to the parents who conceive, bear, support, and raise them rather than to the employers who hire those parents" (Reference 7). The Supreme Court also ruled that your employer may not restrict you from a specific job "because of concerns about the next generation." Thus, the lower limits apply only if you choose to declare your pregnancy in writing.

13. If I am planning to become pregnant but am not yet pregnant and I inform the licensee of that in writing, do the lower dose limits apply?

No. The requirement for lower limits applies only if you declare in writing that you are already pregnant.

14. What if I have a miscarriage or find out that I am not pregnant?

If you have declared your pregnancy in writing, you should promptly inform the licensee in writing that you are no longer pregnant. However, if you have not formally declared your pregnancy in writing, you need not inform the licensee of your nonpregnant status.

15. How long is the lower dose limit in effect?

The dose to the embryo/fetus must be limited until you withdraw your declaration in writing or you inform the licensee in writing that you are no longer pregnant. If the declaration is not withdrawn, the written declaration may be considered expired one year after submission.

16. If I have declared my pregnancy in writing, can I revoke my declaration of pregnancy even if I am still pregnant?

Yes, you may. The choice is entirely yours. If you revoke your declaration of pregnancy, the lower dose limit for the embryo/fetus no longer applies.

17. What if I work under contract at a licensed facility?

The regulations state that you should formally declare your pregnancy to the licensee in writing. The licensee has the responsibility to limit the dose to the embryo/fetus.

18. Where can I get additional information?

The references to this Appendix contain helpful information, especially Reference 3, NRC's Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Radiation Exposure," for general information on radiation risks. The licensee should be able to give this document to you.

For information on legal aspects, see Reference 7, "The Rock and the Hard Place: Employer Liability to Fertile or Pregnant Employees and Their Unborn Children—What Can the Employer Do?" which is an article in the journal *Radiation Protection Management*.

You may telephone the NRC Headquarters at (301) 415-7000. Legal questions should be directed to the Office of the General Counsel, and technical questions should be directed to the Division of Industrial and Medical Nuclear Safety.

You may also telephone the NRC Regional Offices at the following numbers: Region I, (610) 337-5000; Region II, (404) 562-4400; Region III, (630) 829-9500; and Region IV, (817) 860-8100. Legal questions should be directed to the Regional Counsel, and technical questions should be directed to the Division of Nuclear Materials Safety.

REFERENCES FOR APPENDIX

1. National Council on Radiation Protection and Measurements, *Limitation of Exposure to Ionizing Radiation*, NCRP Report No. 116, Bethesda, MD, 1993.

2. International Commission on Radiological Protection, *1990 Recommendations of the International Commission on Radiological Protection*, ICRP Publication 60, Ann. ICRP 21: No. 1-3, Pergamon Press, Oxford, UK, 1991.

3. USNRC, "Instruction Concerning Risks from Occupational Radiation Exposure," Regulatory Guide 8.29, Revision 1, February 1996.[1] (Electronically available at www.nrc.gov/NRC/RG/index.html)

4. Committee on the Biological Effects of Ionizing Radiations, National Research Council, *Health Effects of Exposure to Low Levels of Ionizing Radiation* (BEIR V), National Academy Press, Washington, DC, 1990.

5. United Nations Scientific Committee on the Effects of Atomic Radiation, *Sources and Effects of Ionizing Radiation*, United Nations, New York, 1993.

6. R. Doll and R. Wakeford, "Risk of Childhood Cancer from Fetal Irradiation," *The British Journal of Radiology*, 70, 130-139, 1997.

7. David Wiedis, Donald E. Jose, and Timm O. Phoebe, "The Rock and the Hard Place: Employer Liability to Fertile or Pregnant Employees and Their Unborn Children—What Can the Employer Do?" *Radiation Protection Management, 11*, 41-49, January/February 1994.

