

June 9, 2009

DRC BOARD MEETING

**Department of
Environmental Quality**

168 N 1950 W

DEQ BLDG #2

Conference Room 101

SALT LAKE CITY, UT

84114-4850

3:00 p.m. – 5:00 p.m.

RADIATION CONTROL BOARD
Department of Environmental Quality (Bldg #2),
Conference Room 101, 168 North 1950 West, Salt Lake City, Utah
3:00 – 5:00 PM, June 9, 2009

FINAL AGENDA

- I. Minutes (**Board Action Item**)
 - a. Approval of the Minutes from the May 12, 2009 Board Meeting
Presented by Peter A. Jenkins

- II. Rules
No Items

- III. Radioactive Materials Licensing/Inspection
No Items

- IV. X-Ray Registration/Inspection
No Items

- V. Radioactive Waste (**Board Information Item**)
 - a. Response to Board Questions Regarding a Moratorium
On Depleted Uranium (DU) Disposal
Presented by Laura Lockhart, Attorney, Attorney General's Office

- VI. Uranium Mill Licensing and Inspection (**Board Information Item**)
 - a. Status of the White Mesa Uranium Mill, Blanding, Utah
Presented by Ron Hochstein, President of Denison Mines

- VII. Other Division Issues
 - a. Modifying the Board Policy: "Requests by the Public
to be Placed on the Board Agenda" (**Board Action Item**)
Presented by Peter A. Jenkins

 - b. Division Activities Report (**Board Information Item**)
Presented by Peter A. Jenkins

- VIII. Public Comment


- IX. **The Next Scheduled Board Meeting: July 14, 2009 (Tuesday)**, DEQ Bldg #2,
Conference Room 101, 168 North 1950 West, Salt Lake City, Utah 3:00 – 5:00
P.M.

For those individuals needing special assistance in accordance with the Americans with Disabilities Act, please contact Brooke Baker at the Utah Department of Environmental Quality, at 168 North 1950 West, Salt Lake City, UT 84116, Office of Human Resources at (801) 536-4412, TDD (801) 536-4414, or by email at: bbaker@utah.gov.

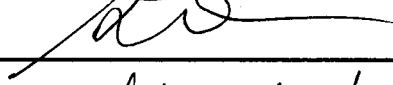
UTAH RADIATION BOARD

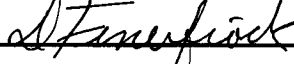
BOARD MEMBERS - SIGN-IN SHEET

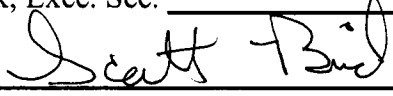
MEETING DATE: June 9, 2009


Peter A. Jenkins, M.S., CHP, Chair 

Elizabeth Goryunova, M.S., Vice Chair 

Amanda Smith, DEQ Executive Director 

Dane L. Finerfrock, Exec. Sec. 


Scott Bird 

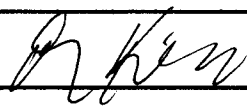
Patrick D. Cone 

Frank D. DeRosso, MSPH, CIH Absent  6/09/09

Christian K. Gardner Absent  6/09/09

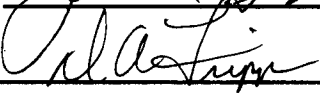
Colleen Johnson 

Edd C. Johnson 

Douglas S. Kimball, DMD 

Joseph K. Miner, M.D., MSPH Absent  6/09/09

John W. Thomson, M.D. 

David A. Tripp, PH.D. 

OTHER STAFF ATTENDING

William J. Sinclair, Deputy Director -will be Absent _____

DRC BOARD MEETING
DEQ Building #2
168 N 1950 W
Conf. Room 101
Salt Lake City UT 84114-4850
3:00 p.m. – 5:00 p.m.

UTAH RADIATION CONTROL BOARD
ATTENDANCE

DATE: Tuesday, June 9, 2009

DRC Board Members Attending This Board Meeting:

- (1) Peter A. Jenkins, M.S., CHP, Chair - Yes
- (2) Elizabeth Goryunova, M.S., Vice Chair - Yes
- (3) Scott Bird - Yes
- (4) Patrick D. Cone - Yes
- (5) Colleen Johnson, Commissioner - Yes
- (6) Edd C. Johnson - Yes
- (7) Douglas S. Kimball, DDS - Yes
- (8) Amanda Smith, DEQ Executive Director - Yes
- (9) John W. Thomson, M.D. - Yes
- (10) David A. Tripp, Ph.D. - Yes

DRC Board Members Not Attending This Meeting:

- (11) Frank D. DeRosso, MSPH, CIH – No, will be out-of- town.
- (12) Christian K. Gardner – No, was NOT able to attend the meeting.
- (13) Joseph K. Miner, M.D., MSPH – No, has another meeting that conflicts with this mtg.

DRC Executive Secretary Attending This Meeting:

- (14) Dane L. Finerfrock, Executive Secretary – Yes

Other DEQ Staff:

- (15) William J. Sinclair, Deputy Director – No, will not be able to attend will be out-of-town.

Public Attendance Sheet
Utah Radiation Control
Board Meeting
 DEQ Bldg. #2, Conf. Room 101
 168 N 1950 W, Salt Lake City, UT 84114-4850
 3:00 - 5:00 p.m.
 June 9, 2009
Please Print

NAME (Please Print)	Organization/Affiliation Phone Number and Email Address:	Speak: Yes or No? If Yes, which Agenda Item Do you Wish to Address Before the Board Today? (List Item#)
1. Ron Hochstein	Denison Miner (USA) Corp Hochstein (303) 628-7798 denisonminer.com	
2. Christopher Thomas	HEAL Utah christoph@healutah.org	Yes - depleted uranium
3. Laura Lochhart	AG's office 801 366-0290	
4. Val J. Christensen	Energy Solutions	X - Yes
5. James Hotskamp	Hollaw & Hart	X - Yes
6. Mark Hedaux	Energy Solutions	No
7. Janine Morgan	HEAL Utah	No
8. Sophia Nicholas	HEAL Utah	No.
9. Amy Orneshe	Deseret News	NO
10. KRISTA BOWERS	—	
11. Karina Macavelias	Heal Utah	NO
12. Eric Spreng	HEAL Utah	No
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NAME (Please Print)	Organization/Affiliation: Phone Number and Email Address:	Speak: Yes or No? If Yes, which Agenda Item Do you Wish to Address Before the Board Today? (List Item#)
20. BRIAN MOENCH	Utah Physicians for a Healthy Environment	Yes V
21. Norman FRANKIE	801-974-5396	?
22. JEFF CLAY	Citizen	?
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Public Attendance Sheet
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NAME (Please Print)	Organization/Affiliation Phone Number and Email Address:	Speak: Yes or No? If Yes, which Agenda Item Do you Wish to Address Before the Board Today? (List Item#)
58. Dan Shinn	Energy Solutions	No
59. THOMAS MAGETTE	ENERGY SOLUTIONS	No
60. Rolling Country	HEAL UTAH	No
61. Mary Ellen NAVAS	Citizen	No
62. Vanessa Preece	HEAL Utah	NO
63. Elise Laram	HEAL	No
64. Aurora E. Shlien	Heal	No
65. Tim Fine	Heal Utah	NO
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Public Attendance Sheet
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Board Meeting
 DEQ Bldg. #2, Conf. Room 101
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 June 9, 2009
Please Print

NAME (Please Print)	Organization/Affiliation Phone Number and Email Address:	Speak: Yes or No? If Yes, which Agenda Item Do you Wish to Address Before the Board Today? (List Item#)
77. 77. John Carter	schmnyck7@yahoo concerned citizen	N
78. Cherry Wong	Wen Chen d	
79. Kathy Vandenberg	Wasatch Clean Air Coalition	no
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DIVISION OF RADIATION CONTROL

BOARD MEETING

June 9, 2009

**ADDITIONAL
SUPPLEMENTS**

DRC BOARD FILE

- I. Minutes (Board Action Item)**
 - a. Approval of the Minutes from the
May 12, 2009 Board Meeting**

Please Replace Page 6 of the Minutes

**Tab 1, Item I. a., Correction made
to Paragraph 3, Word “Stake Holder”
Corrected to Read: “Stakeholder”
(Replaced 3 times in this paragraph)**

William J. Sinclair, Acting DEQ Director, reported that at the NWIC's May and September 2009 meetings, the NWIC passed a clarification to the existing resolution order. The clarification was to make certain *EnergySolutions* was not receiving foreign waste after the waste has gone to a treatment facility. He said that the NWIC felt it necessary to determine that the Bear Creek facility (one of the treatment facilities *EnergySolutions* uses) was properly attributing the waste-ash coming out to the facility to the original generators.

Mr. Sinclair said that prior to that, there had already been a lawsuit filed by *EnergySolutions* against the Northwest Interstate Compact (NWIC). The lawsuit fights the idea of the NWIC's authority to regulate *EnergySolutions*.

Mr. Sinclair said the NWIC is currently starting a stakeholder process to talk about the Environmental Quality Restricted Account (which is monies used to run the programs allocated by the legislature). He said that because of this the Department of Environmental Quality (DEQ) is going to start a process involving the counties, the companies, and DEQ. The stakeholder will discuss if disposal fees to DEQ are enough to fund closure. Mr. Sinclair informed the Board that Commissioner Colleen Johnson had agreed to sit on the stakeholder meetings with the NWIC.

Mr. Sinclair said that there would be an initial meeting on May 28, 2009 at DEQ to talk more about the stakeholder process. He said that this was going to be an on-going process throughout the summer. He said that as the process moves forward, he would keep the Board informed.

b. Division Activities Report (Board Information Item)

Peter A. Jenkins, Chair, asked the Board members to recall that at the last Board meeting they approved summary reporting. The Board also agreed that if they had any questions regarding the summary reporting that they would bring them up during the meeting. Chairman Jenkins asked the Board members if they had any questions on the summary report. The Board members had no question on this report.

Dane Finerfrock, Executive Secretary, discussed to include the daily manifest that the Division receives in the summary report. Mr. Finerfrock informed the Board that in the daily manifests, the Division staff are able to see whether Depleted Uranium (DU) has been manifested and received at Clive. After much discussion the Board agreed to have Mr. Finerfrock include the daily manifest report in their summary report. The Board agreed to have the staff report to the Board whenever DU was received at *EnergySolutions*.

- V. Radioactive Waste (Board Information Item)**
 - a. Response to Board Questions Regarding a Moratorium
On Depleted Uranium (DU) Disposal**

**OFFICE OF THE ATTORNEY GENERAL, STATE OF UTAH
MEMORANDUM**

TO: Radiation Control Board

FROM: Laura Lockhart
Assistant Attorney General

DATE: June 3, 2009

RE: Options for moratorium for depleted uranium

You requested that I report to you at the June 9 Board meeting about options for imposing a moratorium on land disposal of depleted uranium in Utah. I have prepared the attached proposals for your consideration.

The rule described in Part 1 of the attached handout would directly impose a moratorium. The rule described in Part 2 approaches the matter instead through the land ownership and control requirement in DRC's rules at R313-25-9. It will be helpful for Board members to know, before reviewing this option, that a previous board granted EnergySolutions an exemption from the land ownership and control requirements.

If the Board determines that it is interested in pursuing this matter, I would recommend that it approve both proposals for rulemaking so that it can receive comments on both before it makes its final determination. I would further recommend that the proposals be made separately to avoid any unnecessary delay in the rules' final implementation.

If the Board would prefer to recommend legislative action, either of these approaches could be modified for that purpose.

I will be prepared to speak to both of these options on June 9.

The NRC staff's report about "whether the quantities of depleted uranium (DU) at issue in the waste stream from uranium enrichment facilities warrant amending section 61.55(a)(6) or the section 61.55(a) waste classification tables" is the document that I found to be most directly pertinent to this matter. That document may be found at:

<http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2008/secy2008-0147/2008-0147scy.pdf>

The Nuclear Regulatory Commission selected the Staff's second option from that paper in a later decision. See http://hps.org/govtrelations/documents/nrc_srm_secy-08-0147.pdf.

DEPLETED URANIUM - OPTIONS FOR REGULATION

1. PROPOSED RULE IMPOSING MORATORIUM

a. Possible language:

R313-71-1. Definitions.

For purposes of this Section R313-71:

“Incidental depleted uranium” means depleted uranium in concentrations of less than [#]% contained in other waste streams.

R313-71-2. Moratorium on land disposal of depleted uranium

- (a) No facility licensed for land disposal of radioactive waste may dispose of depleted uranium.
- (b) This prohibition does not apply to:
 - (i) small amounts of incidental depleted uranium contained within other waste streams, which collectively total less than [#] metric tons annually;
 - (ii) waste received by a facility for disposal before the effective date of this Section R313-72, provided the contract to dispose of the waste is dated before [DATE].
- (c) This prohibition shall expire on the earlier of the following dates:
 - (i) 180 days after the effective date of the rule promulgated by the federal Nuclear Regulatory Commission regarding disposal of depleted uranium, as anticipated in the March 18, 2009 instruction from the Commission to NRC staff entitled “Staff Requirements – SECY-08-0147 – Response to Commission Order CLI-05-20 Regarding Depleted Uranium;” or
 - (ii) January 1, 2013.

Other exemptions to consider:

- Waste streams the land disposal facility has a contract to dispose of if the contract is dated [before May 13, 2009] [before the effective date of this Section R313-71].

b. Authority for rule:

Utah Code Ann. § 19-3-104. Registration and licensing of radiation sources by department - Assessment of fees - Rulemaking authority and procedure - Siting criteria.

(4) The board may make rules:

(a) necessary for controlling exposure to sources of radiation that constitute a significant health hazard

c. Applicability of Utah Code Ann. §§ 19-3-104(8) and (9).

Compliance with Utah Code Ann. §§ 19-3-104(8) and (9) would be required. Those provisions limit the authority of the Board to make rules:

(8) (a) *Except as provided in Subsection (9), the board may not adopt rules, for the purpose of the state assuming responsibilities from the United States Nuclear Regulatory Commission with respect to regulation of sources of ionizing radiation, that are more stringent than the corresponding federal regulations which address the same circumstances.*

(b) *In adopting those rules, the board may incorporate corresponding federal regulations by reference.*

(9) (a) *The board may adopt rules more stringent than corresponding federal regulations for the purpose described in Subsection (8) only if it makes a written finding after public comment and hearing and based on evidence in the record that corresponding federal regulations are not adequate to protect public health and the environment of the state.*

d. Questions the Board should consider as it determines whether to adopt this rule:

1. What is the evidence that corresponding federal regulations either are or are not adequate to protect public health and the environment?
2. If there is evidence that federal regulations are not adequate to protect public health and the environment, do we know the quantities of depleted uranium that may be land disposed without raising those concerns?
3. In the absence of a moratorium, what quantities of depleted uranium would be disposed of before the NRC completes its rulemaking process and we are able to complete ours?

2. EFFECTIVENESS OF WAIVER RULE

a. Background:

- (i) DRC rules require that a land disposal facility have evidence that a federal or state agency either own the property or will own it after closure.

R313-25-9. Institutional Information.

