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DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF RADIATION CONTROL

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Division of
Radiation Control

IN THE MATTER OF: THE
PROPOSED CHANGE TO UTAH
RADIATION CONTROL RULE
R313-25-8

) TRANSCRIPT OF
) PROCEEDINGS
)
) Public Comment
) Hearing
)

January 26, 2010 * 6:03 p.m.

Before: John Hultquist, Low-Level Waste Section
Manager

Location: Department of Environmental Quality
Division of Radiation Control
168 North 1950 West, Room 101
Salt Lake City, Utah 84116

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PUBLIC SPEAKERS:

Ed Firmage
Robert Henline
Cindy King
George Chapman
John Cuomo
Claire Geddes
Steve Nelson
Geri Roos
Christopher Thomas
Amy O'Connor
Joe Andrade
Helene Cuomo
Sam Gosch
Joe Nickols
Bob Brister

P R O C E E D I N G S

1
2
3 MR. HULTQUIST: Good evening, ladies and
4 gentlemen.

5 I call this meeting to order.

6 This is a public hearing convened under
7 R313-17, of the Utah Radiation Control Rules, to
8 receive oral comments on the proposed rule,
9 R313-25-8: License Requirements for Land Disposal of
10 Radioactive Waste - Technical Analysis.

11 My name is John Hultquist. I am the
12 Low-Level Waste Section Manager in the Department of
13 Environmental Quality, Division of Radiation Control.

14 This proposed rule added language to
15 Section 8 of Chapter 25 regarding land disposal of
16 significant quantities of depleted uranium, i.e.,
17 more than one metric ton in total accumulation, and
18 the requirement to submit for the Executive
19 Secretary's review and approval a performance
20 assessment that demonstrates that the performance
21 standards specified in 10 CFR Part 61 and
22 corresponding provisions of Utah rules will be met.
23 Revision to R313-25-8: License Requirements for Land
24 Disposal of Radioactive Waste - Technical Analysis,
25 was submitted to the Division of Administrative Rules

1 in December 2009, and was published in the January
2 1st, 2010 issue of the Utah State Bulletin, which
3 initiated a 30-day public comment period. In
4 addition to being published in the Utah State
5 Bulletin, the public notice was published in the Salt
6 Lake Tribune, Deseret News and Tooele
7 Transcript-Bulletin, as well as on the DRC web page.

8 If anyone desires to make a statement or
9 comment for the record, please write and sign the
10 public participation sign-in sheet located on the
11 back table near the entrance door.

12 This hearing is being recorded and the
13 proceedings will be available as part of the public
14 participation document prepared for this rule making.

15 Written statements dealing with the
16 proposed rule and dated postmarked no later than
17 February 2nd, 2010 will be accepted for the record,
18 as well as oral statements or comments made this
19 evening.

20 Relevant comments will be considered in
21 the final decision of the proposed rule. This is a
22 hearing to receive oral comments, and as such, there
23 will be no questioning of the participants. I ask
24 that you confine your remarks to the matter at hand.

25 We will now proceed with the hearing

1 comments.

2 And first up, I have Ed Firmage.

3 MR. FIRMAGE: For the last year, the DEQ
4 has struggled to deal with the consequences of the
5 NRC's shockingly shortsighted and
6 scientifically-indefensible decision to classify
7 depleted uranium as Class A low-level waste. The
8 proper response from Utah to this decision should
9 have been, and still could be, to ban depleted
10 uranium all together. In view our State's
11 relationship with EnergySolutions, however, this
12 seems unlikely.

13 The least, therefore, that our State
14 should do is to ensure that appropriate new measures
15 are in place to limit future damage. DU violates
16 every essential definition of true low-level waste.
17 It becomes more, not less, radioactive over time.
18 And it is long lasting. EnergySolutions Clive
19 facility is designed for waste with a short half life
20 and relatively low levels of radioactivity. On this
21 basis alone, storing DU at Clive must necessarily
22 involve extra site-specific measures.

23 But concerns about longer lived and
24 eventually more potent radioactive material are not
25 the only reasons that new, much more stringent

1 requirements should be in place. EnergySolutions
2 touts Clive as a remote and arid facility ideal for
3 storing dangerous material. On the time scale of
4 true low-level waste, this claim is not inaccurate.
5 On the time scale of DU, however, it is entirely
6 misleading. Clive is located at the bottom of
7 historic Lake Bonneville, which has inundated the
8 area several times in the last 100,000 years. In
9 geologic time, which is what we're talking about with
10 the active life of DU, it is near certain that Lake
11 Bonneville will return. And with its return, Clive
12 ceases to be a remote, arid anything. The integrity
13 of Clive will be destroyed by wave action, and
14 radioactive material could be dispersed by currents,
15 storms and the rise and fall of the lake to every
16 part of the basin and potentially beyond.

17 It is therefore incumbent on Utah, if it
18 will not do the sensible thing and ban DU all
19 together, to provide a higher level of safety for DU
20 storage here than currently applies at Clive. It
21 should be the purpose of the RCB's new rule to ensure
22 that this is the case.

23 MR. HULTQUIST: Thank you.

24 Next up will be Robert Henning.

25 MR. HENLINE: Henline.

1 MR. HULTQUIST: Okay. Sorry.

2 MR. HENLINE: "The Utah Division of
3 Radiation Control protects Utah citizens and the
4 environment from sources of radiation that constitute
5 a significant health hazard." These words were taken
6 from the Utah Division of Radiation Control website,
7 in Director Finerfrock's welcome message. I think it
8 unfortunate that I need to come before the Board to
9 remind you of your obligation to Utah's people and
10 her environment, but the Board's recent refusal to
11 act in any interests but those of corporate greed
12 does, in fact, necessitate such a reminder.