8. National Council on Radiation Protection and Measurements, *Considerations Regarding the Unintended Radiation Exposure of the Embryo, Fetus, or Nursing Child*, NCRP Commentary No. 9, Bethesda, MD, 1994.

9. National Council on Radiation Protection and Measurements, *Risk Estimates for Radiation Protection*, NCRP Report No. 115, Bethesda, MD, 1993.

10. National Radiological Protection Board, *Advice on Exposure to Ionising Radiation During Pregnancy*, National Radiological Protection Board, Chilton, Didcot, UK, 1998.

11. M.L. Thomas and D. Hagemeyer, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities, 1996," Twenty-Ninth Annual Report, NUREG-0713, Vol. 18, USNRC, 1998.[2]

[1]Single copies of regulatory guides, both active and draft, and draft NUREG documents may be obtained free of charge by writing the Reproduction and Distribution Services Section, OCIO, USNRC, Washington, DC 20555–0001, or by fax to (301)415–2289, or by email to <DISTRIBUTION@NRC.GOV>. Active guides may also be purchased from the National Technical Information Service on a standing order basis. Details on this service may be obtained by writing NTIS, 5285 Port Royal Road, Springfield, VA 22161. Copies of active and draft guides are available for inspection or copying for a fee from the NRC Public Document Room at 2120 L Street NW., Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; telephone (202)634–3273; fax (202)634–3343.

[2]Copies are available at current rates from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20402–9328 (telephone (202)512–1800); or from the National Technical Information Service by writing NTIS at 5285 Port Royal Road, Springfield, VA 22161. Copies are available for inspection or copying for a fee from the NRC Public Document Room at 2120 L Street NW., Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; telephone (202)634–3273; fax (202)634–3343.

FORM LETTER FOR DECLARING PREGNANCY

This form letter is provided for your convenience. To make your written declaration of pregnancy, you may fill in the blanks in this form letter, you may use a form letter the licensee has provided to you, or you may write your own letter.

DECLARATION OF PREGNANCY

To:_____

In accordance with the NRC's regulations at 10 CFR 20.1208, "Dose to an Embryo/Fetus," I am declaring that I am pregnant. I believe I became pregnant in_____ (only the month and year need be provided).

I understand the radiation dose to my embryo/fetus during my entire pregnancy will not be allowed to exceed 0.5 rem (5 millisievert) (unless that dose has already been exceeded between the time of conception and submitting this letter). I also understand that meeting the lower dose limit may require a change in job or job responsibilities during my pregnancy.

_____
(Your signature)

_____
(Your name printed)

_____
(Date)

REGULATORY ANALYSIS

A separate regulatory analysis was not prepared for this regulatory guide. A regulatory analysis prepared for 10 CFR Part 20, "Standards for Protection Against Radiation" (56 FR 23360), provides the regulatory basis for this guide and examines the costs and benefits of the rule as implemented by the guide. A copy of the "Regulatory Analysis for the Revision of 10 CFR Part 20" (PNL-6712, November 1988) is available for inspection and copying for a fee at the NRC Public Document Room, 2120 L Street NW, Washington, DC, as an enclosure to Part 20 (56 FR 23360).

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SECRETARY

September 20, 1999

MEMORANDUM TO: William D. Travers
Executive Director for Operations

FROM: Annette L. Vietti-Cook, Secretary

SUBJECT: STAFF REQUIREMENTS - SECY-99-214 - OPTIONS FOR PROCEEDING WITH NRC'S EFFORTS REGARDING THE RELEASE OF SOLID MATERIALS

The Commission has approved option 1 of SECY-99-214, directing the staff to proceed with the enhanced participatory rulemaking plan and schedule already established, supplemented with the following guidance.

The Executive Director for Operations (EDO) shall keep the Commissioners fully and currently informed of the status and progress of the enhanced participatory rulemaking process, especially of interactions with stakeholders. Under the supervision of the EDO, the Deputy Executive Director for Operations for Materials, Research, and State Programs (DEDMRS) will have direct oversight over activities related to this sensitive rulemaking process. The DEDMRS shall establish direct and frequently used lines of communication with the responsible NMSS management and staff.