The institutional information submitted by the applicant shall include:

- (1) *A certification by the federal or state agency which owns the disposal site that the agency is prepared to accept transfer of the license when the provisions of R313-25-16 are met and will assume responsibility for institutional control after site closure and for post-closure observation and maintenance.*
- (2) *Evidence, if the proposed disposal site is on land not owned by the federal or a state government, that arrangements have been made for assumption of ownership in fee by the federal or a state agency.*

- (ii) EnergySolutions, through its predecessor Envirocare, received waivers from the land ownership/control requirement based on the other controls that were provided. The waivers were granted under this section of the General Provisions:

R313-12-55. Exemptions.

- (1) *The Board may, upon application or upon its own initiative, grant exemptions or exceptions from the requirements of these rules as it determines are authorized by law and will not result in undue hazard to public health and safety or the environment.*

b. Possible language:

R313-71-3. Limitation on Exemptions from the Requirements of R313-25-9.

- (1) No facility licensed for land disposal of radioactive waste may dispose of depleted uranium unless it demonstrated compliance with the requirements of R313-25-9 during the licensing process.
- (2) The requirements of R313-71-3(1) may not be waived under the authority of R313-12-55, except by a specific order from this Board that cites this Section R313-71-3.
- (3) A facility that has not been required to meet the requirements of R313-25-9 because it has received an exemption from the requirements of that provision has not demonstrated compliance with the requirements of that provision for purposes of paragraph R313-71-3(1).
- (4) The prohibition specified in R313-71-3(1) does not apply to:
 - (i) small amounts of incidental depleted uranium which collectively total less than [#] metric tons annually; or
 - (ii) waste received by a facility for disposal before the effective date of this Section R313-71, provided the contract to dispose of the waste is dated before [May 13, 2009].

Other exemptions to consider:

- waste streams the land disposal facility has a contract to dispose of if the contract is dated [before May 13, 2009] [before the effective date of this Section R313-71].

c. Authority for rule:

See authority for rulemaking cited under Part 1.b above.

d. Applicability of Utah Code Ann. §§ 19-3-104(8) and (9).

Land ownership/control requirements are specified in federal rules (10 C.F.R. § 61.14). For that reason, no analysis under these provisions would be required.

e. Questions the Board should consider as it determines whether to adopt this rule:

1. What is the basis for having different approaches to exemption from the land ownership/control requirements of R315-25-9 for different wastes?
2. What is the basis for having the rule apply immediately?

VI. Uranium Mill Licensing and Inspection (Board Information Item)
a. Status of the White Mesa Uranium Mill, Blanding, Utah

Presentation by Ron Hochstein, President of Denison Mines

Handout Distributed to DRC Board Members

Thank you

Mr. Chairman, and members of the Radiation Control Board, my name is Ron Hochstein and I am President and Chief Executive Officer of Denison Mines (USA) Corp. I appreciate the opportunity to speak to you today about the current status of the uranium industry and in particular Denison's uranium operations in Utah.

For those of you whom are new to the board, Denison is a publically traded company with uranium recovery operations in the western US, and Canada, and exploration and development projects in Canada, Mongolia, and Africa. Our holdings in the U.S. include 3 operating uranium mines in Colorado and Utah, and the only operating uranium mill in the U.S., located in San Juan County, near Blanding, Utah. Denison also has several mines in Utah and Colorado currently on standby, and 4 partially developed mines in northern Arizona.

The uranium market experienced a sharp rise in prices beginning in late 2005, peaking at \$135 per pound U_3O_8 in mid 2007. In response to the initial rise in prices, Denison opened 7 mines in Utah and Colorado. Since then the spot price has fallen to as low as \$40 per pound, but is showing recent signs of strengthening and most recently was quoted at \$50 per pound U_3O_8 .

With the softening of uranium and vanadium prices over the last 18 months we were forced to place a total of 4 mines on standby, and most recently cease processing of conventional ore at the White Mesa mill. Late last year, the company placed into standby the Tony M mine, near Ticaboo, Utah, and most recently the Rim Mine near Monticello, Utah. Denison is currently operating the Pandora and Beaver mines near La Sal, Utah and the West Sunday mine in Colorado. We are hopeful that the recent rise in the spot price of uranium will continue and we can resume operations at those mines on stand-by.

Ore produced from the mines is shipped to the White Mesa Mill, located 6 miles south of Blanding, Utah. Ore from the mines is transported to the Mill by highway trucks operating under US Department of Transportation regulations, and Denison's own company mandated requirements. In 2008, the mill received over 11,570 trucks hauling conventional ore.

The White Mesa Mill is one of only four conventional uranium mills remaining in the US, and the only one that is fully permitted and operational. The Mill began processing conventional ore in April 2008, and processed conventional ore until the end of May of this year. Although the Mill is 29 years old it is in excellent shape, with \$31 million of capital improvements and upgrades over the last two

years, including a new triple lined state-of-the-art tailings cell. In 2008, the Mill processed 249,000 tons of ore and recovered 800,000 pounds of U₃O₈, and 1.2 million pounds of V₂O₅, a by-product metal contained with the uranium in all the mines in eastern Utah. Vanadium is used in the production of high strength steel. In 2009, the Mill is budgeted to produce approximately 700,000 pounds U₃O₈, and 500,000 pounds of V₂O₅.

As stated earlier, conventional ore processing at the White Mesa mill has been suspended; however, Denison will continue to be producing uranium for the remainder of the year through the processing of alternate feed material. We will be starting up a new alternate feed circuit this month. This circuit is designed to process ^{these} ~~alternate feed~~ materials more efficiently than in the past. This circuit will operate throughout the remainder of the year and continuously going forward. We are planning on restarting conventional ore processing in early 2010 in order to fulfill long term contractual commitments.

Denison currently employs approximately 160 people in our U.S. mining and milling operations, and an additional 134 contractor personnel. Of the 134 contractor personnel, 59 are employees of White Mesa Inc., a Native American owned small business headquartered in White Mesa, Utah. The majority of our

employees and contractors are Utah-based. I'm very proud of our employees as they reached an important safety milestone in April with over 1.0 million manhours worked without a Lost Time Accident. at the White Mesa mill.

Substantially all of the uranium that is produced in the US, as well as from other international producers, is used in nuclear reactors for the generation of electricity. The only other significant use is in the production of medical isotopes. The yellowcake that Denison produces undergoes three additional, and costly, steps before it is usable as reactor fuel. The current worldwide demand for uranium is approximately 184 million pounds U₃O₈ per year, with primary production only 114 million pounds per year. The remainder is made up from secondary sources of supply such as inventories held by producers and utilities, government inventories and uranium recycled from nuclear weapons. Currently approximately 50% of the U.S. uranium demand is satisfied from uranium supplied from down blended Soviet nuclear weapons. This program will end in 2013.

There are currently 436 reactors in the world, 104 of them in the US. Nuclear power generates approximately 20% of the electricity used in the US. There are currently 29 applications for new reactors in the US, and several other countries, particularly China, India, Japan and South Korea, as well as some European

countries, have aggressive plans for expansion of nuclear power. Nuclear power's current and future contribution to reducing greenhouse gases cannot be ignored.

Based upon recent assessments of future secondary uranium supply, combined with the uranium industry's production forecast, and expected nuclear generating capacity – there is a growing requirement for increased uranium production. Based upon the second quarter Ux Consulting report, world uranium demand is forecast to increase from its 2008 level of 184 million pounds to 234 million pounds by 2020. At the same time, supply from secondary sources is expected to drop from 47 million pounds in 2008 to 15 million pounds in 2020. As a result, uranium production will need to expand significantly to meet the increasing demand.

Denison's operations provide significant economic benefit to the citizens and institutions of the State. Since the beginning of 2006, the company has paid over \$23 million in wages to our Utah employees; we have paid almost \$1.1 million in State and local property taxes, and have paid the State School and Institutional Trust Lands Administration almost \$2.3 million in fees and royalties.

Since August of 2004, the operations at the White Mesa mill have been regulated by the UDEQ, Division of Radiation Control. As with any new relationship, the

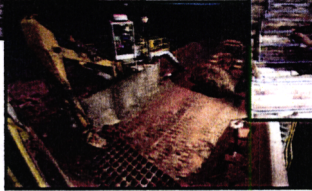
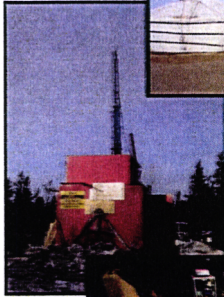
first couple of years were a bit rocky, but now we understand better what is expected by the Division and we are moving forward. Denison still has a ways to go to improve, but we are getting there. And over the past five years, there has been no shortage of activities.

Since the transition, the Division has implemented an amended Radioactive Materials License, which was based on the mill's NRC Source Materials License, a new Groundwater Discharge Permit, which has increased the groundwater monitoring from 6 parameters from 4 wells, to 38 parameters at 26 wells; a Best Management Practices Plan, a Stormwater Management Plan, a license amendment for the Fansteel alternate feed material, a tailings sampling plan and a seeps and springs sampling plan, and the licensing of a new tailings cell, to name but a few. This is in addition to the ongoing inspections and review of quarterly and semi-annual reports that are filed by us.

Currently, Denison has numerous submittals in with the Division including: the Chloroform Corrective Action Plan, a license amendment and design permit approval for tailings cell 4B, the license renewal application, an amendment to the Groundwater Discharge Permit, as well as a few minor operational license amendments.

The Division of Radiation Control is a tough regulator in their duty to protect the environment in the State of Utah, but also fair and responsive to our permitting needs; however, your support in increasing the number of staff within the Department is important to ensure that they can be responsive to all stakeholders needs.

Mr. Chairman, I appreciate the committee's time, and I am happy to answer any questions.



Radiation Control Board

June 9, 2009

MEETING THE CHALLENGE



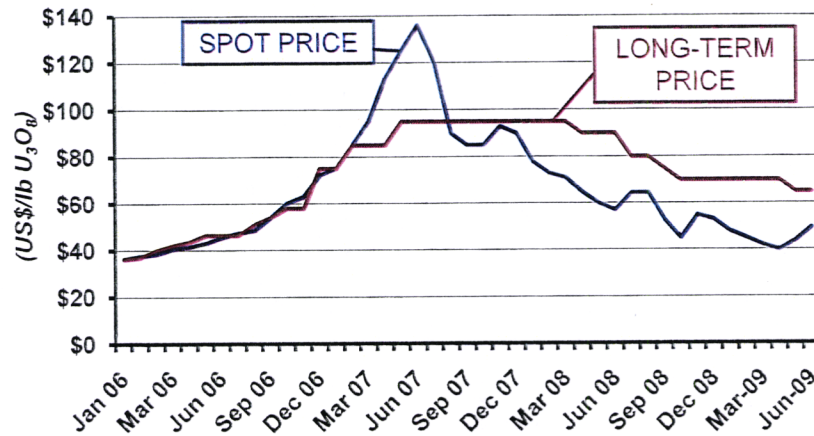
Denison Quick Facts (TSX: DML, NYSE AMEX: DNN)

- Exploration, development, mining, milling
- Assets in Canada, U.S., Zambia, Mongolia
- 3 operating mines in North America
- 2 uranium mills in North America
- 2008 U₃O₈ production: 1.6 million lbs
 - More than double 2007 production
- 2009 U₃O₈ production: 1.4 million lbs

MEETING THE CHALLENGE



U₃O₈ Spot and Long-term Prices (As of June 8/09)



Published by UxCo.

MEETING THE CHALLENGE



U.S. Production

- Sunday, Rim & Tony M on standby
- Standby mines can be restarted to meet sales contracts
- U.S. production can produce 1.7 million lbs/year



MEETING THE CHALLENGE



White Mesa Mill

- Conventional ore processing started April/08
 - White Mesa only operating conventional uranium ore processing facility in U.S.
- 2008: completed \$31 million mill modernization & relining of Tailings Cell 4A
- 2008 production
 - 0.8 million lbs U_3O_8
 - 1.2 million lbs V_2O_5

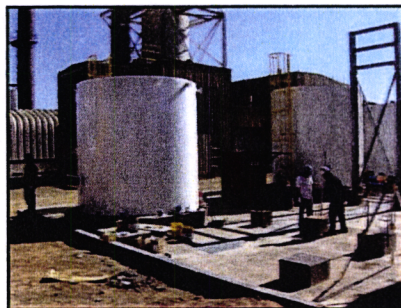


MEETING THE CHALLENGE



White Mesa Mill

- Conventional ore processing ended May/09
- \$5 million alternate feed circuit :
 - Operational by June
 - 2009 output: 160,000 lbs
- 2009 production
 - 0.7 million lbs U_3O_8
 - 0.5 million lbs V_2O_5

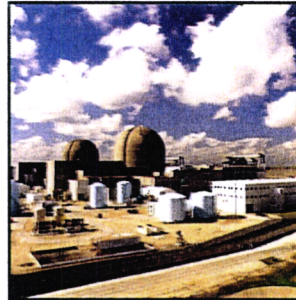


MEETING THE CHALLENGE



Uranium Market

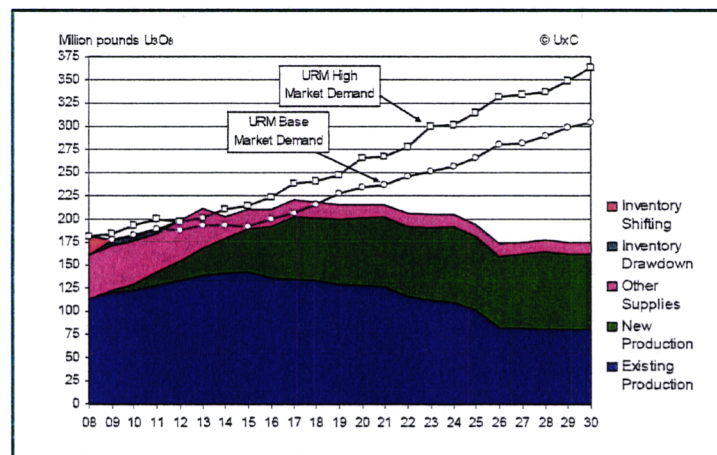
- 436 operating nuclear reactors in 30 countries
 - 104 reactors in the U.S. generating 20% of the electricity
- 44 reactors under construction
- 29 applications for new reactors in the U.S.
- 14 new countries expected to go nuclear
- Nuclear power reduces carbon footprint & helps eliminate greenhouse gases



MEETING THE CHALLENGE



Market Demand vs. Mid-Case Production Sources, 2008 – 2030



Source: Uranium Market Outlook, Q1 2009, Ux Consulting Company


MEETING THE CHALLENGE



2004 to 2008 Activities

- Radioactive Materials License
- Groundwater Discharge Permit
- Management and Sampling Plans
- Alternate Feed License Amendment
- Licensing of a new Tailings Cell

MEETING THE CHALLENGE

A small, horizontal aerial photograph showing a mining site with various structures, roads, and tailings piles.

Current Activities

- Chloroform Corrective Action Plan
- Cell 4B License Amendment and Permitting
- License Renewal Application
- GWDP Amendments

MEETING THE CHALLENGE

A small, horizontal aerial photograph showing a mining site with various structures, roads, and tailings piles.