13 There is no doubt that depleted uranium
14 poses a significant health and safety risk. There is
15 not a credible scientific expert that will contest
16 this simple fact. It is a substance that is not only
17 toxic for billions of years, it also becomes
18 increasingly toxic over time. This, we know. What
19 we don't know is if the EnergySolutions Clive
20 facility is capable of storing this waste safely.
21 Let me repeat that. We don't know if that facility
22 is capable of safely storing the depleted uranium.

23 In a letter dated 21, September 2009,
24 EnergySolutions' president, Val Christensen, stated,
25 "EnergySolutions has contracted with Neptune and

1 Company, the industry-recognized experts in the field
2 of performance assessments, to provide an updated
3 performance assessment for depleted uranium
4 disposal....We anticipate that the performance
5 assessment will be provided to your staff by December
6 2010." What this tells us is that the facility at
7 Clive has not been properly evaluated for the safe,
8 long-term disposal of depleted uranium by the
9 admission EnergySolutions. Yet, they still demand
10 the right to import this deadly substance and to
11 dispose of it on out land in our backyards.

12 It is now time for the people of Utah to
13 make a demand of their own, a demand that this body
14 live up to its obligations and act in the best
15 interests of the people and the environment of Utah,
16 not a corporation that has repeatedly demonstrated
17 its disdain for the rules and regulations meant to
18 protect us. What that means, ladies and gentlemen,
19 is that as you evaluate the regulations regarding
20 disposal of depleted uranium, you err on the side of
21 caution, on the side of protection, on the side of
22 doing the job as you've accepted it. And unless and
23 until it can be proven that this toxic waste can be
24 safely and permanently stored at this facility, your
25 jobs and your integrity that you have taken demand

1 that you refuse to allow this waste to come into
2 Utah.

3 Thank you.

4 (Applause.)

5 MR. HULTQUIST: Next, Cindy King.

6 MS. KING: Hello. My name is Cindy King.

7 And I'd like to make my comments very brief.

8 I'd like to congratulate the Division of
9 Radiation Control for its due diligence in taking
10 upon a risk that's bigger than they actually need to
11 do. I'd like to encourage them to make sure that
12 they prove without a reasonable doubt that if they're
13 going to dispose of depleted uranium, that
14 EnergySolutions can do so. To date, the record of
15 that facility does not speak for safety, does not
16 speak for protection and does not speak for public
17 health.

18 I thank you very much for your time.

19 MR. HULTQUIST: Thank you.

20 Next, George Chapman.

21 MR. CHAPMAN: Specifically, with regards
22 to the rule 313-25-8 proposed, I recommend you put in
23 birds. All you have in the way of animals is
24 burrowing animals, and based on past experience with
25 EnergySolutions, they will use that to drive more DU

1 in. It's a loophole you need to close. Again, I
2 recommend you add specifically birds. We don't want
3 radioactive seagulls flying around.

4 I also recommend that you put in something
5 about monitoring directly the barrel viability,
6 because those barrels aren't supposed to last more
7 than 50 years.

8 I also recommend, and I understand the
9 performance assessment coming will indicate the
10 curies, but it is important for this rule that curies
11 be limited and specified. And that's the only way to
12 monitor, really, radiation.

13 Also, earthquakes are not listed here.
14 And I think it's mentioned a couple of times in other
15 rules, but I think you specifically have to mention
16 that in the event of an earthquake there should be
17 better monitoring.

18 And again, the biggest issue with regards
19 to this rule is there is a drop dead date of
20 March 1st. Between now and March 1st,
21 EnergySolutions, in their mind, can do anything they
22 want. And I strongly recommend you somehow make it
23 clear that EnergySolutions is not allowed to bring in
24 anything else until this rule goes into effect and
25 they prove, through a performance assessment, that

1 it's safe.

2 Thank you for your time.

3 MR. HULTQUIST: Thank you.

4 John Cuomo.

5 MR. CUOMO: I'm John Cuomo. I'll also
6 make my statement short.

7 As a citizen of Utah, as a Ph.D. research
8 scientist, I'm quite concerned about the safety of
9 Utah's citizens and future generations, and risk of
10 contamination exposure from depleted uranium. I,
11 therefore, fully support a course of action to devise
12 a new rule to ensure that no depleted uranium comes
13 to our state in advance of the completion of thorough
14 public health studies and performance assessments.

15 We need to fully evaluate the health
16 effect, the level of possible exposures and the
17 timing of peak radiation dosing.

18 In addition, the ruling should take into
19 account the possibility of geological events that
20 could occur during the storage period, including
21 flooding, earthquakes or other likely events that
22 could impact the security of these stored materials.

23 Thank you.

24 MR. HULTQUIST: Thank you.

25 Next is Claire Geddes.

1 MS. GEDDES: My name is Claire Geddes.

2 I'd like to thank the Board for the time
3 and effort they've put into looking at this issue.

4 I'm convinced that this isn't a safe
5 disposal for depleted uranium. Most of the time,
6 they're using a clay liner in there. In studying
7 clay liners, clay liners heave in an area where you
8 have freeze and thaw. And they're not something
9 that's going to keep anything from coming through.
10 So this seems to be more suitable to deep geological
11 burial.

12 I also am concerned about the
13 concentrations of the toxic metals, and hope that
14 this'll be looked at just as much as the long life of
15 the depleted uranium.

16 It just makes good sense that we shouldn't
17 be putting anything out there that we aren't
18 absolutely sure is suitable for that area. And as
19 many others have said, I don't think there's any
20 proof that this is suitable.