In March 2000, concurrent with the staff's submission of the Commission Paper, mentioned in SECY-99-028, on the results of public meetings and the status of the technical analyses, the staff should brief the Commission on stakeholder reactions and concerns, the staff's recommendation on whether to proceed with rulemaking or other staff actions regarding release of solid materials, and the schedule for future staff actions on this effort.

The staff should continue using the current workshops as the scoping process for the draft Generic Environmental Impact Statement (GEIS), as noted in the June 30, 1999, Federal Register notice that announced the workshops.

If the Commission decides to proceed with rulemaking on the release of solid materials, after considering the March 2000 Commission Paper and briefing, the staff should plan to issue a preliminary version of the draft GEIS (through the Federal Register, the rulemaking web site, and other available means) and hold 1 or 2 stakeholder informational meetings to discuss the preliminary version of the draft GEIS. This will provide stakeholders with the necessary technical information, in advance, similar to the Part 35 revision effort, to allow for meaningful participation when the draft GEIS is formally issued for comment.

cc: Chairman Dicus
Commissioner Diaz
Commissioner McGaffigan
Commissioner Merrifield
OGC
CIO
CFO
OCA
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Office Directors, Regions, ACRS, ACNW, ASLBP (via E-Mail)
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
Office of Public Affairs
Washington, D.C. 20555

BIOLOGICAL EFFECTS OF RADIATION

Background

Radiation is all around us occurring naturally in the environment. We are exposed all the time to radiation from radon in the air, uranium, radium and thorium in the earth, cosmic rays from outer space and the sun, radioactive potassium in our food and water, and from within our own bodies. This is commonly called naturally-occurring background radiation. The average radiation exposure to an individual in the United States is about 360 millirem (mrem) or 3.6 millisievert (mSv) per year. About 83% of this [300 mrem (3 mSv)] is from naturally-occurring radon (200 mrem (2 mSv)] that emanates from the ground. The largest man-made source is from medical diagnosis and accounts for about 50 mrem (0.5 mSv) per year (14%). Consumer products such as smoke detectors, exit signs and luminous watch dials contribute about 10 mrem (0.1 mSv) per year (3%).

Background radiation varies depending on the area where you live, the type of housing construction you live in, and what you eat. For instance, Colorado has higher radiation levels because at its high altitude, there is more exposure to cosmic rays and with its naturally-occurring uranium enriched soil, there is more terrestrial radiation. Brick homes have higher natural radiation levels than homes made of other materials such as wood, and certain foods such as bananas, salt, and Brazil nuts naturally contain higher levels of radiation than other foods. Above this background level, the NRC limits maximum radiation dose to the public to 100 mrem per year (1 mSv/yr), and limits dose to adults working in nuclear operations to 5,000 mrem per year (50 mSv/yr).

Discussion

Biological effects of radiation on living cells may result in three outcomes: (1) cells repair themselves, resulting in no damage; (2) cells die, much like millions of body cells do every day, being replaced through normal biological processes; or (3) cells change their reproductive structure. Like most chemical substances, the effects caused by radiation can be seen clearly only at doses much higher than are allowed by Federal regulations.

Biological effects of radiation may be classified as prompt or delayed.

Prompt effects can appear in a matter of minutes to as long as a few weeks after exposure to very high doses of radiation. The higher the dose, the sooner the effects will appear, and the higher the probability of death. For example, in 1986, firefighters battling the fire at the Chernobyl nuclear power plant in the Ukraine died from very large doses [approximately 1,100,000 millirad (11,000 milligray) of radiation. Because radiation affects different people in different ways, it is not possible to indicate what dose is needed to be fatal. However, it is believed that 50% of a population would die within thirty days after receiving a dose between 250,000 to 450,000 mrem (2500 mSv to 4500 mSv). This would vary depending on the health of the individuals before the exposure and the medical care received after the exposure.