RADIATION CONTROL BOARD
Department of Environmental Quality (Bldg #2),
Conference Room 101, 168 North 1950 West, Salt Lake City, Utah
3:00 – 5:00 PM, June 9, 2009

TENTATIVE AGENDA

- I. Minutes (**Board Action Item**)
 - a. Approval of the Minutes from the May 12, 2009 Board Meeting
- II. Rules
No Items
- III. Radioactive Materials Licensing/Inspection
No Items
- IV. X-Ray Registration/Inspection
No Items
- V. Radioactive Waste (**Board Information Item**)
 - a. Response to Board Questions Regarding a Moratorium On Depleted Uranium (DU) Disposal
- VI. Uranium Mill Licensing and Inspection (**Board Information Item**)
 - a. Status of the White Mesa Uranium Mill, Blanding, Utah
- VII. Other Division Issues
 - a. Modifying the Board Policy: "Requests by the Public to be Placed on the Board Agenda" (**Board Action Item**)
 - b. Division Activities Report (**Board Information Item**)
- VIII. Public Comment
- IX. **The Next Scheduled Board Meeting: July 14, 2009 (Tuesday), DEQ Bldg #2, Conference Room 101, 168 North 1950 West, Salt Lake City, Utah 3:00 – 5:00 P.M.**

For those individuals needing special assistance in accordance with the Americans with Disabilities Act, please contact Brooke Baker at the Utah Department of Environmental Quality, at 168 North 1950 West, Salt Lake City, UT 84116, Office of Human Resources at (801) 536-4412, TDD (801) 536-4414, or by email at: bbaker@utah.gov.

1	<p>I. Minutes (Board Action Item)</p> <p>a. Approval of the Minutes from the May 12,, 2009 Board Meeting</p>
2	<p>II. Rules</p> <p>No Items</p>
3	<p>III. Radioactive Materials Licensing/Inspection</p> <p>No Items</p>
4	<p>IV. X-Ray Registration/Inspection</p> <p>No Items</p>
5	<p>V. Radioactive Waste (Board Information Item)</p> <p>a. Response to Board Questions Regarding a Moratorium on Depleted Uranium (DU) Disposal</p>
6	<p>VI. Uranium Mill Licensing and Inspection (Board Information Item)</p> <p>a. Status of the White Mesa Uranium Mill, Blanding, Utah</p>
7	<p>VII. Other Division Issues (Board Info Items)</p> <p>a. Modifying the Board Policy: "Request by the Public to be Placed on the Board Agenda"</p> <p>b. Division Activities Report</p> <p>VIII. Public Comment</p>
8	<p>IX. Other Issues:</p> <p>The Next Scheduled Board Meeting: July 14, 2009, (Tuesday), DEQ Bldg #2, Conference Room 101, 168 North 1950 West, Salt Lake City, Utah, 3:00 – 5:00 P.M.</p>

- I. **Minutes (Board Action Item)**
 - a. **Approval of the Minutes from the
May 12, 2009 Board Meeting**

MINUTES
OF
THE UTAH RADIATION CONTROL BOARD

May 12, 2009

Department of Environmental Quality, DEQ Building #2

Conference Room 101

168 N 1950 W

Salt Lake City, Utah 84114-4850

BOARD MEMBERS PRESENT

Peter A. Jenkins, M.S., CHP, Chair
Dane L. Finerfrock, Executive Secretary
Scott Bird
Patrick D. Cone
Frank D. DeRosso, MSPH, CIH
Christian K. Gardner
Colleen Johnson
Douglas S. Kimball, DMD
Joseph K. Miner, M.D., MSPH
William J. Sinclair, Acting Executive Director
David A. Tripp, Ph.D.

BOARD MEMBERS ABSENT/EXCUSED

Elizabeth Goryunova, M.S., Vice Chair
Edd C. Johnson
John W. Thomson, M.D.

DRC STAFF/OTHER DEQ MEMBERS

PRESENT

Edith Barker, DRC Staff
Kevin Carney, DRC Staff
David Esser, DRC Staff
Phil Goble, DRC Staff
Craig Jones, DRC Section Manager
Laura Lockhart, Attorney, Atty. General's Office
Yoli Necochea, DRC Staff
Raymond Nelson, DRC Staff
Loren Morton, DRC Section Manager
Sonja Robinson, DRC Staff

PUBLIC

Bob Archibald, Private Citizen
Sarah Brownstein, Private Citizen
Peter Brownstein, Private Citizen
Duane Carlin, HEAL - Utah
John Coulter, HEAL - Utah
Rolene Coulter, HEAL - Utah
Michael Cowley, Private Citizen
Judy Fahys, Salt Lake Tribune
Ed Firmage, Jr., Private Citizen
Neomi Frank, Private Citizen
George Gates, HEAL - Utah
Eileen G. Greene, Private Citizen
Elise Lazar, HEAL - Utah
Mark Ledoux, EnergySolutions
Thomas Magette, EnergySolutions
Shaun McCandless, EnergySolutions
Marsha McLean, Sierra Club
Brian Moench, UPHE
Arthur Morris, HEAL - Utah
M. Diane Naham, Private Citizen
Mary Ellen Navas, Private Citizen
James O'Neal, Private Citizen
Vanessa Pierce, HEAL-Utah
Eric Spreng, HEAL - Utah
Katy Savage, HEAL - Utah
Sallie Shatz, HEAL - Utah
Aurora E. Shlien, HEAL - Utah
Dan Shrum, EnergySolutions
Christopher Thomas, HEAL-Utah
Cherry Wong, Private Citizen

GREETINGS/MEETING CALLED TO ORDER

The Utah Radiation Control Board convened in the Department of Environmental Quality (DEQ), Conference Room 101, 168 North 1950 West, DEQ Bldg. 2, Salt Lake City, Utah. Peter A. Jenkins, Chair, called the meeting to order at 3:05 p.m. He welcomed the Board Members and the public. Chairman Jenkins indicated that if the public wished to address any items on the agenda, they should sign the public sign-in sheet. Those desiring to comment would be given an opportunity to address their concerns during the comment period.

I. APPROVAL OF MINUTES (Board Action Item)

a. Approval of the Minutes from the April 14, 2009 Board Meeting

Peter A. Jenkins, Chair, asked the Board members for corrections to the minutes from the April 14, 2009 Board meeting. There were no corrections requested by the Board members to the minutes.

MOTION MADE BY DOUGLAS S. KIMBALL TO APPROVE THE MINUTES OF APRIL 14, 2009 AS WRITTEN

MOTION SECONDED BY JOSEPH K. MINER

MOTION CARRIED AND PASSED UNANIMOUSLY

**II. RULES
No Items**

**III. RADIOACTIVE MATERIALS LICENSING/INSPECTION
No Items**

**IV. X-Ray Registration/Inspection (Board Action Item)
a. Approval of Mammography Imaging Medical Physicists**

Craig Jones, DRC Staff, informed the Board on this action item. Mr. Jones said that this item required the Board's approval annually. He said the approval involved the classification of an individual called the Mammography Imaging Medical Physicist (MIMP). Mr. Jones informed the Board that there were currently 50 facilities in the State of Utah that were certified by the Food and Drug Administration (FDA) to perform mammography services. He said these facilities were required by the FDA to make use of an MIMP with their knowledge, skills and abilities to perform mammography inspections in the State.

Mr. Jones said that there were seven individuals seeking recertification in the State as qualified MIMP inspectors and one individual (Adam Arndt, M.S.) is seeking to be certified. The following eight individuals are requesting the Board's approval as MIMPs:

Lisa M. Bosworth, M.S.
Byron L. Hardy, Ph. D.
Robert J. Hoffman, M.S.
Peter A. Jenkins, M.S.

Ann M. Jones, M.S.
Ross L. Mercer, M.S.
Gene L. Wollan, M.S.
Adam Arndt, M.S.

RECOMMENDATION:

The Executive Secretary recommended that the Board approve each individual as a Mammography Imaging Medical Physicist (MIMP). The effective date of their approval should be from June 1, 2009 to May 31, 2009.

MOTION MADE BY DAVID A. TRIPP TO APPROVE THE INDIVIDUALS THAT HAVE REQUESTED TO BE CERTIFIED AS MAMMOGRAPHY IMAGING MEDICAL PHYSICIST EFFECTIVE FROM JUNE 1, 2009 THROUGH MAY 31, 2010

SECONDED BY JOSEPH K. MINER

MOTION CARRIED AND PASSED UNANIMOUSLY

V. Radioactive Waste (Board Information Items)

**a. Judd vs. Utah Radiation Control Board
Petition to Intervene: Utah Court of Appeals**

Dane L. Finerfrock, Executive Secretary, informed the Board that in the Board packets each member had a copy of a letter from the Utah Court of Appeals. The letter indicated that Mr. Charles Judd, President of Cedar Mountain Environmental Inc., had filed an action on April 9, 2009 asking the court to review the Board's decision on Standing. Mr. Finerfrock said he would keep the Board informed on the final decision on this matter.

**b. Presentation by Representatives from HEAL – Utah
Regarding Depleted Uranium Disposal**

Christopher Thomas, Policy Director of HEAL-Utah, thanked the Board for hearing his presentation (Mr. Thomas' power point presentation is attached).

After the presentation, members of the public came forward and presented their comments to the Board. The following are the public comments from those that addressed the Board:

PUBLIC COMMENTS:

- (1) Kate Savage, HEAL – Utah, (see attached comments).
Final request to the Board: Ms. Savage asked the Board to think about what Depleted Uranium would cause in 50,000 years or in

deep geologic-time. She asked Board members to care about the future and multi-generational justice.

- (2) Bob Archibald, Private Citizen from Sandy, Utah, (see attached comments). Final request to the Board: Mr. Archibald said that he agrees with Christopher Thomas and asked the Board to impose a moratorium on storing any further Depleted Uranium in the State of Utah, pending much closer scrutiny.
- (3) Mary Ellen Navas, Private Citizen from Sandy, Utah, (see attached comments). Final request to the Board: Ms. Navas asked that a moratorium be placed on storing the large quantities of Depleted Uranium that is coming into the State of Utah.
- (4) Edwin Firmage, Jr., Private Citizen, (see attached comments). Final request to the Board: Mr. Firmage asked that an immediate moratorium be placed on the disposal of any additional Depleted Uranium within the State of Utah.
- (5) Michael Cowley, Private Citizen of Salt Lake County, (see attached comments). Final request to the Board: Mr. Cowley asked the Board not to allow future waste streams (especially Depleted Uranium with its billion year decay cycle at activity levels greater than Class C) to circumvent the geographically predetermined time-limit at Clive.

Questions by the Board:

Bill Sinclair asked Christopher Thomas about the 700,000 metric tons of Depleted Uranium (DU) that needed a future disposal pathway. Mr. Sinclair asked if this material was owned by the Department of Energy (DOE). He asked if the DOE was considering looking at disposal sites like the Nevada Test site and the Clive site at *EnergySolutions*, and if they were also looking to dispose of the waste at other DOE facilities?

Christopher Thomas, HEAL-Utah, responded that he believed the material was exclusively owned by DOE, and that they were looking to dispose of the material within the next couple of years. Mr. Thomas said that DOE had identified both of the sites. He said that DOE had also mentioned the sites in their Environmental Impact Statements (EIS).

The Board discussed with Ms. Laura Lockhart, Attorney, whether they could request a temporary moratorium and whether they could make a rule for Depleted Uranium (DU), until the U.S. Nuclear Regulatory Commission (NRC) has finished with their rule making on DU. Chairman Jenkins asked Ms. Lockhart to report to them at the next Board meeting on the following questions: (1) whether the Executive Secretary had the

authority through the licensing process to enact a moratorium for DU; (2) can this be accomplished better through a rule making process; and (3) can the State of Utah promulgate a more stringent rule--more stringent than there is in the Federal rules.

VI. URANIUM MILL TAILINGS UPDATE

No Items

VII. Other Division Issues

a. Summary from the Meeting of the Northwest Interstate Compact (NWIC) Low- Level Radioactive Waste Management (Board Information Item)

William J. Sinclair, Acting Executive Director, reported to the Board regarding two meetings he had recently attended: (1) the meeting of the Low-Level Radioactive Waste (LLRW) Forum held on March 22-23, 2009 in Columbia, South Carolina and (2) the meeting of the Northwest Interstate Compact (NWIC) held on May 5, 2009 in Seattle, Washington. Mr. Sinclair went over some of the background history, legislation, and objective meeting information, and the goals of the interstate compacts. (see attached reports)

After his presentation to the Board, Mr. Sinclair pointed out two final important issues the Northwest Interstate Compact (NWIC) was currently seeking from *EnergySolutions*: (1) the NWIC had been receiving monthly reports for years from *EnergySolutions* on material being disposed at the Clive site. These reports have been discontinued by *EnergySolutions*, but the NWIC would still like these reports to continue. (2) The NWIC has asked *EnergySolutions* how the waste was attributed at the Bear Creek waste facility in Tennessee. He said the NWIC had not received a response from *EnergySolutions* on either one of these issues.

Mr. Sinclair said that NWIC reissued the letters to *EnergySolutions* requesting information at the September 2008 Portland, Oregon meeting. Mr. Sinclair said that the NWIC did not expect a response from *EnergySolutions* because of the pending lawsuits, but the NWIC felt it was necessary to take this action. Mr. Sinclair asked the Board if they had any questions.

Questions by the Board:

David A. Tripp asked Mr. Sinclair to review the background information of the letters being sent by the Northwest Interstate Compact (NWIC) to *EnergySolutions*.

William J. Sinclair, Acting DEQ Director, reported that at the NWIC's May and September 2009 meetings, the NWIC passed a clarification to the existing resolution order. The clarification was to make certain EnergySolutions was not receiving foreign waste after the waste has gone to a treatment facility. He said that the NWIC felt it necessary to determine that the Bear Creek facility (one of the treatment facilities EnergySolutions uses) was properly attributing the waste-ash coming out to the facility to the original generators.

Mr. Sinclair said that prior to that, there had already been a lawsuit filed by EnergySolutions against the Northwest Interstate Compact (NWIC). The lawsuit fights the idea of the NWIC's authority to regulate EnergySolutions.

Mr. Sinclair said the NWIC is currently starting a Stake Holder process to talk about the Environmental Quality Restricted Account (which is monies used to run the programs allocated by the legislature). He said that because of this the Department of Environmental Quality (DEQ) is going to start a process involving the counties, the companies, and DEQ. The State Holders will discuss if disposal fees to DEQ are enough to fund closure. Mr. Sinclair informed the Board that Commissioner Colleen Johnson had agreed to sit on the Stakeholder meetings with the NWIC.

Mr. Sinclair said that there would be an initial meeting on May 28, 2009 at DEQ to talk more about the stakeholder process. He said that this was going to be an on-going process throughout the summer. He said that as the process moves forward, he would keep the Board informed.

b. Division Activities Report (Board Information Item)

Peter A. Jenkins, Chair, asked the Board members to recall that at the last Board meeting they approved summary reporting. The Board also agreed that if they had any questions regarding the summary reporting that they would bring them up during the meeting. Chairman Jenkins asked the Board members if they had any questions on the summary report. The Board members had no question on this report.