21 I'm also concerned that what we may see
22 here is someone come in, EnergySolutions will go out
23 and hire a firm to tell us that it's okay. They'll
24 bring it to Dane Finerfrock, and Dane Finerfrock will
25 say, "Yeah. It's okay." That's kind of the way

1 we've done things in the past. I find that very
2 unsuitable. Most people want an independent report
3 on this anyway, not the company that's trying to get
4 the waste in to go out and authorize it. So that's a
5 real concern of mine, how we're going to look at this
6 report, how this report is generated.

7 So I would urge the Board to look at those
8 issues and also the issues that the others have
9 talked about, earthquake, flood, all of the natural
10 disasters that could happen that would impact that
11 site.

12 I appreciate the work the Board's done. I
13 think they need to be vigilant on this. And that
14 nothing should be put in the ground until there's
15 definite proof, and I don't know how they can ever
16 prove that, that it would be safe.

17 Thank you.

18 (Applause.)

19 MR. HULTQUIST: Thank you.

20 Steve Nelson.

21 DR. NELSON: Hi. My concerns with the
22 rule are that the 10,000-year performance period is
23 too short and that the requirement for only a
24 qualitative analysis out to the time of what is
25 currently in the rule peak doses is inadequate. And

1 I think there are some other requirements in the rule
2 that conflict with that.

3 And I'll be providing the Board with
4 lengthy written comment.

5 There is some things -- just a few things
6 I wanted to express tonight.

7 First of all, I was concerned with the
8 audio that I listened to regarding some of the staff
9 discussions from December talking about the
10 probability of repeated flooding having to do with
11 the stars being aligned. Long-term hazard assessment
12 in the geological sciences is based upon the
13 observation of past behavior of natural system. And
14 the past behavior of this natural system is telling
15 us that the lake has expanded to the elevation of
16 Clive at least five times -- or has reached the
17 elevation of Clive at least five times in the last
18 150,000 years.

19 In other waste regulatory programs, we
20 have the concept of what is called a "disruptive
21 event." This is a feature event or a process that
22 could disrupt the containment integrity of a storage
23 facility. And usually the point, the tipping point
24 at which you have to consider in a performance
25 assessment a disruptive event is if it has a one in

1 10,000 chance of occurring in 10,000 years. Our
2 analysis shows that it has about a one in three
3 chance of occurring in 10,000 years. Much, much
4 higher than the threshold.

5 Some other things we will show, that if
6 the 60,000 tons -- and I realize that's an upper
7 limit based upon EnergySolutions' good faith
8 estimates of what's been placed in the past -- but if
9 you take the upper limit of 49,000 tons, plus 11,000
10 that are on their way, and dissolve them in a lake
11 that has expanded to the elevation of Clive, you get
12 a concentration of uranium in water that is .25 parts
13 per million, which, by the way, is about eight times
14 the Environmental Protection Agency limits for water.

15 If the market place is opened, if the more
16 than a million tons of depleted uranium, which are
17 anticipated to be produced in addition to the
18 inventory that's already in existence, if a million
19 tons are buried out there and dissolved in that lake,
20 it will exceed the EPA limit on uranium in water by
21 about 140 times.

22 And by the way, uranium oxides are fairly
23 soluble in waters. A recent study from 2000, at the
24 Idaho National Engineering and Environmental Lab,
25 showed that uranium oxides are soluble at about 100

1 parts per million. That's -- I haven't done the
2 math, but that's undoubtedly a few thousand times the
3 EPA limit.

4 So some recommendations, which I am going
5 to put forth for the Board:

6 From the discussions that the Board had in
7 December, they were concerned about the ability to
8 have realistic models that extend beyond 10,000
9 years. Well, I happen to agree with that, but that
10 is no excuse for inadequate protection and not
11 modeling out longer than that. If they want to take
12 time out of the equation, the EnergySolutions'
13 contractor can assume the full activity of depleted
14 uranium as its daughter's ingrown into the model at
15 time equal zero. If, as I heard from the audio, if
16 they're going to assume flooding, they can assume
17 that a shore line develops at EnergySolutions on
18 piles for an extended period of time. If we're
19 concerned about things like differential compaction
20 as we're concerned about in the rule, they can assume
21 that the lake returns to the Provo level, which is
22 about 460 feet higher than the elevation of
23 EnergySolutions. And they can model what will happen
24 in terms of differential compaction in enhanced
25 seepage due to a water column that's 460 feet deep.

1 More importantly, it is my very strong
2 recommendation that the Board, and not the DRC staff,
3 read and respond to all public comment. The Board
4 wrote the draft rule, the Board should read and
5 respond to the input.

6 And finally, a final recommendation would
7 be that an independent peer review panel be formed,
8 not a contractor to DRC, not DRC staff, but an
9 independent, multi-disciplinary peer review panel be
10 formed to review the performance assessment.

11 As a final statement, I heard
12 EnergySolutions acknowledge that they were going to
13 consider flooding in their model. And so my
14 immediate reaction was, of course, if they have to
15 consider flooding in the model, isn't that an
16 implicit assumption that this is the wrong place for
17 the storage of depleted uranium?

18 (Applause.)

19 MR. HULTQUIST: Thank you.

20 Is it Geri Rose?

21 MS. ROOS: Roos.

22 MR. HULTQUIST: Roos.

23 MS. ROOS: I'm Geri Roos.

24 It disturbs me that this company believes
25 that the citizens of this state are so dumb that we

1 don't understand what is going on. One thing that we
2 do understand is that this is very nasty waste that
3 we are talking about. Waste that becomes more
4 dangerous with time. And no one wants it. Thus, the
5 other states would like to ship it off to Utah under
6 the assumption that we are just a wasteland and good
7 for nothing else. Many people love that wasteland
8 and do not want to see it destroyed.