It should be noted that the doses referred to above are acute whole body doses, meaning that the whole body is exposed to the radiation in a very short period of time (minutes to hours). Exposure of only parts of the body will likely lead to more localized effects, such as skin burns or tissue damage in the exposed area.

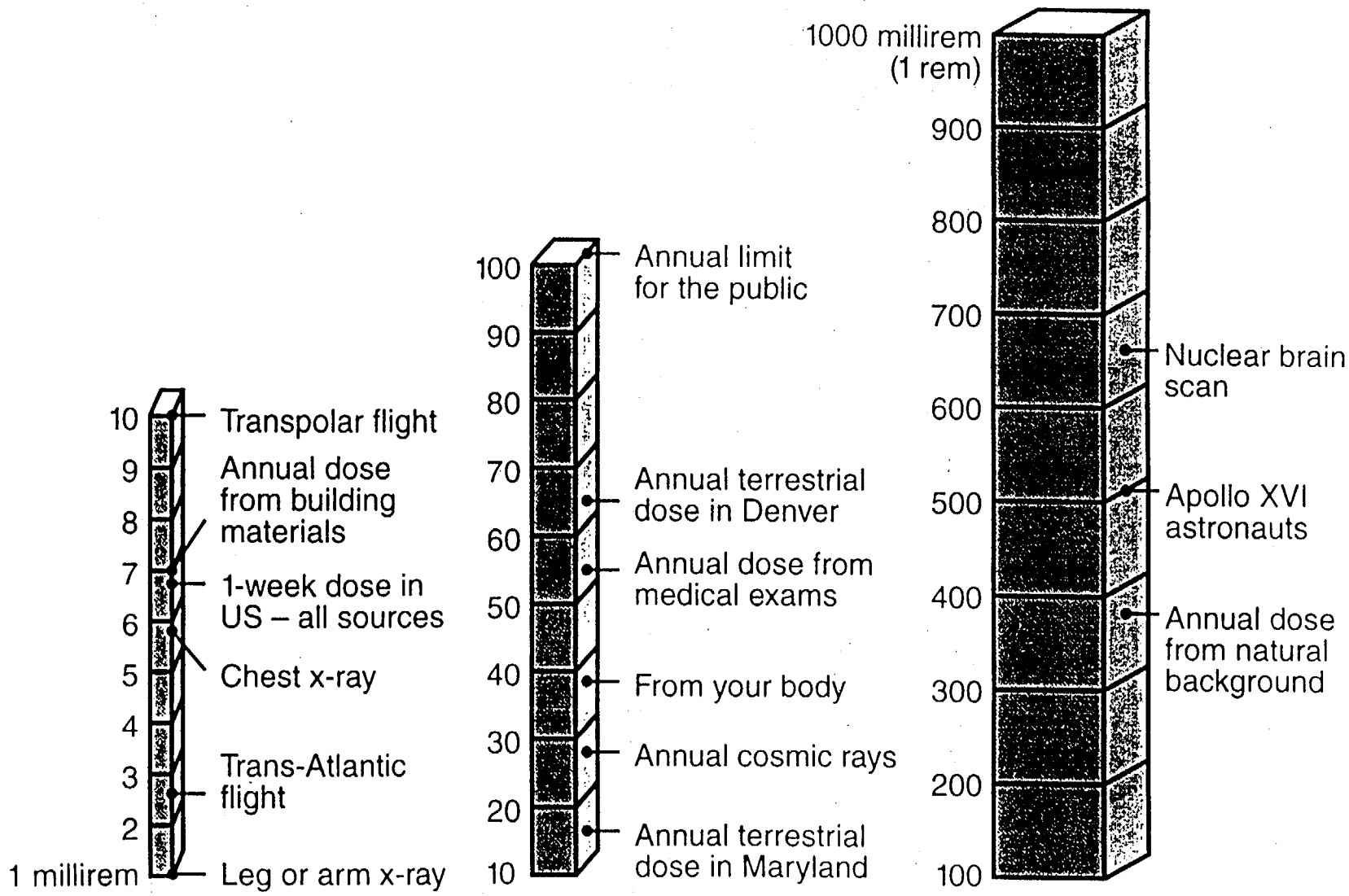
Delayed effects of radiation are effects that appear many years (usually between 5-20 years) after exposure. The period before cancer appears is known as the latent period. Genetic effects and the development of cancer are the primary health concerns. The cancers that may develop as a result of radiation exposure are indistinguishable from those that develop spontaneously or as a result of exposure to other carcinogens. Radiation exposure may be only the initiating step that may or may not eventually lead to cancer. Genetic effects may appear in the exposed person's direct offspring, or may appear several generations later, depending on whether the altered genes are dominant or recessive.