Dane Finerfrock, Executive Secretary, discussed including the daily manifest that the Division receives in the summary report. Mr. Finerfrock informed the Board that in the daily manifests, the Division staff are able to see whether Depleted Uranium (DU) has been manifested and received at Clive. After much discussion the Board agreed to have Mr. Finerfrock include the daily manifest report in their summary report. The Board agreed to have the staff report to the Board whenever DU was received at EnergySolutions.

Peter A. Jenkins, Chair, welcomed the newly appointed Board Member, Commissioner Colleen Johnson, who was present at this Board meeting.

Amendment Request to Board Policy:

Peter Jenkins, Chair, informed the Board that there was a policy for members of the public to follow in order to address the Board. After much discussion by the Board members, Chairman Jenkins made the following motion to change the policy that was currently on the web page:

MOTION MADE BY PETER A. JENKINS TO AMEND THE CURRENT POLICY REQUIREMENT AND REQUIRE THAT ANY MEMBER OF THE PUBLIC, ADDRESSING THE BOARD ON AN UPCOMING AGENDA, MUST PROVIDE THE INFORMATION THAT THEY WILL BE PRESENTING TWO WEEKS PRIOR TO THE BOARD MEETING TO THE EXECUTIVE SECRETARY

SECONDED BY CHRISTIAN K. GARDNER

MOTION CARRIED AND PASSED UNANIMOUSLY

VIII. PUBLIC COMMENT
Please refer to Item V. b.

VIII. The Next Scheduled Board Meeting: May 12, 2009 (Tuesday), DEQ Bldg #2, Conference Room 101, 168 North 1950 West, Salt Lake City, Utah 3:00 – 5:00 P.M. THE BOARD MEETING ADJOURNED AT 4:58 P.M.

- V. Radioactive Waste (Board Information Items)**
 - b. Presentation by Representatives from
HEAL - Utah Regarding Depleted Uranium
Disposal**

**Christopher Thomas - Attachment of his
Power-Point Presentation and Comments**

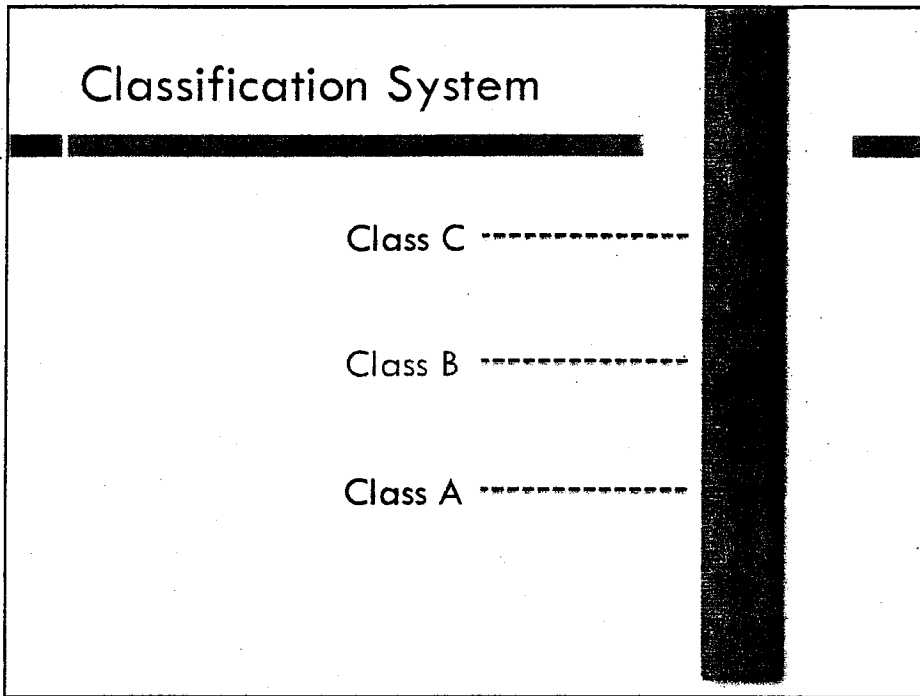


DEPLETED URANIUM AND UTAH

The case for a moratorium on DU disposal

Part 1. A hole in the regulations





People who are concerned about nuclear waste in Utah know that we use a classification system for low-level nuclear waste. You can think of it like a ruler that measures the concentration of a particular radionuclide. Above certain limits, the waste becomes Class B or Class C. Of course in Utah, we have banned Class B and C waste.

Class A – Everything else

Table 1.

C-14	8	
Ni-59	80	
Nb-94	220	
Tc-99	3	
I-129	.08	
Pu-241		3,500
Cm-242		20,000
Ra-226		100

Table 2.

H-3	40
Co-60	700
Ni-63	3.5
Sr-90	.04
Cs-137	1

If the waste does not contain any radionuclides listed in either Table I or II, it is Class A

-Utah Administrative Rules, R313-15-1008(1)(f)

But it's actually a little more complicated than that. If you look in our state rules, you will see a couple of tables. You use the tables to figure out whether a particular waste is Class A, B, or C. But there's an important caveat. Any radionuclide that does not appear in either table is defined to be Class A waste. This means that anything that was not dealt with in the tables is automatically cast in the Class A designation and is therefore allowed to be disposed at the EnergySolutions site in Utah. Although these are drastically simplified tables, you will notice that Uranium does not appear in either table – therefore, a literal reading would lead you to believe that all Uranium is by default a Class A waste.

Table 7.2 Waste Classification Table

Isotope	Column 1 Maximum Concentration for Class A Segregated Waste. Above This, It Is Class B Stable Waste $\mu\text{Ci}/\text{cm}^3$	Column 2 Concentrations Above Which Some Wastes Become Class C Intruder Waste $\mu\text{Ci}/\text{cm}^3$	Column 3 Maximum Concentration For Any Waste Class $\mu\text{Ci}/\text{cm}^3$
Any with half-life less than 5 years	700	70,000	Theoretical maximum specific activity
H-3	40	10 ^a	Theoretical maximum ^a Specific Activity
C-14	0.8	0.8	0.8 ^a
Ni-59	2.2	2.2	2.2
Co-60	700	70,000	Theoretical maximum specific activity
Ni-63	3.5	70	70
Nb-94	0.002	0.002	0.002
Sr-90	0.04	150	700
Tc-99	0.3	0.3	0.3 ^a
I-129	0.008	0.008	0.008 ^a
Cs-135	84	84	84
Cs-137	1.0	44	4600
Enriched Uranium	0.04	0.04	0.04
Natural or Depleted uranium	0.05	0.05	0.05
Alpha-emitting transuranic isotopes			10 nCi/g
Pu-241			350 nCi/g

However, it wasn't always this way. Here I'm showing you a classification table as it appeared in 1981. This was a first cut at what the waste classification tables would eventually look like.

Table 7.2 Waste Classification Table

Isotope	Column 1 Maximum Concentration for Class A Segregated Waste. Above This, It Is Class B Stable Waste $\mu\text{Ci}/\text{cm}^3$	Column 2 Concentrations Above Which Some Wastes Become Class C Intruder Waste $\mu\text{Ci}/\text{cm}^3$	Column 3 Maximum Concentration For Any Waste Class $\mu\text{Ci}/\text{cm}^3$
Any with half-life less than 5 years	700	70,000	Theoretical maximum specific activity
H-3	40	10^8	Theoretical maximum Specific Activity
C-14	0.8	0.8	0.8 ^a
Ni-59	2.2	2.2	2.2
Co-60	700	70,000	Theoretical maximum specific activity
Ni-63	3.5	70	70
Nb-94	0.002	0.002	0.002
Sr-90	0.04	150	700
Tc-99	0.3	0.3	0.3 ^a
I-129	0.008	0.008	0.008 ^a
Cs-135	84	84	84
Cs-137	1.0	44	4600
Enriched Uranium	0.04	0.04	0.04
Natural or Depleted uranium	0.05	0.05	0.05
Alpha-emitting transuranic isotopes			10 nCi/g
Pu-241			350 nCi/g

Anything less concentrated than the values in column one is Class A, anything more concentrated is Class B, and anything more concentrated than column 2 is Class C waste. Anything greater than Column 3 was not generally to be disposed in shallow land burial sites like the EnergySolutions site.

Table 7.2 Waste Classification Table

Isotope	Column 1 Maximum Concentration for Class A Segregated Waste. Above This, It Is Class B Stable Waste $\mu\text{Ci}/\text{cm}^3$	Column 2 Concentrations Above Which Some Wastes Become Class C Intruder Waste $\mu\text{Ci}/\text{cm}^3$	Column 3 Maximum Concentration For Any Waste Class $\mu\text{Ci}/\text{cm}^3$
Any with half-life less than 5 years	700	70,000	Theoretical maximum specific activity
H-3	40	10*	Theoretical maximum* Specific Activity
C-14	0.8	0.8	0.8*
Ni-59	2.2	2.2	2.2
Co-60	700	70,000	Theoretical maximum specific activity
Ni-63	3.5	70	70
Nb-94	0.002	0.002	0.002
Sr-90	0.04	150	700
Tc-99	0.3	0.3	0.3*
I-129	0.008	0.008	0.008*
Cs-135	84	84	84
Cs-137	1.0	44	4600
Enriched Uranium	0.04	0.04	0.04
Natural or Depleted uranium	0.05	0.05	0.05
Alpha-emitting transuranic isotopes			10 nCi/g
Pu-241			350 nCi/g

You will notice that in 1981, in the draft classification tables, Uranium DOES appear. And you will also notice that the concentration limits were quite low -- .05 micro-curies per cubic centimeter. This was the limit for Class A, B, and C waste. What does this mean? It meant that in 1981, any waste having greater than .05 micro-curies per cubic centimeter of natural or depleted uranium was generally NOT considered appropriate for shallow land disposal, like at EnergySolutions' site in Utah.

Table 7.2 Waste Classification Table

Isotope	Column 1 Maximum Concentration for Class A Segregated Waste. Above This, It Is Class B Stable Waste $\mu\text{Ci}/\text{cm}^3$	Column 2 Concentrations Above Which Some Wastes Become Class C Intruder Waste $\mu\text{Ci}/\text{cm}^3$	Column 3 Maximum Concentration for Any Waste Class $\mu\text{Ci}/\text{cm}^3$
Any with half-life less than 5 years	700	70,000	Theoretical maximum specific activity Theoretical maximum* Specific Activity
H-3	40	10*	0.8*
C-14	0.8	0.8	2.2
Ni-59	2.2	2.2	Theoretical maximum specific activity
Co-60	700	70,000	70
Ni-63	3.5	70	0.002
Nb-94	0.002	0.002	700
Sr-90	0.04	150	0.3*
Tc-99	0.3	0.3	0.008*
I-129	0.008	0.008	84
Cs-135	84	84	4600
Cs-137	1.0	44	
Alpha-emitting transuranic isotopes Pu-241			10 nCi/g 350 nCi/g

Ultimately, however, Uranium in all its forms was REMOVED from the waste classification tables. Why?

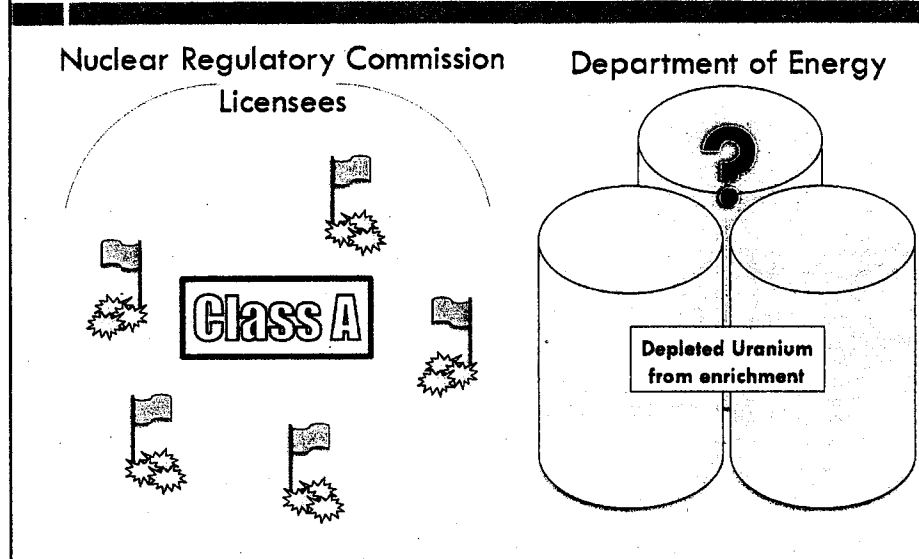
Why was Uranium removed?

[T]he types of uranium-bearing wastes disposed of do not present a sufficient hazard to warrant limitation on the concentration of this naturally occurring material

Source: NUREG-0945 1982

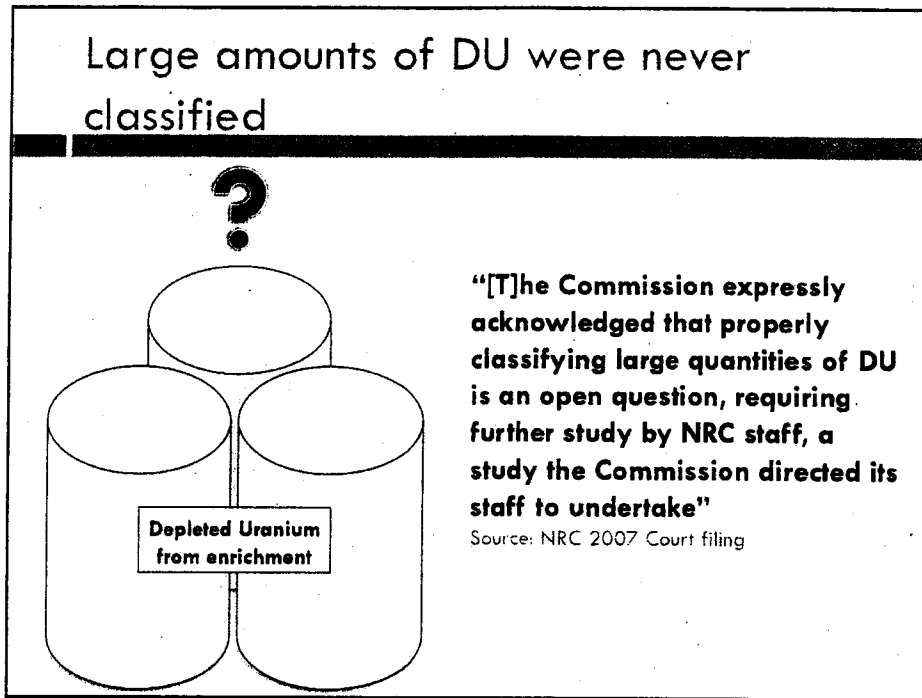
When the Nuclear Regulatory Commission published the final rules on low-level nuclear waste classification, they released this statement, saying that thy types of uranium-bearing wastes they oversaw did not require setting a limit on this naturally occurring material. So what did this mean, practically speaking?

Why was Uranium removed?