9 I stand with the Board to find new rules
10 to ensure that no depleted uranium comes to our state
11 ever, or at least until a complete and thorough
12 performance assessment can be made. EnergySolutions
13 and other states would have us believe it is
14 perfectly safe. Never mind that 84 percent of the
15 citizens of this state are opposed to our becoming a
16 radioactive waste dump. It doesn't matter if we
17 don't understand all the scientific information about
18 it, what matters is we don't want it. Just like the
19 other states don't want it.

20 As regulators, you should determine if it
21 can be safe. Please remember, what may be safe
22 today, may not be safe tomorrow. This state is prone
23 to earthquakes, and when Mother Nature hits, man is
24 powerless. Haiti is a prime example of that. And we
25 don't know what the Great Salt Lake is going to do.

1 Utah has done it's share of storing
2 dangerous waste. Now, let's let the other states
3 step up to the plate.

4 Thank you.

5 (Applause.)

6 MR. HULTQUIST: Next, Christopher Thomas.

7 MR. THOMAS: I want to start by thanking
8 the Radiation Control Board for looking at this rule
9 in the first place. And I want to thank everybody
10 who is here in the audience who came out because this
11 issue is so important.

12 Our State is at a crossroads. 5,000 drums
13 of depleted uranium await disposal at EnergySolutions
14 nuclear waste dump site 80 miles west of where we sit
15 tonight. Thousands more are lined up in South
16 Carolina waiting to be loaded and shipped across the
17 country here to Utah. Because the threat from
18 depleted uranium is so great and so long lived, the
19 choices we make today will literally impact Utah's
20 health and environment forever. The stakes are great
21 and the new standards proposed by the Utah Radiation
22 Control Board cannot be enacted soon enough. We are
23 racing the clock, attempting to close the door before
24 the Department of Energy sends two more train loads
25 full of depleted uranium to Utah. Because the

1 Department of Energy has decided that spending
2 stimulus money to send nuclear waste to Utah is more
3 important than respecting Utah's democratic process
4 and is more important than ensuring this waste is
5 held to more rigorous health and safety standards, we
6 are counting on you and the Board to enact these new
7 standards quickly.

8 It's important to remember that it did not
9 have to be this way. When the Federal Government
10 first looked at low-level waste, it recognized that
11 large amounts of concentrated depleted uranium should
12 never be buried in landfills, like EnergySolutions,
13 period. Under those first draft rules, the drums of
14 depleted uranium that now threaten us would never
15 have been eligible to come here in the first place
16 because these drums would have exceeded the allowable
17 limit by ten times. The more than 700,000 tons of
18 depleted uranium stockpiled around the country would
19 be classified as greater than Class C waste, and
20 would have been required to be disposed far below the
21 earth's surface.

22 As we now know, the Nuclear Regulatory
23 Commission did away with the proposed limits on
24 depleted uranium because, quite frankly, they didn't
25 anticipate the million-ton depleted uranium problem

1 that we now face. In fact, the NRC only assumed that
2 17 curies of depleted uranium, total, would be
3 disposed at a site like EnergySolutions. The amount
4 that we are now threatened with is thousands of times
5 greater than that amount.

6 The radioactivity of depleted uranium is
7 most like transuranic waste, and the National
8 Research Council acknowledged this in a report
9 released in 2003. "If treated like transuranic
10 waste, depleted uranium would need to be disposed in
11 a mined salt cavern in New Mexico 2,000 feet below
12 the earth's surface." Scientists and engineers have
13 mentioned this fact to me repeatedly. They have said
14 our country already knows how to deal with waste like
15 this, it needs to be put in a deep geologic disposal.

16 But instead, the Department of Energy has
17 put a bullseye on the State of Utah and wants to bury
18 a billion-year hazard in a landfill made of dirt and
19 rocks and concrete, that scientists tell us will
20 likely be washed away by the nearby Great Salt Lake
21 over the next tens of thousands of years. This
22 defies science, logic and basic common sense.

23 The way we deal with nuclear waste in this
24 country and internationally comes from a very simple
25 concept. The concept is that future generations

1 should not have to pay for the nuclear messes we make
2 today. They shouldn't have to pay with their health
3 and they shouldn't have to pay with their resources.
4 We know now that depleted uranium grows in
5 radioactive hazard, starting in 1,000 years, peaking
6 at a million years and then remaining at that high
7 level of radioactivity for billions of years. Seen
8 from a more global view, depleted uranium only meets
9 our Class A limit on nuclear waste for far less than
10 one percent of its hazardous life. We know now that
11 EnergySolutions was only designed to limit
12 radioactive releases for up to 1,000 years, a limit
13 that is grossly insufficient to meet this hazard.

14 The more I learn, the more I've talked to
15 experts in the field, even considering putting
16 depleted uranium here in Utah is a gross misjudgment.
17 We would rather not have this waste here at all
18 period. But if we cannot stop it outright, then we
19 must hold it to a much, much higher standard. And
20 the rule you're accepting comment on tonight is a
21 step in that direction. But it must be made even
22 stronger.

23 First, the new studies required by this
24 rule must be transparent and they must be open to
25 public scrutiny. It is shocking to many that

1 EnergySolutions gets to choose and pays for the new
2 safety study that will be required. How do we ensure
3 that this black box of a study is rigorous enough and
4 conservative enough that it will actually be
5 protective of Utah's public health and safety for the
6 foreseeable future? The first thing we need to do is
7 require that before the Executive Secretary can
8 accept a performance assessment as complete, it must
9 be made available for public comment, there must be a
10 finding of fact issued and it must be open to public
11 review and comment.