Although radiation is known to cause cancers at high doses, currently there are no data to unequivocally establish the occurrence of cancer following exposure to low doses -- below about 30,000 mrem (300 mSv). Studies of a population exposed to chronic low-levels of radiation above normal background have shown no biological effects. This population includes occupationally exposed radiation workers and people living in areas having high levels of background radiation [above 1,000 mrem (1 mSv) per year].

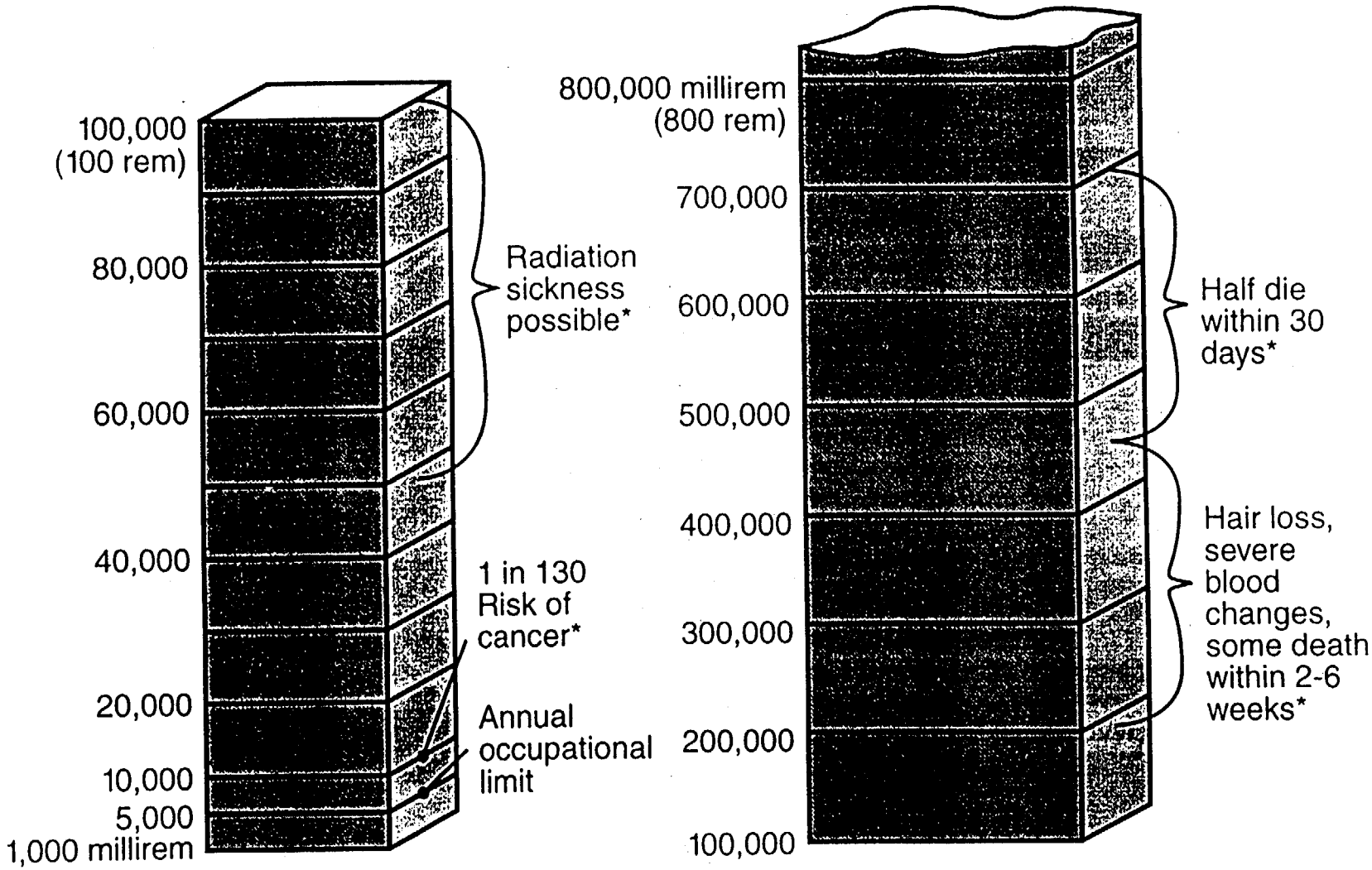
In the absence of sufficient data to the contrary, the radiation protection community conservatively assumes that any amount of radiation may pose some risk for causing cancer and hereditary effects, and that the risk is higher for higher level doses. The NRC's dose limits for both radiation workers and members of the public were developed on that basis. [NRC regulations and radiation exposure limits are contained in Title 10 of the Code of Federal Regulations under Part 20].