Well, it's important to remember that the Nuclear Regulatory Commission only sets rules, typically, for commercial entities. So back in 1982, as the NRC was publishing these rules, they looked around at all of their commercial licensees and figured out, generally speaking, what kinds of waste they had. And when they did that, they realized that the licensees only possessed small quantities of uranium wastes that did not pose, in their minds, a severe risk. For these small quantities of commercial uranium-based waste, the NRC said that these could safely fall under the Class A rubric. However, there was a very large, very concentrated, and very risky waste stream out there – that belonged to the Department of Energy. By statute, the Department of Energy is not required to play by NRC's rules and is not an NRC licensee. When the NRC said that small amounts of commercial Uranium waste could be considered Class A, it left the classification of large amounts of highly concentrated Depleted Uranium an open question.

Large amounts of DU were never classified



"[T]he Commission expressly acknowledged that properly classifying large quantities of DU is an open question, requiring further study by NRC staff, a study the Commission directed its staff to undertake"

Source: NRC 2007 Court filing

The NRC acknowledged this in 2007, in a court filing, when the Commission stated that properly classifying large quantities of DU was an open question, requiring further study by NRC staff. In other words, the impacts and proper disposal of large amounts of depleted uranium was NEVER finalized, and never dealt with in our national low-level waste classification system. This is the hole in the regulations.

A hole in the regulations—Large amounts of DU not covered

Table 1.

C-14	8	
Ni-59	80	
Nb-94	220	
Tc-99	3	
I-129	.08	
Pu-241		3,500
Cm-242		20,000
Ra-226		100

Table 2.

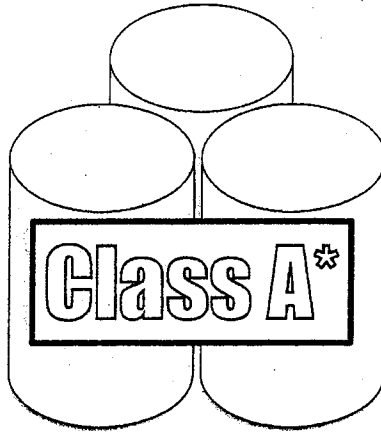
H-3	40
Co-60	700
Ni-63	3.5
Sr-90	.04
Cs-137	1

If the waste does not contain any radionuclides listed in either Table I or II, it is Class A

Source: Utah Administrative Rules, R313-15-1008(1)(f)

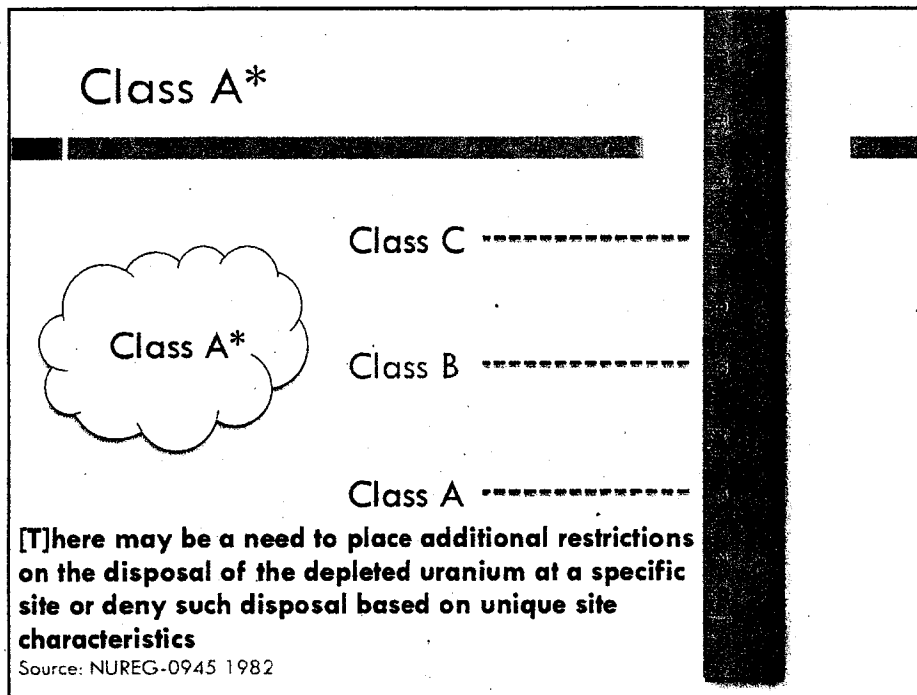
... Because despite the well documented history and the admission by NRC that the classification of depleted uranium was never done and required further study, what we're stuck with is a waste classification system that treats Depleted Uranium, by default, as a class A waste.

Part 2. Class A (with an asterisk)



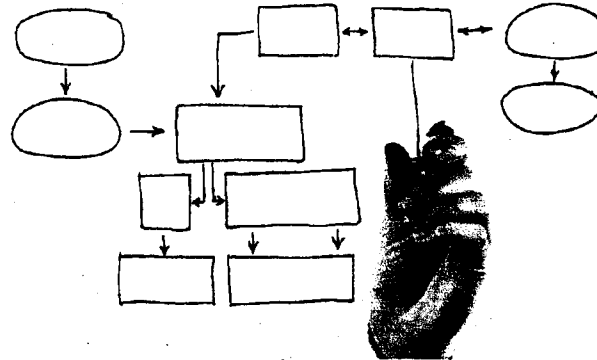
*This waste requires further study before it can be disposed of as a Class A waste

This brings us to the present year, 2009, when the Nuclear Regulatory Commission, by a 3 – 1 vote, tentatively decided to treat depleted uranium as a very special kind of Class A waste. We at HEAL have begun to refer to this as “Class A with an asterisk”



What does Class A with an asterisk mean? Well, unlike the system we're used to, where anything that is a Class A waste can go to a Class A site, and so on, depleted uranium is considered a class A waste but may NOT be suitable for disposal at Class A sites. In their words, "There may be a need to place additional restrictions on the disposal of depleted uranium at a specific site or (even) DENY such disposal based on unique site characteristics."

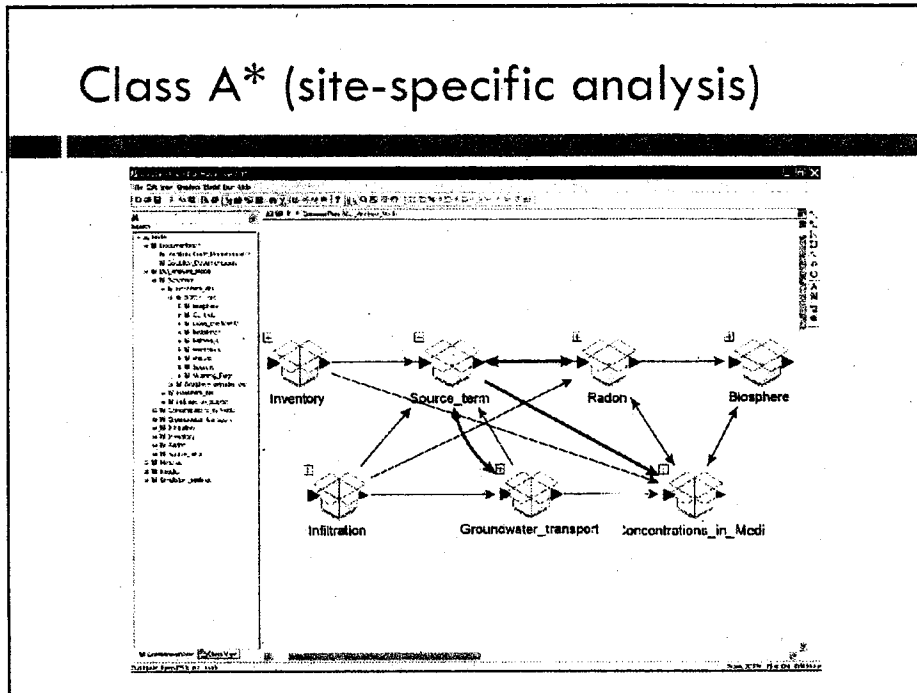
Class A* (site-specific analysis)



Will dose limits be exceeded?

What this will require is complicated mathematical modeling that will try to answer the question of whether dose limits to members of the public will be exceeded.

Class A* (site-specific analysis)



Of course they won't use a whiteboard, they'll use computers to do the analysis – this is an image from NRC's recent publication on depleted uranium.

Class A* (assumptions)

Key assumptions

What is the performance period?

What is the disposal depth?

What is the site moisture?

How long is institutional control?

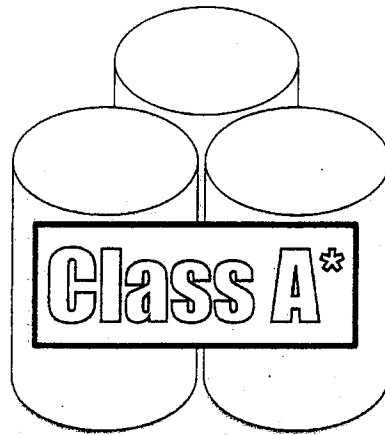
The outcome of these models – whether dose limits will be exceeded – hinge entirely upon the variables and assumptions used to run the program. These are several key factors that if set low or high could change the outcome of the model. For instance, if you look at depleted uranium over a short horizon (say, 10,000 years) a site could well meet the dose limits. However, if that same site were modeled over 1 million years (which is when depleted uranium is at its peak hazard), that same site could fail. In order to ensure consistency, NRC will undertake a rule-making to decide what some of these key assumptions are and how they can vary over the modeling time horizon.

Class A* (NRC rule-making)

Will likely take 2 – 3 years

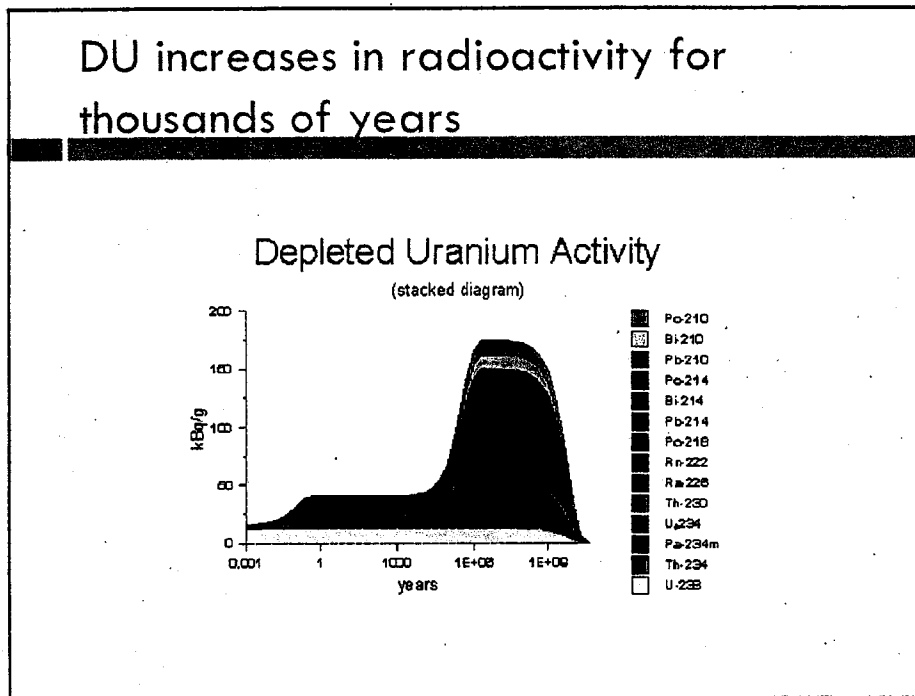
I was recently in Washington, DC, and met with the staff that is working on this issue of depleted uranium classification, and they said that this rulemaking would likely take in the neighborhood of 2 to 3 years. This is important, and I will come back to it later.

Part 3. The problem

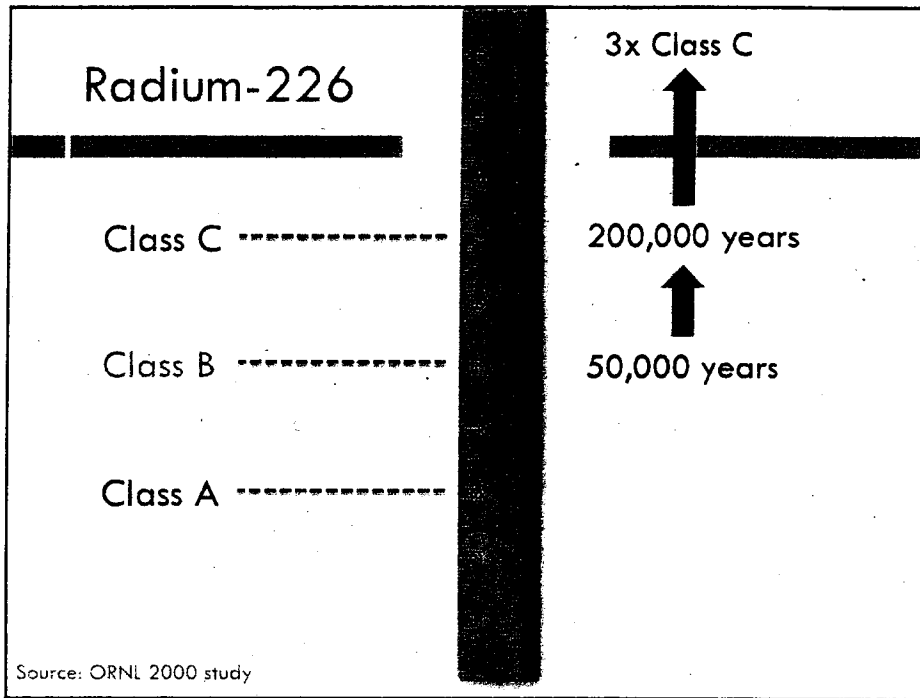


So, in the mean time, why should we here in Utah, and you as Radiation Control Board members, be concerned about Depleted Uranium coming to Utah?

DU increases in radioactivity for thousands of years

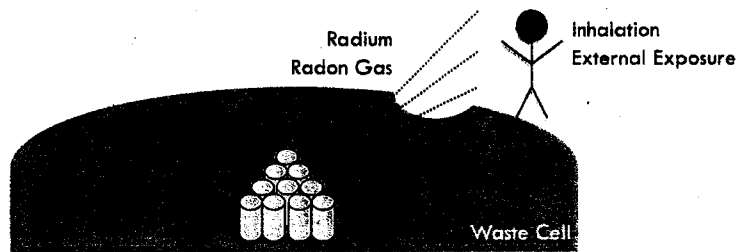


As was noted in the last meeting and in newspaper reports, depleted uranium grows more radioactive and hazardous over time. Whereas most Class A waste is thought to decay to reasonably safe levels within 100 years, depleted uranium reaches its peak hazard in around 1 million years. This is because of the decay products of uranium-238, the main constituent of depleted uranium. If you can see it, one listed decay product is Radium-226, which I'm going to focus on for a moment.



