



State of Utah

SPENCER J. COX  
Governor

DEIDRE HENDERSON  
Lieutenant Governor

Department of  
Environmental Quality

Kimberly D. Shelley  
Executive Director

DIVISION OF WASTE MANAGEMENT  
AND RADIATION CONTROL

Douglas J. Hansen  
Director

A meeting of the Waste Management and Radiation Control Board has been scheduled for June 8, 2023, at 1:30 pm at the Utah Department of Environmental Quality, (Multi-Agency State Office Building) Conference Room #1015, 195 North 1950 West, SLC.

Board members and interested persons may participate electronically/telephonically.  
Join via the Internet: [meet.google.com/gad-sxsd-uvs](https://meet.google.com/gad-sxsd-uvs)  
Join via the Phone: (US) +1 978-593-3748 PIN: 902 672 356#

AGENDA

- I. Call to Order and Roll Call.
- II. Public Comments on Agenda Items.
- III. Declarations of Conflict of Interest.
- IV. Introduction of new Board member Jeremy Hawk.
- V. Approval of the meeting minutes for the May 11, 2023, Board meeting ..... Tab 1  
**(Board Action Item)**
- VI. Petroleum Storage Tanks Update ..... Tab 2
- VII. X-Ray Program ..... Tab 3
  - A. Approval of an exemption from Utah Administrative Code R313-28-31(5) requiring portable or mobile X-ray equipment to be used only if it is impractical to transfer the patient to a stationary radiographic installation **(Board Action Item)**.
- VIII. Low-Level Radioactive Waste ..... Tab 4
  - A. EnergySolutions request for a site-specific treatment variance from the Hazardous Waste Management Rules. EnergySolutions seeks authorization to receive uranium extraction process residuals encased in cement for macroencapsulation **(Board Action Item)**.
  - B. EnergySolutions request for a site-specific treatment variance from the Hazardous Waste Management Rules. EnergySolutions seeks authorization to receive lithium and lithium-ion batteries for direct macroencapsulation treatment **(Board Action Item)**.

(Over)

IX. Other Business.

- A. Miscellaneous Information Items.
- B. Scheduling of next Board meeting (July 13, 2023).

X. Adjourn.

In compliance with the Americans with Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Larene Wyss, Office of Human Resources at (801) 536-4284, Telecommunications Relay Service 711, or by email at “[lwyss@utah.gov](mailto:lwyss@utah.gov)”.

**Waste Management and Radiation Control Board Meeting Minutes**  
**Utah Department of Environmental Quality**  
**Multi-Agency State Office Building (Conf. Room #1015)**  
**195 North 1950 West, SLC**  
**May 11, 2023**  
**1:30 p.m.**

**Board Members Participating at Anchor Location:** Brett Mickelson (Chair), Dennis Riding (Vice-Chair), Mark Franc, Dr. Steve McIff, Vern Rogers, Shane Whitney

**Board Members Participating Virtually:** Nathan Rich, Dr. Richard Codell, Danielle Endres

**Board Members Excused:** Kim Shelley and Scott Wardle

**UDEQ Staff Members Participating at Anchor Location:**

Doug Hansen Therron Blatter, Braden Asper, Tom Ball, Rachel Boyer, Tyler Hegburg, Jalynn Knudsen, Arlene Lovato, Gabrielle Marinick, Deborah Ng, Bret Randall, Elisa Smith, Sean Warner, Otis Willoughby, Adam Wingate

**Others Attending at Anchor Location:** Tim Orton

**Other UDEQ employees and interested members of the public also participated either electronically or telephonically.**

**I. Call to Order and Roll Call.**

Chairman Mickelson called the meeting to order at 1:30 pm. Roll call of Board members was conducted, see above.

**II. Public Comments on Agenda Items – None.**

**III. Declarations of Conflict of Interest –**

Vern Rogers recused himself from the agenda items regarding EnergySolutions (Information Item).