Contact:
Cynthia G. Jones, Sr. Level Advisor for Health Physics
Office of Nuclear Material Safety and Safeguards,
U.S. Nuclear Regulatory Commission, Washington, D.C. 20555,
(301) 415-7853

RADIATION DOSES IN PERSPECTIVE

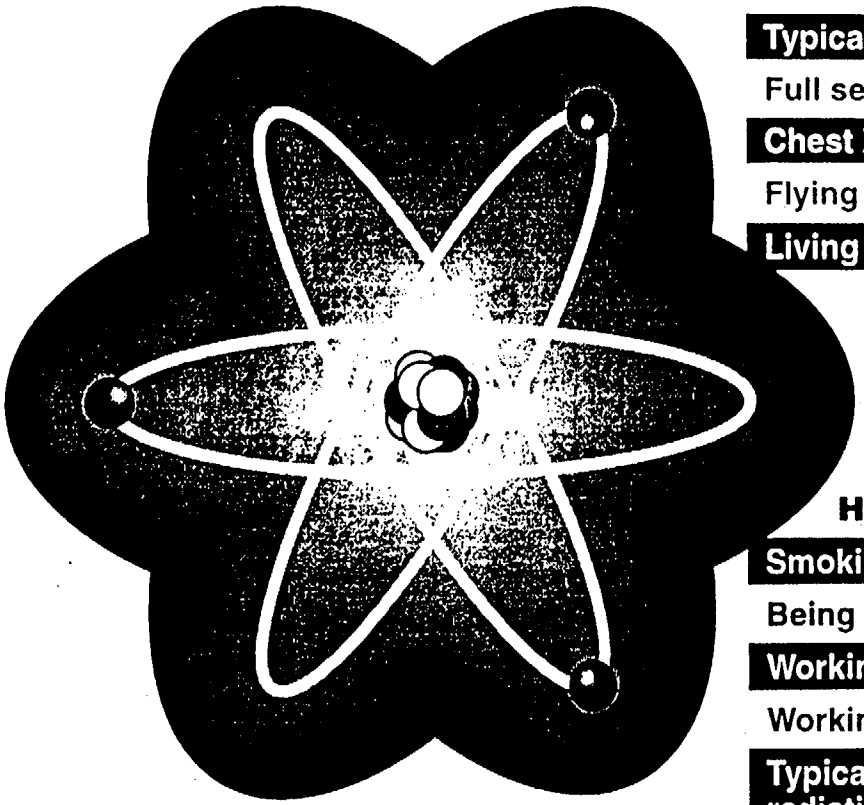


RADIATION DOSES IN PERSPECTIVE



* Doses received over a short time period (hours to days) at high dose rates are "acute" doses