The state of Utah, even though it doesn't define limits for Uranium, DOES specify limits on Radium-226. And if you look at one study by the DOE conducted in 2000, there are some interesting results. According to their calculations, the radium-226 from depleted uranium will exceed Class B limits in around 50,000 years, and will exceed Class C limits in about 200,000 years. Eventually, the concentration of Radium-226 will be THREE TIMES the class C limit. If you're like me, then you're probably asking yourself why we would ever allow a waste stream into the state that will in the future exceed Class A limits. Although Utah law is silent on when to apply classification limits, the Division of Radiation Control has taken the position that the limits are observed when the waste arrives for disposal, and not over the life of the waste. This doesn't seem right to me.

Radiation exposure limits could be exceeded in a matter of hours



Even if the disposal site is arid, eventual erosion of the cover could lead to doses exceeding the Federal standard (25 mRem per year) in only a matter of hours for an onsite intruder

One of the problems with radium-226 and radon gas, another decay product, is that these can expose on-site intruders if the waste cap is ever eroded. And it's hard to imagine that the cap would NOT erode over 1 million years of hazard. One study found that if the depleted uranium waste was ever uncovered through erosion, an onsite intruder could receive more than the dose limit in a matter of mere hours.

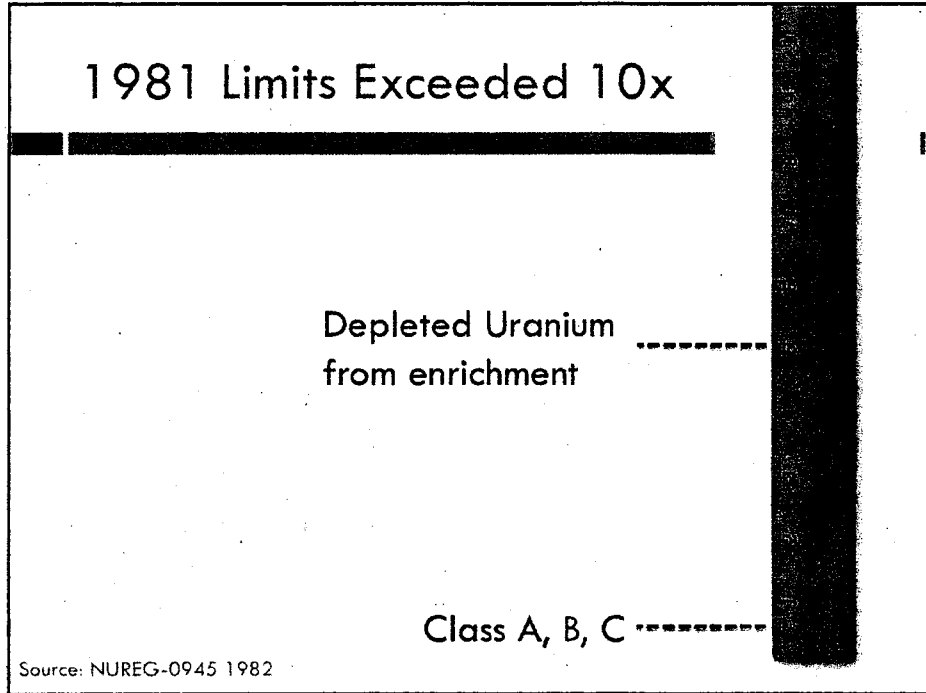
DU and Active Maintenance

R313-25-22. Stability of the Disposal Site After Closure

The disposal facility shall be sited, designed, used, operated, and closed to achieve long-term stability of the disposal site and to eliminate, to the extent practicable, the need for ongoing active maintenance of the disposal site following closure so that only surveillance, monitoring, or minor custodial care are required.

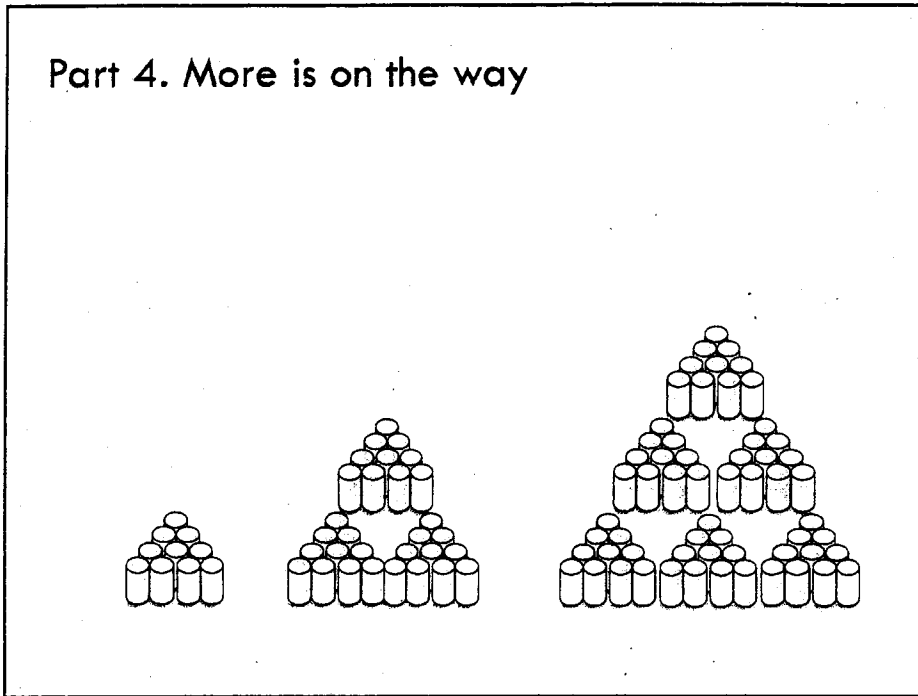


Furthermore, if you look at Utah's radiation rules, particular emphasis is placed on making sure the site won't need active maintenance over the long haul after the site has been closed down. However, if you have a very long-lived hazard, active maintenance will almost CERTAINLY be required to keep the cap in a functional condition. And remember, we don't even know who is supposed to take care of this site in the long-term. The state of Utah said it doesn't want that responsibility. The Department of Energy hasn't said it will take over the long-term care, either. Why would we create a long-term hazard that requires ongoing active care at the site, in violation of our own rules and when we don't even have a long-term custodian for the site?



Now, remember that 1981 limit that was in the draft waste classification tables? That limit was .05 microcuries per cubic centimeter. If you look at the concentration of the depleted uranium that Utah stands to get from the Department of Energy, that stuff is over 10 TIMES the concentration that the draft tables would have considered unsuitable for shallow land burial. In other words, we could be taking material in Utah that the NRC in 1981 said should only be placed in deep geologic disposal like what was contemplated at Yucca Mountain for HIGH level waste.

Part 4. More is on the way



Now that we've talked about some of the hazards of depleted uranium, I want to turn to the question of what's out there, and what EnergySolutions has taken in the past.

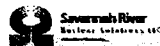
5,400 drums in October, 2008

Achievements

- 5,408 Depleted Uranium Oxide 55-gallon drums from building 221-21F were shipped to Energy Solutions in Clive, Utah, with the first shipment arriving October 21, 2008
- This facility was turned over to the MOX Project shortly after deinventory



Building 221-21F before and after DUO drum removal.



First of all, I was shocked to find out that around 5,400 drums of depleted uranium were sent to EnergySolutions Utah site just last October. I was alarmed because I knew that the NRC was only just starting to look at the question of whether depleted uranium was safe to bury at a site like EnergySolutions. When I contacted the Division to find out more information about this material, I was further alarmed to find out that they did not have the waste documentation on hand. It was only after a member of the Board requested the manifests that I was sent a copy. Bottom line is that I'm not sure the state knew or was even concerned that this depleted uranium was coming here. After I reviewed the manifests and consulted a radiation expert, we determined that this was nearly pure depleted uranium oxide very similar to what we are concerned about.

More DU likely to arrive 2010

From the Savannah River Site TRU and Solid Waste Recovery Act
Project Plan Draft

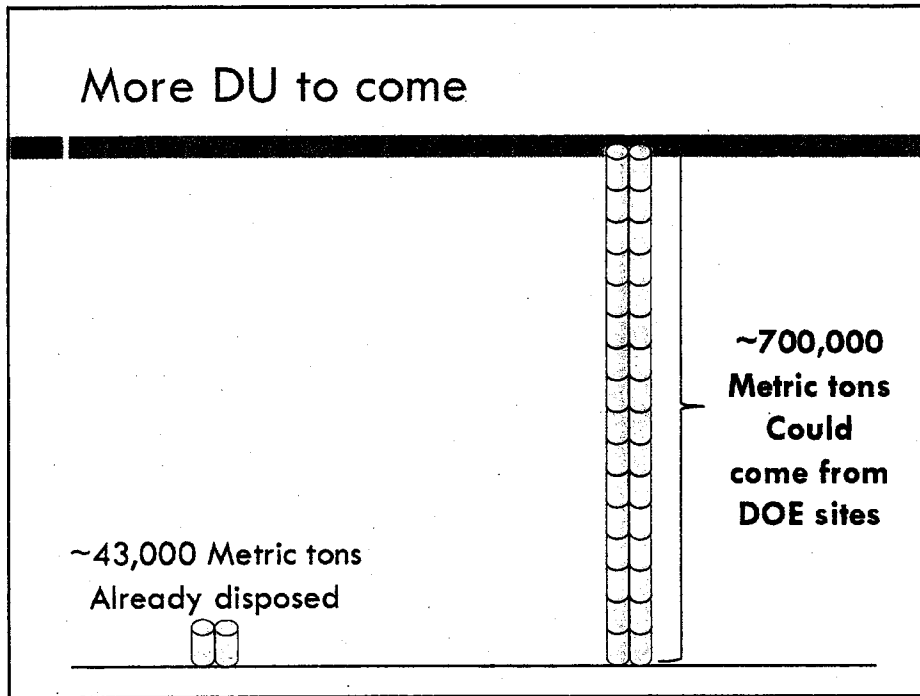
By Around August 2009

Award Depleted Uranium Oxide (DUO) 16,000 drum
disposition subcontract, Definitize PEMP/ Award
Fec Plan vis formal contract modification. Initiate

By Around June 2010

Complete DUO disposition (16,000 drums),
Complete TRU Pad I soil cover and waste removal

Then also when I was in DC, I found out that the stimulus package passed by Congress will pay for the disposal of another 16,000 drums. The great thing about the stimulus bill is that it requires a huge degree of transparency in how the funds are being spent. So I was able to pull up the draft project plan and it looks as though a DOE subcontractor will award the contract to dispose the 16,000 drums this year and complete disposal in 2010. I don't know for sure that EnergySolutions will get this disposal contract, but I'd say it's a very good possibility.



I was also shocked last month when the Executive Secretary stated that EnergySolutions had disposed of 43,000 metric tons of depleted uranium over its history. This sounds like a lot. But when you compare that to the stockpile maintained by the Department of Energy, it pales in comparison. 16 TIMES as much depleted uranium will shortly be de-converted from gaseous to solid form and could be disposed within the next three years.

Utah is vulnerable

More than 700,000 tons of depleted uranium could arrive in Utah for disposal BEFORE the NRC rule-making and required analysis are even complete

The bottom line is that because of the hole in our regulations, these 700,000 tons of depleted uranium could arrive in Utah for disposal before the NRC has even finished its rulemaking and before the analysis is even complete. This means that Utah is vulnerable and that our current laws and regulations won't stop this waste from coming here. This could have drastic implications for the health of future Utahns. It could also have drastic financial implications for the site.

Temporary moratorium

- Temporary moratorium until NRC rule-making and analysis are complete
- Participate in the rule-making to ensure Utah health and safety standards observed
- Review the analysis with expert consultation
- Consider other rule-making as appropriate

Finally, here's what I would ask you as the Board to consider. Because we are vulnerable, because there is a lot of this depleted uranium that could be coming here later this year and in years to come, I am asking you to place a moratorium on depleted uranium disposal in our state – at least until the NRC has completed its rule-making and we understand if depleted uranium disposal can be safely done in Utah. With that, I'd be happy to take any questions.

V. Radioactive Waste (Board Information Items)
b. Presentation by Representatives from
HEAL – Utah Regarding Depleted Uranium
Disposal

Public Speakers – Handouts:

- (1) Kate Savage, HEAL – Utah
- (2) Mary Ellen Navas, Private Citizen, Sandy, UT
- (3) Bob Archibald, Private Citizen, Sandy, UT
- (4) Edwin Firmage, Private Citizen, Salt Lake
County
- (5) Michael Cowley, Private Citizen

**PRESENTATION TO THE UTAH RADIATION CONTROL BOARD MAY 12, 2009
DRC BOARD MEETING**

Katy Savage, HEAL – Utah,

Steve Cramer, CEO of *EnergySolutions* has made repeated comments and claims that Class A waste coming into Utah is harmless after 100 years. These comments have been made on radio shows and in the newspaper. Now, we are finding out that 43,000 tons of Depleted Uranium is in the area which the experts all agree increases in radioactivity and has hazardous effects overtime. As Citizens of Utah, it gives us some confusion and concern as to how they could have been saying with a straight face that this waste would be harmless after 100 years when they knew they would be bringing material that could pose a threat to living creatures for a million years. My one request to you is that if *EnergySolutions* wants to continue making this claim that the waste they are bringing in will be harmless in 100 years; that you do your best to hold them to their word and not allow them to bring in Depleted Uranium. Since you are talking about “eye of the beholder,” decisions. I was thinking that most planners have difficulty thinking 15 years in the future, but I don’t know if that’s in the nature of people who deal with nuclear issues. I think that you probably recognize that you must think of time differently and you must think of an expended responsibility because of that. So, I just ask that you think about not only what this will cause and say in 50,000 years or deep in geologic time, but also that you care about that future plan. Like most of us that care about multi-generational justice care about it. Thank you.

RADIATION CONTROL BOARD
May 12, 2009

I am not a physical scientist. I'm a Psychologist. But research I have done in anticipation of this meeting causes me great concern about what we know and don't know about DU.

First, use of DU in munitions and as armament in the first Gulf War and since, has ignited mountains of research, opinion and allegations. Some tout DU munitions as cheap and effective, some call them today's Agent Orange, with highly lethal qualities. Many link DU to unexplained illnesses among our Gulf War vets, even Gulf War Syndrome.

Here's the argument. U-238, a dense radioactive heavy metal is an alpha emitter. But, DU is also a beta emitter. Two beta-emitting daughter isotopes, Thorium-234 and Protactinium-234, are present and in active equilibrium with U-238 within 20 weeks of enrichment. This occurs through a rare active, spontaneous and persistent fission process. These beta emissions are considered by many to be the main radiological hazard in handling bulk DU.

The high density of DU makes it attractive as counterweight in airplanes and for military use. DU is also highly pyrophoric ----- it burns upon impact --- it has a low (for a metal) burning point.

With air friction, or impact, or intense fire, DU bursts into flame, aerosols --- and emits tiny particles of uranium oxide into the air resulting in both heavy metal and radiation poisoning when inhaled. Entire areas can be contaminated with these tiny very long-lived particles. The breathing of these particles ---- or ingestion of minute quantities in food or water can cause irreparable kidney damage and extensive cellular damage. Some consider this a greater risk from DU than radiation.