12 Second, this performance assessment that
13 is undertaken must be no less rigorous than the
14 studies that the NRC originally performed to create
15 the whole A, B, C waste classification system. They
16 looked at very specific issues where people would
17 come into contact with the waste at future times.
18 And those same scenarios must be considered at a
19 minimum in any new performance assessment that
20 EnergySolutions has to do.

21 Third, disruptive events or any events
22 that could cause a catastrophic failure of the
23 EnergySolutions landfills must be looked at. And I
24 think that the disruptive events mentioned by Dr.
25 Nelson may be a very good place to start. We have a

1 model already for how to look at the safety of waste
2 that lives -- that is hazardous for many, many
3 thousands of years of high-level waste, and we
4 should, where appropriate, adopt the same standards
5 here for depleted uranium because of the long-lived
6 hazard.

7 There also must be a very clear line
8 distinguishing what threshold makes depleted uranium
9 supposedly acceptable for disposal versus
10 unacceptable for disposal. I am shocked that the
11 Nuclear Regulatory Commission, in their recent
12 analysis, accepted a two percent success rate as
13 evidence that depleted uranium could be disposed of
14 safely. I mean, to me, that's 98 percent evidence
15 that near service disposal is absolutely inadequate.
16 And I think in this case, we must consider something
17 like a 95 percent bar that must be met before
18 depleted uranium would be considered safe to come to
19 Utah.

20 We must also take into account changes in
21 climate that can happen over tens of thousands of
22 years. I've heard experts talk about this at great
23 lengths, and there's no way that using the last 40
24 years of precipitation out at the Clive site can be
25 used to then predict the changes in climate that can

1 happen over the next several thousand years. It just
2 doesn't make sense.

3 And along those same lines, I've heard
4 that, you know, modeling beyond 10,000 years is
5 difficult. Well, it's difficult to know what'll
6 happen. It's difficult to have a crystal ball and to
7 see exactly what will happen. That should be
8 absolutely no excuse for allowing depleted uranium
9 waste into this State. Our rules, our law in Utah
10 requires scientifically defensible modeling to
11 support, you know, the conclusion that a certain site
12 would be safe for waste. Of any kind. And I think
13 if looking at more than 10,000 years is a high bar to
14 set, that's a high bar that EnergySolutions should be
15 expected to meet and meet fully. There is no reason
16 we should have a less -- reduced standard for waste
17 that's dangerous for a longer time.

18 I'm prepared to submit more detailed
19 written comments before the close of the public
20 comment period on February 2nd that will detail more
21 of what I think should be in the rule to ensure that
22 Utah's public health and safety is protected.

23 But in conclusion, this is what I want to
24 say: Utah deserves very strong protections. We
25 deserve regulators who have the expertise, resources

1 and will to enforce those protections in the
2 strongest possible way. And we need leadership in
3 the Governor's Office to ensure that no one,
4 including and even especially the Federal Government,
5 no one is given free reign to circumvent or preempt
6 those protections.

7 Thank you.

8 (Applause.)

9 MR. HULTQUIST: Thank you.

10 Is it Annie O'Connor?

11 MS. O'CONNOR: Amy.

12 MR. HULTQUIST: Amy. Okay.

13 MS. O'CONNOR: My name is Amy O'Connor.

14 I'd like to start by saying I would
15 encourage the Committee to not allow one more ton of
16 DU into Utah. However, for the sake of clarity and
17 exactness, what I would like to bring to your
18 Committee today is a paper by -- that was written in
19 2003 by the National Research Council. It's
20 entitled, "Improving the Scientific basis for
21 Managing DOE's Excess Nuclear Materials and Spent
22 Nuclear Fuel." And it outlines many of the potential
23 health risks that I'm very much concerned with.

24 And let me just read this to you, again,
25 for the sake of clarity.

1 "Options for future disposition of DU,
2 once converted to oxide, are continued storage, reuse
3 and disposal as waste. There are significant gaps in
4 understanding health effects of uranium and its
5 compounds that need to be resolved before DOE can
6 fully evaluate these options. Beneficial ways to
7 reuse large amounts of uranium have not been
8 identified. Because of uranium's unique chemical and
9 physical properties, the Committee believes that this
10 lack of reuse options reflect gaps in current
11 knowledge rather than being a reason for disposing of
12 the material as waste. There are significant
13 challenges for deciding how the uranium might be
14 disposed if it were declared to be waste."

15 They address disposal.

16 "The current plans for conversion to oxide
17 will put the DU in a form that will be more stable
18 than the DUF6 for further storage. If disposal is
19 necessary, it is not likely to be simple. The alpha
20 activity of DU is 200 to 300 nanocuries per gram.
21 Geological disposal is required for transuranic waste
22 with alpha activity above 100 nanocuries per gram.
23 If uranium were a transuranic element, it would
24 require disposal in a Waste Isolation Pilot Plant
25 based on its radioactivity. The chemical toxicity of

1 this very large amount of material would certainly
2 become a problem as well. One option suggested by
3 the U.S. Nuclear Regulatory Commission is disposal in
4 a mined cavity, or former uranium mine. Challenges
5 for this option would include understanding the
6 fundamental differences between uranium ore and the
7 bulk uranium oxide powder."

8 As for long-term research for reuse and
9 disposal: "The World Health Organization has
10 compiled a list of the research needed to better
11 assess chemical and radiological health risks from
12 exposure to uranium compounds. The Committee
13 believes that this research will assist the DOE in
14 its future decisions for reusing or disposing of its
15 DU."