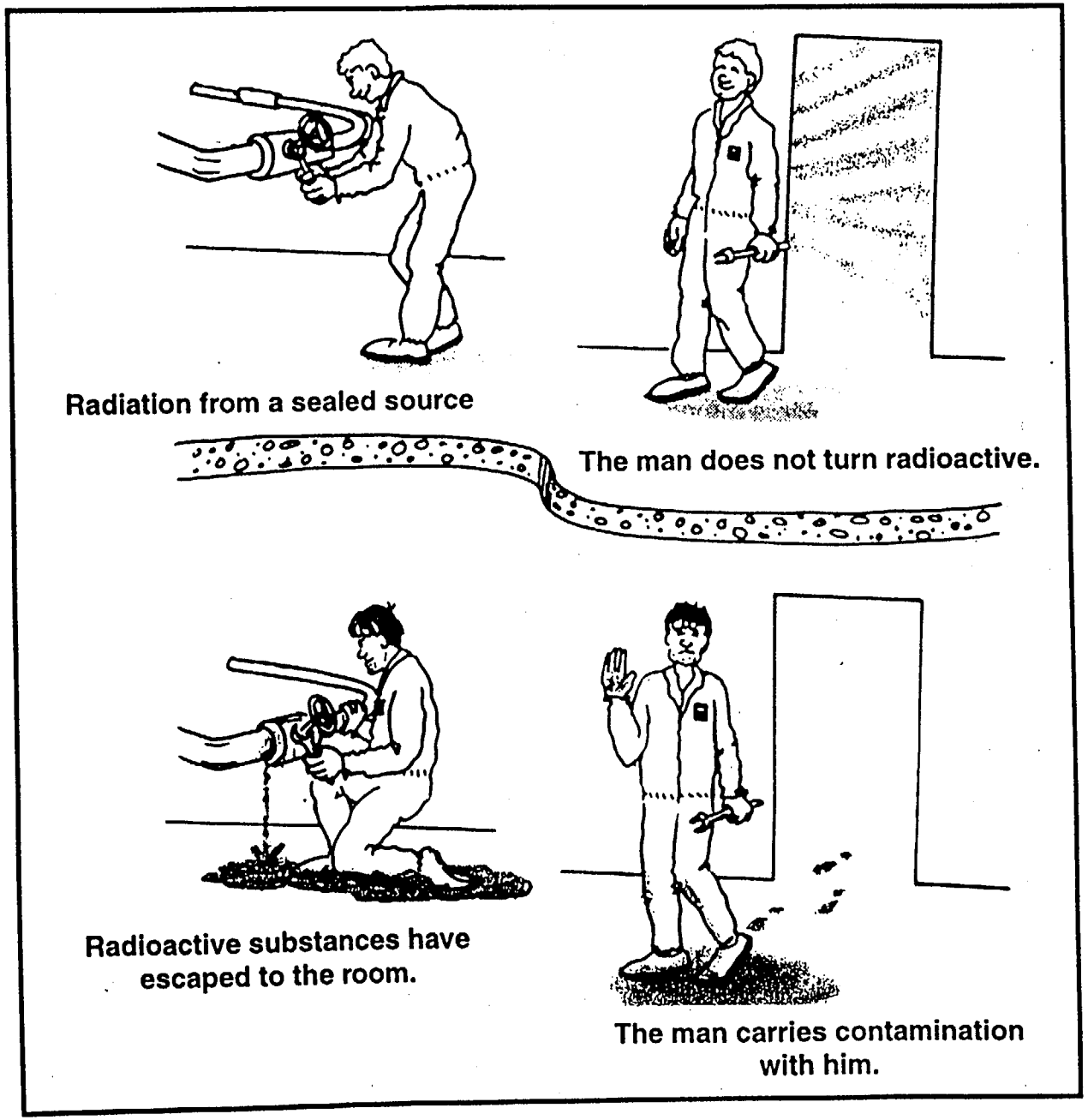
MEASURING RADIATION'S EFFECTS



Activity	Millirems
Typical yearly dose, all sources	360.00
Full set of dental X-rays	40.00
Chest X-ray	8.00
Flying round-trip from D.C. to Los Angeles	5.00
Living outside nuclear power plant for a year	0.10

Health risk	Expected life lost
Smoking a pack of cigarettes a day	6 years
Being 15 percent overweight	2 years
Working in construction	227 days
Working in nuclear plant (1,000 mrem/yr)	51 days
Typical annual background radiation dose (360 mrem/yr)	18 days

Despite the theoretical risk factors, radiation studies for almost a century and follow-up studies of hundreds of thousands of occupationally exposed workers have not revealed any adverse health effect caused by normal exposure to artificial radiation. Dose limits applied to the public are only a small fraction of those for radiation workers.


Radiation from a sealed source
The man does not turn radioactive.
Radioactive substances have escaped to the room.
The man carries contamination with him.

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Sen. Thomas L. Moore, SC Senator, Member, SC Nuclear Waste Task Force

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The Fifteenth Annual Radioactive Waste Management Exchange Decisionmakers' Forum for 1999 will include **a Technical Symposium. Individuals interested in presenting technical papers that offer new/innovative ideas/technologies/studies should fax a 200 word abstract to: Exchange/Monitor Publications & Forums** at 202-296-2805 or e-mail to elh@exchangemonitor.com by **Nov. 29**.

Papers are being solicited for sessions in the following Areas:

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- Material Recycle/Reuse (Regs/Practices)
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- Disposal of Large Scale Equipment