There are many examples of the threat of DU --- In 1992 an El Al Boeing 747 crashed into an apartment building in Amsterdam, Holland and burned intensely. Approximately 273 kg of DU (the tail section counterweight) was never unaccounted for, apparently burned and likely contaminated the area

Another --- at the forced closing of the weapons facility in Clonie NY, uranium particles were found as far as 26 miles away, downwind.

So in closing I have this request. For decades we have underestimated the dangers of the byproducts and contaminants associated with processing and enriching Uranium. It is time to make certain we do not make yet another mistake, this time. DU is in no way benign. In fact when I think of an airplane crash carrying DU counterweights or envision the crash of a semi, carrying DU on Utah highways, or a serious fire out at Clive, I say lets make certain we consider all of the risks of DU before we bring more of it into Utah.

I ask you to impose a moratorium on storing any more DU in Utah, pending much closer scrutiny.

BOB ARCHIBACD
SANDY, UTAH

I am Mary Ellen Navas, of Sandy Utah. Thank you for your attention today and for your prudence and leadership on the Radiation Control Board. My comments today are not unusually technical or complicated. But I do have a concern and a request of you.

What we have heard today is that large quantities of depleted uranium decay into more radioactive constituents, including radium. Eventually, this material will exceed Class C limits that our state has established for radium. *→ 35,000 years - Not the geologic time you Mr. Finestral are not concerned about*
Our state legislature in 2005 passed a statutory ban on class B and C waste. Why would we now knowingly let material come into our state that will violate our own ban on B and C waste? The prudent path forward seems quite clear to me. I would like to see you, as our state's citizen panel on radiation issues, place a moratorium on large quantities of depleted uranium coming into the state.

Thank you.

Mary Ellen Navas
4115 East Quarry Dr
Sandy, UT 84092
(801) 943-3264 (h)
May 12, 2009

Testimony before the Utah Radiation Control Board

May 12, 2009

Edwin Firmage

With the NRC's recent decision to classify depleted uranium as Class A low-level waste, Utah, which is the country's principal low-level waste repository, will almost certainly become the dumping ground for this toxic material, which is not made less dangerous by a ruling of the NRC.

Currently some 740,000 tons of depleted uranium in unstable hexafluoride form are stockpiled at Department of Energy sites at Paducah, Kentucky, Portsmouth, Ohio, and Oak Ridge, Tennessee. One company, LES, is currently building an enrichment plant in New Mexico, which will generate well over 100,000 metric tons of depleted uranium. Three other companies are seeking licenses to build enrichment plants in Idaho, Ohio, and North Carolina. The NRC staff assumes that between existing stocks and depleted uranium from new plants, 1.4 million tons in all, will have to be disposed of as radioactive waste.

In contrast to the low-level waste that is currently stored at Energy Solutions' Clive facility, the radioactivity of depleted increases with time because of the in-growth of decay products such as thorium-230 and radium-226 from uranium-238. In time, the radioactivity of the Clive material will exceed the limit set even for Class C waste, which Utah has banned. And, unlike the material now being stored at the Clive site, this waste will remain highly radioactive for hundreds of thousands of years. Thorium-230, for example, has a half life of over 75,000 years. Among the most concerning by-products of U-238 decay is radon gas, large quantities of which ~~will~~ may well escape the minimal protective covering of simple dirt that the Clive facility offers.

All of this material will start coming to before anyone will have had an opportunity to determine whether Utah is an appropriate or safe disposal site for this material. This is madness. I urge to put in place an immediate moratorium on the disposal of any additional depleted uranium in Utah.

Thank you.

While EnergySolution's nuclear waste repository at Clive, UT is suitable for disposal of short-lived radionuclides---those that would decay to safe levels from within decades to several thousands of years---disposal of longer term radionuclides, such as those involved with depleted uranium, should require an extended analysis of its geologic history. Analysing the site's characteristics with this longer focus, reveals that Clive is inherently vulnerable---and will become completely compromised through erosion and flooding---due to its location and elevation within the Lake Bonneville Basin.

Please refer to Map 73---Major Levels of Great Salt Lake and Lake Bonneville---figure 4, and you'll notice that the location of EnergySolution's Clive site---at an elevation of 4,280 feet---was under water 12,000 of the last 24,000 years during the most recent Lake Bonneville period. Data from numerous sources, has established the frequency in which these lakes are created. "Beginning around 900,000 years ago, the glacial-interglacial cycles shifted frequency. Ever since, the glacial peaks have been 100,000 years apart..."¹ More specifically, geologists explain that the most recent Lake Bonneville was just the latest in a series of predictably occurring lakes, "geologic evidence suggests that it may have evaporated and reformed as many as 28 times in the last 3 million years."² Many of these earlier lakes---as with the previous Lake Bonneville of 150,000-130,000 years ago---are thought to have filled the basin to a depth of approximately 800 feet.³ Future Lake Bonneville will be limited to a maximum depth of only 650 feet, ironically, because of too much water during the last cycle. Lake Bonneville reached a depth of over 1,000 feet before overflowing out of the Great Basin at Red Rock Pass, Idaho into the Snake River drainage. A huge flood ensued, cutting through 350 feet of soft material until reaching bedrock at an elevation of 4,740 feet.³ At this new maximum, Clive will be submerged in up to 460 feet of water during the next cycle. Referring back to Map 73, Figure 1, future Lake Bonneville will cover all blue areas except the lightest blue.

The clay, gravel, rock, and dirt barriers at Clive are engineered to isolate its buried nuclear waste in a dry desert climate, that receives a limited amount of rain, for several thousands of years---possibly exceeding the required specs. But in time, these barriers will fail---catastrophically and completely---as pounding waves and inevitable flooding from the next Lake Bonneville reach the site.

What makes this especially troubling is EnergySolutions and DEQ's in-depth understanding of the interactions of water and nuclear waste. During the discussions which lead to the successful ban of B and C Class nuclear wastes, two important questions were asked. "What caused previously licensed B & C nuclear waste sites to leak radioactive material into their surrounding environments---costing dozens of billions to either cleanup or relocate?"; and, "What lessons could be learned from their failures?" Regulators and scientists from DEQ and EnergySolutions confidently suggested that they had the answer. All previous sites leaked because they allowed liquid wastes to be disposed at their sites. Clive would not be allowed to receive liquid wastes and all incoming waste streams would be monitored and modified, if necessary, to strictly control their moisture content---not too wet to migrate or too dry to blow away---during placement, burial and storage. Ironically---the achilles heel at Clive will be water---due to the sites inevitable periodic flooding.

It would be proactive to consider nuclear wastes currently stored at Clive---that will be at dangerous levels in 90,000 years---as already compromised---especially the 5,500 barrels of depleted uranium interred last October. Instigating a study now, to determine future liabilities, and designing a relocation plan for areas at Clive determined to be at risk, might save future generations billions.

My hope is that this board will not allow any future waste streams---especially depleted uranium with its billion year decay cycle at activity levels Greater than Class C---to circumvent this geographically predetermined time limit at Clive. *It appears that every 1,000 yrs if floods, it's done it 28 times in the last 3 million years, why would we not expect to do it again.*

Michael Cowley
Salt Lake County resident
801.558-2505

- VII. Other Division Issues (Board Information Items)**
 - a. Summary from the Meeting of the Northwest Interstate Compact (NWIC) Low-Level Radioactive Waste Management**

Presentation by William J. Sinclair, Acting DEQ Director

Report on the Low Level Waste Forum meeting (March 22-23, 2009) and the Northwest Interstate Compact (May 5, 2009)

LowLevel Waste Forum

Background:

In 1980, Congress passed the Low-Level Radioactive Waste Policy Act. This legislation gives states the responsibility to provide for disposal of commercial low-level radioactive waste and encourages states to form interstate agreements, or compacts, to cooperatively implement the law. The federal legislation of 1980, and the subsequent Low-Level Radioactive Waste Policy Amendments Act of 1985, were endorsed by the Governors of the 50 states.

Until 1985, representatives of the Governors worked to achieve the goals of the law through a committee of the National Governors' Association. After passage of the 1985 amendments, representatives of compacts and states established a separate organization, known as the Low-Level Radioactive Waste Forum, to promote the objectives of the federal law and the compacts. In 2001, the Low-Level Radioactive Waste Forum became an independent nonprofit organization—the Low-Level Radioactive Waste Forum, Inc.

The Low-Level Radioactive Waste Forum, Inc.'s objectives include

- facilitating state and interstate compact implementation of the federal Low-Level Radioactive Waste Policy Amendments Act;
- educating policy makers and the public about the management and disposal of low-level radioactive waste and about the aims of the federal legislation;
- fostering information sharing among state and interstate compact officials;
- providing opportunities for state and interstate compact officials to exchange views with federal officials and other interested parties; and
- supporting the goals of interstate compacts.

The Low-Level Radioactive Waste Forum, Inc. meets twice per year at locations determined by the membership. Each meeting includes reports on the latest developments in states and interstate compacts, interactive discussions of leading-edge policy issues, and expert presentations on regulatory, legal, and technical questions. Voting membership in the Low-Level Radioactive Waste Forum, Inc. is open to interstate compacts, states that are designated by a compact to host—or that currently host—a commercial low-level radioactive waste disposal facility, and unaffiliated states. Voting members representing interstate compacts are appointed by interstate compact commissions. Voting members representing host states and unaffiliated states are appointed by the Governors of those states. Non-voting membership is open to other

states that have joined interstate compacts, as well as to corporations and other interested parties. These members include federal agencies such as EPA, NRC, DOE, DOD, waste disposal companies such as WCS, EnergySolutions, American Ecology, Clean Harbors, radioactive waste generators and treatment facilities, and interested parties such as the Nuclear Energy Institute.

Meeting of March 23-24 in Columbia, South Carolina

Recent Developments

- ◆ Waste Control Specialists (WCS) low-level waste facility in Texas moving forward - Texas Compact Commission formed - indicating they will begin accepting waste at the WCS facility in 2010
- ◆ EnergySolutions versus Northwest Interstate Compact
- ◆ Impact on a new administration on the federal regulatory agencies
- ◆ NRC briefing on LLW - April 17, 2009
- ◆ SC message: Barnwell will not re-open as a national disposal site (e.g. Class B and C waste)

Challenging Issues Discussed

- ◆ Concentration Averaging
- ◆ National Policy on Ionizing Radiation
- ◆ Continued Operation of the Barnwell Site (decommissioning and operations)
- ◆ Change to Waste Classification
- ◆ Uranium Enrichment and Associated Residual Management Considerations
- ◆ How Can We Work Together to Develop a National Solution
 - ◆ Current and future management needs
 - ◆ Anticipated landmark events
 - ◆ Interested stakeholders
 - ◆ Obstacles to facility siting
- ◆ Lack of Disposal for Radioactive Sealed Sources and National Security
- ◆ NRC Regulatory Issue Summary for Interim LLRW Storage

Next meeting:

September 21-22, 2009 - Park City, UT (sponsored by the State of Utah) with optional EnergySolutions tour on the afternoon of the 22nd

Northwest Interstate Compact

Background:

Congress, in 1980, enacted and, in 1985, amended legislation authorizing states to form interstate compacts and to develop new regional disposal facilities for low-level radioactive waste. This legislation, the Low-Level Radioactive Waste Policy Act of 1980 as amended in 1985 (the Policy Act), was the result of efforts on the parts of the governors of the three states with existing commercial low-level radioactive waste disposal facilities (Washington, Nevada, South Carolina - the "sited states") to bring about a more equitable policy of low-level radioactive waste disposal across the nation.

The Policy Act stands as a compromise between states with existing facilities and states or compacts without disposal facilities. As part of the bargain, the sited states agreed to accept waste generated nationally until January, 1993. In return states and compacts without disposal capacity agreed to acquire it by January 1, 1993, either through the siting of a disposal facility of their own or through disposal contracts with other states or compacts. By that date, all states and compacts were to have either operational disposal sites or storage, or other interim waste management programs in place.

In 1985 Congress ratified the Northwest Interstate Compact on Low-Level Radioactive Waste Management. The guiding policy of the Compact is the protection of the health and safety of the citizens through the cooperative effort of the party states, while providing for the economical management of low-level radioactive wastes within the Compact region.

The original seven member states were Alaska, Hawaii, Idaho, Montana, Oregon, Utah, and Washington. The eighth state, Wyoming, joined the Compact in March of 1992.

As allowed by the Policy Act, the Richland, Washington, disposal site stopped accepting out-of-region LLRW as of January 1, 1993, except for that volume agreed to in the Rocky Mountain Compact (RMC) contract. There is an agreement between the Northwest and the Rocky Mountain compacts which allows LLRW waste from the RMC to be disposed at the US Ecology site in Washington, but limits the waste volumes to 6,000 cubic feet per year, plus a 3% per year growth factor. A one-time allowance (which has been completed) of 140,000 cubic feet for the Fort St. Vrain reactor waste was included. The contract term runs until site closure.

This contract is an attempt to protect and support the national compacting process through site consolidation. The RMC states generate very small volumes of waste, making a RMC disposal site uneconomical. The contract sets an example for states that have, as yet, been unable to form compacts or develop contracts for waste management.