16 And as an aside, I just encourage the
17 Committee to carefully look at these and make sure
18 that they are addressed in your rule.

19 First, "Neurotoxicity: Other heavy metals
20 are known neurotoxins, but only a few studies have
21 been conducted on uranium. Studies are needed to
22 determine if DU is a neurotoxic. Reproductive and
23 developmental effects have been reported in single
24 animal studies, but no studies have been conducted to
25 determine if they can be confirmed or that they can

1 occur in humans."

2 Second, "Hematological effects: Uranium
3 distribution within bone is thought to be such that
4 irradiation of bone marrow and blood-forming cells
5 are limited due to the short range of alpha particles
6 emitted during decay. Research is needed to
7 determine if this view is correct."

8 Third, "Genotoxicity: Some in vitro
9 studies suggest genotoxic effects occur via the
10 binding of uranium compounds to DNA. Research is
11 needed to determine if uranium is genotoxic by this
12 or other mechanisms. There are also opportunities to
13 extend current knowledge in the following areas:

14 "Understanding of the extent,
15 reversibility and possible existence of thresholds
16 for kidney damage in people exposed to DU. Important
17 information could come from studies of populations
18 exposed to naturally-elevated concentrations of
19 uranium in drinking water.

20 "Better assessments of impacts of exposure
21 of children. This is particularly important given
22 their unique exposure scenarios such as geophagia and
23 hand-to-mouth activities.

24 "Validation of transfer coefficients for
25 uranium compounds entering the food chain, for

1 example, from soil ingested by livestock during
2 grazing and then to humans. Investigations are
3 needed on the chemical and physical form,
4 physiological behavior, leaching and subsequent
5 environmental cycling of specific forms of uranium
6 from various industrial and military sources.
7 Particular attention should be paid to how the bulk
8 of DU might eventually be deposited. Aside from the
9 possible presence of containments in some of the DU
10 from recycled uranium, the isotope enrichment process
11 leaves a material that initially has a lower
12 radioactivity than natural uranium. Not only U-235,
13 but most of the uranium decay chain isotopes are
14 removed. Modeling the long-term behavior of DU
15 should include the fact that these daughter isotopes
16 will gradually reappear over time."

17 So as you can see, "all of these
18 considerations," I believe, "should have been dealt
19 with prior to EnergySolutions accepting any quantity
20 of depleted uranium." Please, please ensure that
21 each and every one of these serious, possible health
22 risks is fully investigated before Utah accepts one
23 more ounce of depleted uranium. And while I haven't,
24 obviously, done all these studies, my personal
25 feeling is simply that not one more ton should come

1 to Utah.

2 Thank you so much for your time.

3 (Applause.)

4 MR. HULTQUIST: Thank you.

5 Next I have Joe Andrade.

6 MR. ANDRADE: Thank you for the
7 opportunity to provide some input.

8 I'm going to read parts of a letter that I
9 submitted to Governor Herbert about two weeks ago,
10 and has been received by his staff. And I will, of
11 course, leave that with you as a written comment.

12 "I am an engineer, professor and teacher
13 with over 40 years on the University of Utah faculty.
14 During 1983 to '87, I served as Dean of the
15 University's College of Engineering. My office was
16 almost directly above the University's small teaching
17 nuclear reactor. I have used radioactive isotopes as
18 research aids for my studies on blood proteins in the
19 early part of my career. I am familiar with
20 radiation, radioactive isotopes, their hazards and
21 risks and generally their safety and disposal issues.
22 I have tested my own basement for Radon, using the
23 State's very effective resources. By the way, this
24 is National Radon Awareness Month, or Radon Action
25 Month. I'd encourage you all to do the same. My

1 basement is on the borderline of requiring some
2 mitigation. I am well aware of safety and risk
3 issues and the problems of relative risks.

4 "We are all responsible for waste,
5 radioactive, CO2 and otherwise. We want our garbage
6 picked up. We don't want to breathe asbestos. We
7 want efficient industrial processes, some of which
8 use radioactive isotopes. We want safety and risk
9 detection equipment, like smoke detectors, many of
10 which use radioactive isotopes. Some of us want
11 nuclear energy, which generates waste, most of that
12 from the mining and enrichment operations for the
13 reactor fuel. We want the most modern and effective
14 medical diagnosis and treatment, many of which
15 utilize radiation and radioisotopes. And we don't
16 want any of this stuff in our own backyard. We want
17 to mine Utah's uranium ores, coal, silver and gold to
18 generate employment and taxes, but we don't want to
19 fully face the health and environmental hazards
20 involved.

21 "It's all a question of balance:
22 minimizing reasonable risks and maximizing reasonable
23 benefits.

24 "I am thankful that we have reasonable,
25 appropriate and safe waste disposal facilities, such

1 as the landfills we all use and the Clive facility
2 under discussion. I am thankful that we have a State
3 DEQ and Division of Radiation Control to help monitor
4 and regulate such facilities. And I am thankful that
5 our wastes, my wastes are located in such facilities,
6 and thus, not spread throughout our communities and
7 environments and not in my own backyard or in yours.
8 Some such facilities even eventually become
9 resources, such as the energy generated via the
10 methane at the County landfill.

11 "As I understand it, the depleted uranium
12 coming to and already at Clive is low-level waste in
13 the oxide form. Thus, not particularly chemically
14 hazardous. The radioactivity is significantly less
15 than the uranium ores common in many parts of Utah.
16 Of course it decays, and some of its decay products
17 are of concern, Radon in particular. The uranium in
18 the soils and concrete in my basement also decay.
19 And the Radon they emit is also of concern. But not
20 of great concern. Half of the average background
21 radiation dose we all get in this State is due to
22 Radon. It's emitted in your basement, in mine, in
23 the soils, in the concrete. Radon is a decay product
24 of uranium. And uranium is actually a fairly common
25 element in the earth's crust. You and I each have

1 right now about a 100 micrograms of uranium in our
2 bodies, according to the World Health Organization.
3 We each carry in our own bodies the elemental makeup
4 of Planet earth, our own, personal periodic tables.