- Entombment as a D&D/Disposal Option
- Disposal of Low Activity & 11(e)2 Waste
- Implementation of DOE Order 435.1
- Disposal of Radwaste Incident to Processing
- Volume Averaging for Rad Content
- Soil Blending to Dilute Rad Contamination
- LLRW Assured Isolation Facilities (Licensing, Oversight, Design)
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- Future Economics of Radwaste Disposal

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Resortview	$ 99.00
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Courtside 1br Suite	$ 120.00

Shared Accommodations, Private Bedroom, Private Bath		
Near Ocean 3br Villa	$230	($ 76.66 per person)
Oceanview 3br Villa	$279	($ 93.00 per person)
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...red **accommodations** should be made by calling the ...um Coordination Office at **1-888-838-8897.**

The 2 and 3 bedroom villas have a private bedroom and bath for each individual, with a shared living room, dining room and kitchen. You may identify with whom you wish to share, otherwise the assignment will be made by the Coordination Office.

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Attendees should fly into Jacksonville International Airport, approximately 40 minutes from Amelia. Worldview Travel, Inc. has obtained preferential airfares for Forum attendees. These fares are lower than published fares, but seats are limited at these rates, so we suggest that you make reservations as early as possible.

For reservations and information Monday-Friday from 9:00 am to 5:30 pm EST dial 800-562-6664, ask for Cindy or Debbie, and identify yourself as an attendee of the **LLRW Decisionmakers' Forum.**

see www.exchangemonitor.com for agenda updates

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January 18-21, 2000

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