There is an arrangement with EnergySolutions (3rd Amended Resolution and Order) that allows access for waste from other states and compacts to the facility. The waste must meet the current conditions of the Utah license. EnergySolutions does not accept waste

from commercial waste generators in the Northwest Compact including Utah. This arrangement is now being challenged in federal court (EnergySolutions vs Northwest Interstate Compact)

Meeting of May 5, 2009 in Seattle, Washington

- ◆ US Ecology overview – Mike Ault, VP, US Ecology
 - 2008 Disposal volume (includes LLW and NARM) : 32, 276 cubic feet
 - 2009 Disposal volumes to date: 10.804 cubic feet
 - 2008 revenue requirements
 - \$5,844,816 – total revenue collected
 - \$5,136,871 – revenue required for site operation
 - \$707,945 – excess returned to generators
 - 2009 revenue requirement: \$5,256,584
- ◆ Utah Activities Overview – Bill Sinclair, Utah Dept of Environmental Quality (handout)
 - 2009 General Session
 - EnergySolutions license renewal appeal
 - EnergySolutions amendment to convert the remaining capacity of the 11e(2) cell to LLW
 - Utah uranium mining/milling
 - Depleted uranium
 - Disposal fees
- ◆ Washington Activities Overview – Larry Goldstein, Washington Dept of Ecology
 - US Ecology Investigation
 - Started January 2008, expected to finish December 2010
 - Four quarters of vadose zone monitoring
 - Five quarters of ground water sampling
 - Public workshop – April 2009
 - Contamination found in soil, soil vapor, and groundwater
 - Next steps
 - Draft remedial investigation report
 - Proposal of interim remedial action
 - Construction of lower layer of cover
 - Interim remedial action report (with public notice and participation)
 - Closure Activities
 - Attempt to transfer \$3 M from closure fund to state general funds (did not occur)
 - July 7, 2009 target date for completion of cover design
 - Will use on-site soils and save \$2 M in cleanup costs
 - Need to select construction contractor
- ◆ LLW Forum Meeting Overview (see notes above on March 23-24, 2009 meeting)

- ◆ NRC LLRW Briefing Meeting – Mike Garner, Exe Director, NWIC
 - Mike Garner listened to the briefing via webcast (available in the NRC webcast archives) and reported the following:
 - The briefing consisted of several presenters
 - NRC staff (Larry Camper, Jim Kennedy, Steve Gary)
 - Key messages
 - Adequate disposal capacity, some lack of access for Class B and C LLW
 - Depleted uranium rulemaking proceeding
 - Focusing on 7 items as result of strategic assessment
 - On the reactor side, focused on safe storage and packaging
 - Expectation that 34 reactors will be decommissioned in 2030
 - Department of Energy (Abigail Cuthbertson, Frank Maricowski)
 - Greater than Class C waste EIS and path forward
 - Sealed sources presenting security risk
 - Concern with materials availability for dirty bombs
 - States/Compacts (Todd Lovinger, LLW Forum, Susan Jabonski, Texas, Organization of Agreement States and CRCPD representatives)
 - Discussion of the Waste Control Specialist Licensing process
 - Discussion of the national outlook for LLW disposal by the Forum
 - Industry representatives (Mike Blevins, Nuclear Energy Institute (NEI), Mike Ziddel, Assistant Radiation Safety Officer, Oregon State University)
 - NEI produced white paper in 2008 that included interim storage of Class B and C waste and how to reduce/optimize generation of radioactive waste (all classes)
 - Mr. Ziddel submitted a report to NRC on sealed sources citing lack of free market conditions that contribute to high costs, lack of disposal capacity for B/C sealed sources, need to amend or repeal the LLW Policy act, and use of DOE facilities or federal lands for disposal of LLW.
 - Question from Commissioners to NRC staff (Larry Camper) : Is it time to get the NRC LLW waste program out of the maintenance mode: Larry Camper responded “yes”

- ◆ Overview of Perma-Fix Northwest Operation – Larry McNamara, COO, Perma-Fix
 - Permafex was invited to give a presentation on its treatment operations, one which is located within the Northwest Compact
 - Permafex has facilities in Richland, WA, Oak Ridge and Kingston, TN, and Florida.
 - The Permafex facility in Richland was previously ATG who went bankrupt and was purchased by Pecos and then by Permafex in June 2007
 - Permafex offers low-level and mixed waste processing at its facilities – has LLW license, and RCRA and PCB permits
 - Some of the treatment options include incineration, thermal treatment, marco encapsulation, stabilization of metals, volume reduction, high dose waste remote handling capabilities, and TRU waste sorting/segregation, verification
 - Have been disposing of ATG legacy waste which has been a 10 years old problem for the state of Washington
 - Have reduced the amount from 2 million pounds to 150,000 pounds as of April 15, 2009
- ◆ Transportation Issues/Concerns – Ken Niles, Oregon Dept of Energy
 - Concern over 2 LLW transportation incidents recently in Oregon
 - Accident in December brought focus on shipments in December (truck hit black ice and crashed)
 - In both cases, no injuries or release of transportation incidents
 - Do shipments to the Richland site have to occur in December? Over 10 years, 10.71% of shipments have occurred during December, Oregon only showed a slight increase during the month based on hazardous materials data
 - Item was discussed but no action taken or needed
- ◆ Update on Legal Issues – Alice Blado – NWIC Counsel
 - Discussed the status of the lawsuit in Executive Session
- ◆ Committee Business
 - Status of Waste Attribution Issues
 - Compact will send letters to EnergySolutions reminding them of their reporting requirements
 - Issue of Puget Sound waste incinerated at the Bear Creek facility and sent to Clive (ES will reimburse US Ecology for the lost revenue as a result of this mistake)
 - Dawn Mining Company Extension Request
 - Allows Dawn Mining to continue disposal of waste sludge from wastewater treatment in the uranium mill tailings cell (continuation from 2000)
 - Perma-Fix Issues
 - 5 drums of co-mingled waste including some from Canada awaiting deposition
 - Occurred prior to the May 2006 clarifying amendment to the 3rd Amended Resolution and Order

- Permission asked to ship to Clive, the Committee determined during Executive Session in consultation with Compact attorneys not to allow this transfer until the lawsuit decision comes forth
- Permafix also addressed other "attribution" issues

- V. Radioactive Waste (Board Information Item)**
 - a. Response to Board Questions Regarding a Moratorium
On Depleted Uranium (DU) Disposal**

**OFFICE OF THE ATTORNEY GENERAL, STATE OF UTAH
MEMORANDUM**

TO: Radiation Control Board

FROM: Laura Lockhart
Assistant Attorney General

DATE: June 3, 2009

RE: Options for moratorium for depleted uranium

You requested that I report to you at the June 9 Board meeting about options for imposing a moratorium on land disposal of depleted uranium in Utah. I have prepared the attached proposals for your consideration.

The rule described in Part 1 of the attached handout would directly impose a moratorium. The rule described in Part 2 approaches the matter instead through the land ownership and control requirement in DRC's rules at R313-25-9. It will be helpful for Board members to know, before reviewing this option, that a previous board granted EnergySolutions an exemption from the land ownership and control requirements.

If the Board determines that it is interested in pursuing this matter, I would recommend that it approve both proposals for rulemaking so that it can receive comments on both before it makes its final determination. I would further recommend that the proposals be made separately to avoid any unnecessary delay in the rules' final implementation.

If the Board would prefer to recommend legislative action, either of these approaches could be modified for that purpose.

I will be prepared to speak to both of these options on June 9.

The NRC staff's report about "whether the quantities of depleted uranium (DU) at issue in the waste stream from uranium enrichment facilities warrant amending section 61.55(a)(6) or the section 61.55(a) waste classification tables" is the document that I found to be most directly pertinent to this matter. That document may be found at:

<http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2008/secy2008-0147/2008-0147scy.pdf>

The Nuclear Regulatory Commission selected the Staff's second option from that paper in a later decision. See http://hps.org/govtrelations/documents/nrc_srm_secy-08-0147.pdf.

DEPLETED URANIUM - OPTIONS FOR REGULATION

1. PROPOSED RULE IMPOSING MORATORIUM

a. Possible language:

R313-71-1. Definitions.

For purposes of this Section R313-71:

“Incidental depleted uranium” means depleted uranium in concentrations of less than [#]% contained in other waste streams.

R313-71-2. Moratorium on land disposal of depleted uranium

- (a) No facility licensed for land disposal of radioactive waste may dispose of depleted uranium.
- (b) This prohibition does not apply to:
 - (i) small amounts of incidental depleted uranium contained within other waste streams, which collectively total less than [#] metric tons annually;
 - (ii) waste received by a facility for disposal before the effective date of this Section R313-72, provided the contract to dispose of the waste is dated before [DATE].
- (c) This prohibition shall expire on the earlier of the following dates:
 - (i) 180 days after the effective date of the rule promulgated by the federal Nuclear Regulatory Commission regarding disposal of depleted uranium, as anticipated in the March 18, 2009 instruction from the Commission to NRC staff entitled “Staff Requirements – SECY-08-0147 – Response to Commission Order CLI-05-20 Regarding Depleted Uranium;” or
 - (ii) January 1, 2013.

Other exemptions to consider:

- Waste streams the land disposal facility has a contract to dispose of if the contract is dated [before May 13, 2009] [before the effective date of this Section R313-71].

b. Authority for rule:

Utah Code Ann. § 19-3-104. Registration and licensing of radiation sources by department - Assessment of fees - Rulemaking authority and procedure - Siting criteria.

(4) *The board may make rules:*

(a) *necessary for controlling exposure to sources of radiation that constitute a significant health hazard*

c. Applicability of Utah Code Ann. §§ 19-3-104(8) and (9).

Compliance with Utah Code Ann. §§ 19-3-104(8) and (9) would be required. Those provisions limit the authority of the Board to make rules:

(8) (a) *Except as provided in Subsection (9), the board may not adopt rules, for the purpose of the state assuming responsibilities from the United States Nuclear Regulatory Commission with respect to regulation of sources of ionizing radiation, that are more stringent than the corresponding federal regulations which address the same circumstances.*

(b) *In adopting those rules, the board may incorporate corresponding federal regulations by reference.*

(9) (a) *The board may adopt rules more stringent than corresponding federal regulations for the purpose described in Subsection (8) only if it makes a written finding after public comment and hearing and based on evidence in the record that corresponding federal regulations are not adequate to protect public health and the environment of the state.*

d. Questions the Board should consider as it determines whether to adopt this rule:

1. What is the evidence that corresponding federal regulations either are or are not adequate to protect public health and the environment?
2. If there is evidence that federal regulations are not adequate to protect public health and the environment, do we know the quantities of depleted uranium that may be land disposed without raising those concerns?
3. In the absence of a moratorium, what quantities of depleted uranium would be disposed of before the NRC completes its rulemaking process and we are able to complete ours?

2. EFFECTIVENESS OF WAIVER RULE

a. Background:

- (i) DRC rules require that a land disposal facility have evidence that a federal or state agency either own the property or will own it after closure.

R313-25-9. Institutional Information.

The institutional information submitted by the applicant shall include:

- (1) *A certification by the federal or state agency which owns the disposal site that the agency is prepared to accept transfer of the license when the provisions of R313-25-16 are met and will assume responsibility for institutional control after site closure and for post-closure observation and maintenance.*
- (2) *Evidence, if the proposed disposal site is on land not owned by the federal or a state government, that arrangements have been made for assumption of ownership in fee by the federal or a state agency.*

- (ii) EnergySolutions, through its predecessor Envirocare, received waivers from the land ownership/control requirement based on the other controls that were provided. The waivers were granted under this section of the General Provisions:

R313-12-55. Exemptions.

- (1) *The Board may, upon application or upon its own initiative, grant exemptions or exceptions from the requirements of these rules as it determines are authorized by law and will not result in undue hazard to public health and safety or the environment.*

b. Possible language:

R313-71-3. Limitation on Exemptions from the Requirements of R313-25-9.

- (1) No facility licensed for land disposal of radioactive waste may dispose of depleted uranium unless it demonstrated compliance with the requirements of R313-25-9 during the licensing process.
- (2) The requirements of R313-71-3(1) may not be waived under the authority of R313-12-55, except by a specific order from this Board that cites this Section R313-71-3.
- (3) A facility that has not been required to meet the requirements of R313-25-9 because it has received an exemption from the requirements of that provision has not demonstrated compliance with the requirements of that provision for purposes of paragraph R313-71-3(1).
- (4) The prohibition specified in R313-71-3(1) does not apply to:
 - (i) small amounts of incidental depleted uranium which collectively total less than [#] metric tons annually; or
 - (ii) waste received by a facility for disposal before the effective date of this Section R313-71, provided the contract to dispose of the waste is dated before [May 13, 2009].

Other exemptions to consider:

- waste streams the land disposal facility has a contract to dispose of if the contract is dated [before May 13, 2009] [before the effective date of this Section R313-71].

c. Authority for rule:

See authority for rulemaking cited under Part 1.b above.

d. Applicability of Utah Code Ann. §§ 19-3-104(8) and (9).

Land ownership/control requirements are specified in federal rules (10 C.F.R. § 61.14). For that reason, no analysis under these provisions would be required.

e. Questions the Board should consider as it determines whether to adopt this rule:

1. What is the basis for having different approaches to exemption from the land ownership/control requirements of R315-25-9 for different wastes?
2. What is the basis for having the rule apply immediately?

VII. Other Division Issues

- a. Modifying the Board Policy: “Requests by the Public to be Placed on the Board Agenda” (Board Action Item)**

Requests by the public to be placed on the Board Agenda

The Utah Radiation Control Board policy is as follows:

1. The Board desires that those who wish to comment upon an issue before the Board to have the opportunity to do so. The Executive Secretary will provide attendees at the Board meeting with a sheet entitled: "Public Comment." This sheet will ask a potential ~~commenter~~ commenter to provide name, organization or affiliation, and the subject ~~they~~ his or she wishes to address. Following approval of Board minutes, attendees will be reminded to sign up if they wish to comment on an issue. The Board chairman can exercise his or her discretion in providing the opportunity to comment in two ways: (1) ~~He may allow~~ comments may be allowed following a specific issue, or (2) ~~designate a~~ specific time during the meeting for "open public comment" may be designated. All public comment is subject to time constraints of the meeting. The Chairman may limit the time for comment on an issue or issues.
 - a. Individuals addressing the Board are not required to submit written statements. However, those individuals who read a prepared written statement may be asked to submit a copy to the Executive Secretary for inclusion in the meeting minutes.
2. Requests to address the Board or have agenda items placed on the meeting agenda or request for a detailed discussion of a an issue or point of view on an issue must be submitted in writing to the Executive Secretary of the Radiation Control Board at least two weeks prior to the next Board meeting. At a minimum, the request must contain sufficient information for the Executive Secretary to determine the appropriateness of such item to be placed on the Board Agenda. The Executive Secretary may accept such request, request additional information to assess the request, or reject such request. The Executive Secretary will notify the requestor of the decision in writing. The Executive Secretary will consult with the Board Chairman prior to taking any action on a request. Requests received after the two week period will be considered for the next scheduled Board meeting. The Executive Secretary may also schedule individuals, companies, or groups to discuss specific issues with their consent.
 - a. Presenters shall provide copies of the presentation and supporting materials (i.e. handouts, pictures, etc) to the Executive Secretary for distribution to the Board members before their scheduled appearance. When copies of materials are not made available prior to the scheduled presentation, the Board may decide to hear the presentation or reschedule the presentation for a future Board meeting.

- VII. Other Division Issues**
 - b. Division Activities Report
(Board Information Item)**

Division of Radiation Control
Activities Report Summary
May, 2009

Notices of Violation assigned a Severity Level I, II, or III or where a Monetary Penalty has been imposed.

1. Settlement Agreement for Notice of Violation and Order, Shootaring Canyon Mill, Utah Ground Water Discharge Permit No.UGW170003. A \$3866.57, monetary penalty was imposed on the Shootaring Canyon Mill for five violations of the Ground Water Discharge Permit or Water Quality Rules.

Other Activities

Meeting Notes:

Meeting of the Public Utilities and Technology Interim Committee

Utah Legislature

May 20, 2009

Agenda Item: Uranium Mining

Attended by Division staff Ryan Johnson

Ryan Johnson attended this meeting to listen to the presentation given by **John Baza, Director of Utah Division of Oil, Gas and Mining**. Mr. Baza told the committee that his Division currently administers 40 exploration permits, 7 active small mine permits and 3 new proposed permits, and 8 active large mine permits with 0 proposed permits. The exploration permits are temporary, 1 year permits. Small mine permits are for mining operations that disturb less than 5 acres, while large mine permits may impact more than 5 acres. Of the 8 active large mine permits, 4 are in operation and another 2 begin operation in 2009 or 2010. Mr. Baza did not provide details on the number of small mine permits that are in operation. After Mr. Baza's presentation, Harold Roberts, Denison Mines, said that they have placed most of their mines on standby until next year and, even though the price of yellow cake has fallen, they expect the price to improve. Both Mr. Baza and Mr. Roberts indicated that they expect the uranium industry to be fairly active for next several years. There was no public comment on the subject and only two questions from the committee.