5 "I am far more concerned with our highly
6 polluted air, leading to respiratory and related
7 problems, with the rapidly increasing CO2 in our
8 environment, leading to climate disruption and major
9 planetary issues, with the increasing Mercury levels
10 in the Great Salt Lake and in our waters and fish,
11 and with many other environmental, social and
12 community hazards, including auto accidents, gun
13 accidents, domestic violence, substance abuse and
14 child abuse.

15 "I'd encourage you all to arrange to test
16 your office and basement for Radon.

17 "I also recommend that DEQ and the State
18 encourage EnergySolutions to fully use the Clive
19 facility to store low-level radioactive waste,
20 including depleted uranium.

21 "I encourage the landfills, to keep taking
22 and storing our other wastes.

23 "And encourage DEQ to continue to do the
24 very best they can regarding the disposal and storage
25 of the waste of our excessively consumption-oriented

1 society."

2 Thanks.

3 MR. HULTQUIST: Thank you.

4 Helene Cuomo.

5 MS. CUOMO: Hi.

6 First of all, I'd like to thank the
7 Radiation Control Board and say, whoa, we need to do
8 more research in this and we need to put a halt and
9 set up new standards and new rules before more of
10 these barrels come in of depleted uranium.

11 And on my drive over here I was thinking
12 about the down-winders. If we don't know somebody
13 personally, we've heard about the down-winders. And
14 at that time, the Government said all these nuclear
15 tests were safe.

16 And then just recently we've been hearing
17 about these open burn pits, how some of our combat
18 soldiers are coming back and they have strange
19 ailments, whether it's leukemia or trouble breathing.
20 Some are even dying. And once again, the Government
21 is slow, saying, you know, "We don't know what's
22 going on." And I think down the road we'll find out,
23 almost like Agent Orange, that there is stuff going
24 on.

25 But the Government, who is supposed to

1 protect us, it takes awhile for, I guess, the
2 research to come in for them to admit, "Yeah. We
3 can't let this hide."

4 And so when the NRC comes -- when they
5 came this fall and they said, "They don't know," that
6 really scared me. That here, we're supposed to know
7 what to do with this depleted uranium when the
8 Government is final saying, "We don't know." And
9 that says to me we need to put a halt to this now,
10 until we do know.

11 There is only a shallow site out at Clive.
12 And the NRC said, "We don't know if that's safe.
13 There hasn't been studies like that." And so, if the
14 Government's taking that caution up front, I think we
15 all need to listen. Because in the past, they
16 haven't. And in the future, they might not. But if
17 they're saying, "Wait. We don't know," everybody's
18 ears should perk up.

19 And I'm very disappointed in Governor
20 Herbert that -- I feel like he was doing it both
21 ways. He waits and waits and waits, knowing that
22 this stuff is coming to Utah unless he can put a halt
23 to it or get the Radiation Control Board to get stuff
24 moving, and then when it's already on the way, he
25 writes this letter and there's big headlines in the

1 paper, "Governor asks to stop depleted uranium."

2 Well, we all know that was too late to do that.

3 And so I really thank the Radiation
4 Control Board for having the guts and the fortitude
5 to say, "Halt. Let's see what's going on." Because
6 this stuff -- it's just going to get hotter. And we
7 don't know. And until we figure it out more and if
8 our Government officials aren't protecting us, I'm
9 really happy that the volunteers -- or if you do get
10 paid, it's very little, I presume -- that they do
11 care about the safety of Utahans, about us now and
12 about our future generations. Because we really
13 don't know. And so we need to slow down. We need to
14 stop. And let's listen to the NRC. We don't know.
15 And that means more research needs to be done and
16 more controls. And somebody needs to have the back
17 bone to say, "Halt," before it's too late.

18 (Applause.)

19 MR. HULTQUIST: Thank you.

20 I'm sorry. I can't read the last name,
21 but is it Saw or Sam? Okay. Come on up.

22 MR. GOSCH: Thank you.

23 My name is Sam Gosch (ph). I am an
24 engineer and retired professor from the University of
25 Utah.

1 I do not have a prepared statement, but I
2 had a few things, like putting water or washing down
3 radioactive isotopes. The thing is as -- because I
4 am a civil engineer I know, that once water gets into
5 the ground, there is no telling which way it's going
6 to go. It can stay static. The isotope, uranium 235
7 can be exchanged with minerals on the ground and stay
8 there for awhile and then flushed out as it breaks
9 through. So putting water under the ground with
10 anything in it is very, very dangerous. Because we
11 would lose track of it completely.

12 And many of these things have very long
13 lives, so they're going to stay there for a long
14 time. And they will keep emitting gamma rays. It is
15 not going to stop. Because some of the half lives
16 are tens of thousands of years.

17 There is one other thing that I have not
18 heard mentioned, and that is the pressure we are now
19 having from climate change. A lot of people think
20 that climate change is happening because of fossil
21 fuels and so let's go nuclear, so then we won't have
22 the CO2 and the global warming problem. So then next
23 some people are saying, "Well, let's cut out the
24 fossil fuel and let's go with nuclear fuel." So
25 there'll be more pressure to have nuclear fuel. So

1 climate change, unfortunately, may trigger another
2 problem.

3 EnergySolutions, I understand, was going
4 to bring waste from Japan and other countries. I
5 think one solution they may consider is send our
6 waste to Japan.

7 Thank you.

8 (Applause.)

9 MR. HULTQUIST: Thank you.

10 Is there anyone else in the audience that
11 would like to comment tonight?

12 (Hand raised.)

13 MR. HULTQUIST: Come on up.

14 MR. NICKOLS: My name is Joe Nickols. And
15 I did sign something over there, but here I am
16 anyway.

17 First, I'd like to say that I'm a
18 recovering physics addict for 29 years sober. And
19 I've seen the light then. And it's alarming that I'm
20 seeing it through these regulations again.

21 I have to commend you on trying to make
22 this at all possible. You know, it is an open forum,
23 which is good. And trying to go from the laws of
24 physics to man-made statutes is a pretty tall order.
25 And it does take some more insight. And that's why

1 I'm here.

2 One of the difficulties I've seen and I'm
3 hearing is that a lot of these basic assumptions kind
4 of get swept over and they're kind of lost in the
5 technical part of these presentations. And energy is
6 neither created nor destroyed, just transformed. So
7 I think if you put that under the umbrella of that's
8 a law of physics, you begin to see some of the
9 anxiety that the folks have.

10 One interesting thing I did discover was
11 that the statutes make differences between "dispose,"
12 "deplete," "decay" and "industry" as stable. So here
13 you're trying to figure out how to use land waste --
14 land for waste, which is invisible energy at this
15 point. And I looked it up in a 1974 college physics
16 book called, "Physics for the Life Sciences," and it
17 seems to me that what's lacking is some way to
18 standardize this. And the simplest way would be the
19 ground states of this waste. And when you're hearing
20 someone saying a container can only last 50 years,
21 well, how long does it take this waste to go back to
22 ground state, which physically means it's not
23 emitting. So that would satisfy all the different
24 types of emissions and different types of daughter
25 particles that get made.

1 So I think in your policies, there needs
2 to be something that's standardized, rather than
3 something that is just made up and then amended and
4 deleted on political will.

5 So in conclusion, the nuclear industry
6 still can't find private insurance. And that, to me,
7 is a great concern because when you're dealing with
8 risk benefit ratios and then actuaries, this is not
9 possible at this time.

10 So I'm saying that you need to put a halt
11 on this. You need to develop a statute that actually
12 goes by the law of physics and something easy to be
13 able to tell the difference. And then this
14 insurability is a concern for everyone, because every
15 other industry has to work under some type of
16 insurability. And years ago, when this started, part
17 of that was a, you know, \$50 billion bond, or I would
18 say gold at this point. And I don't see that
19 anymore.

20 So I just hope that you guys read this
21 book and answer the arguments here today. I think it
22 would put a lot of insight onto at least clarifying
23 and creating some kind of standard that's either
24 agreed on or mitigated on or gone through the courts.
25 So I think a lot could be avoided but creating a

1 standard that's physically attached to some science
2 rather than half a technical story.

3 Thank you for your time.

4 MR. HULTQUIST: Thank you.

5 At this point, I have no other individual
6 on the list.

7 And by the way, Joe, I did have you on,
8 you just didn't say "yes" or "no" whether you wanted
9 to comment. So you were down on the list.

10 I would like to thank everyone for coming
11 here tonight.

12 If there is no one in the audience that
13 would like to make any additional statements --

14 MR. BRISTER: I would.

15 MR. HULTQUIST: Okay.

16 MR. BRISTER: My name is Bob Brister. I'm
17 a resident of Salt Lake City.

18 One of my favorite means of recreation is
19 going out to the West Desert and enjoying our
20 beautiful public lands out there. It really breaks
21 my heart to see the West Desert treated as the
22 Nation's toxic waste dump.

23 You know, the people of Utah have suffered
24 tremendously over the decades, from the nuclear
25 power/nuclear weapons industry, from the down-winders

1 to the Navajo Indian miners of uranium, and I don't
2 think the people of Utah should be made to suffer
3 anymore from this industry.

4 I think it's a really sad reflection on
5 the state of politics in Utah that a state that has
6 suffered so much from the nuclear industry has so
7 much of its political system bought off by the
8 industry, apparently. EnergySolutions is a malignant
9 corporation. I'd love to see its charter revoked.

10 And I urge the Radiation Control Board to
11 be our last line of defense against nuclear waste
12 dumping here in Utah, especially depleted uranium,
13 which, as people have said so many times, just gets
14 worse and worse over time.

15 Thank you very much.

16 (Applause.)

17 MR. HULTQUIST: Thank you.

18 All right. Ladies and gentlemen, that
19 looks like it. We've been here an hour. And we
20 appreciate all the comments that have been provided.

21 And if you have something in writing that
22 you would like to leave with us, you may do so up
23 front here.

24 And at this time, the meeting is
25 adjourned.

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(Hearing concluded at 7:00 p.m.)

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REPORTER'S HEARING CERTIFICATE

STATE OF UTAH)
) ss.
COUNTY OF SALT LAKE)

I, Kelly Fine-Jensen, Registered Professional Reporter and Notary Public in and for the State of Utah, do hereby certify:

That said proceeding was taken down by me in stenotype on January 26, 2010, at the place therein named, and was thereafter transcribed, and that a true and correct transcription of said testimony is set forth in the preceding pages;

I further certify that I am not kin or otherwise associated with any of the parties to said cause of action and that I am not interested in the outcome thereof.

WITNESS MY HAND AND OFFICIAL SEAL this 4rd day of February, 2010.

Kelly Fine-Jensen, RPR
Notary Public
Residing in Salt Lake County