**IV. Introduction of new Board member Jeremy Hawk. Tabled until next Board meeting.**

**V. Approval of the meeting minutes for the April 13, 2023 Board meeting (Board Action Item).**

**It was moved by Dennis Riding and seconded by Shane Whitney and UNANIMOUSLY CARRIED to approve the April 13, 2023 Board meeting minutes.**

**VI. Petroleum Storage Tanks Update.**

Therron Blatter, Petroleum Storage Tank (PST) Branch Manager of the Division of Environmental Response and Remediation (DERR), informed the Board that the preliminary estimate of the cash balance of the PST Fund for the end of April 2023, is \$29,861,615.00. The actual cash balance of the PST Fund at the end of March 2023, is \$29,395,417.00. The DERR continues to watch the balance of the PST Fund closely to ensure sufficient cash is available to cover qualified claims for releases. The DERR will monitor the impact of adding aboveground petroleum storage tanks (APSTs) on the Fund for their financial responsibility for future releases.

Mr. Blatter also reported that the June 30, 2023, deadline for APSTs to obtain a certificate of compliance is less than two months away. To date, the DERR has received notification of 571 APSTs at 213 facilities. The first certificate of compliance to one of these facilities was issued this week.

There were no comments or questions.

## VII. X-Ray Program.

### A. **Approval of a Mammography Imaging Medical Physicist (MIMP) in accordance with UCA 19-3-103.1 (2)(c) of the Utah Code Annotated (Board Action Item).**

Tom Ball, Planning and Technical Support Section Manager in the Division of Waste Management and Radiation Control (Division), reviewed the request for the Board to approve an application to be certificated as new Mammography Imaging Medical Physicist (MIMP).

The MIMPs perform radiation surveys and evaluate the quality control programs of facilities in Utah that provide mammography examinations.

The MIMPs certifications must be approved by the Board as required by Utah Code § 19-3-103.1. The application to be certificated as a MIMP was submitted by Charlene Bremer. Division staff has reviewed the application and have determined that Ms. Bremer meets the requirements detailed in R313-28-140 of the Utah Administrative Code.

This is a Board action item. The Director of the Division of Waste Management and Radiation Control recommends the Board issue a certificate approval as a MIMP to Ms. Bremer.

There were no comments or questions.

**It was moved by Dr. McIff and seconded by Shane Whitney and UNANIMOUSLY CARRIED to approve Charlene Bremer to be certified as a Mammography Imaging Medical Physicist (MIMP) in accordance with UCA 19-3-103.1 (2)(c) of the Utah Code Annotated.**

## VIII. Low-Level Radioactive Waste.

### A. **EnergySolutions request for a site-specific treatment variance from the Hazardous Waste Management Rules. EnergySolutions seeks authorization to receive uranium extraction process residuals encased in cement for macroencapsulation (Information Item).**

Tyler Hegburg, Environmental Scientist, Low-Level Radioactive Section, Division of Waste Management and Radiation Control, reviewed EnergySolutions request for a site-specific treatment variance from the Hazardous Waste Management Rules. EnergySolutions seeks authorization to receive uranium extraction process residuals encased in cement for macroencapsulation.

Tim Orton, representative of EnergySolutions, informed the Board that this will be the 15<sup>th</sup> year that EnergySolutions has requested this same variance. The first request was approved in 2007 and variance requests are only valid for one year. This variance is from several processes performed at a Department of Energy site that has enriched uranium as a byproduct, most of which is enriched uranium contaminated ash. The residual waste from each of the processes is collected in small cans (approximately 2 ½ gallons each) and placed in specially designed 16-gallon drum overpacks that are cemented and then sent to EnergySolutions. This process is completed for safety and security reasons. The waste may also contain some metals and other organics that make it characteristically hazardous, requiring the waste be treated.

Upon arrival, *EnergySolutions* proposes to macroencapsulate the waste, thereby isolating the waste from potential leaching media, and final disposal for the waste will occur in the Mixed Waste Disposal Cell at the *EnergySolutions* Mixed Waste Facility.

Macroencapsulation is a permitted process that has been utilized over the past 17-20 years at the Clive facility that significantly reduces the potential for migration (leaching) of waste.

Danielle Endres requested clarification on what enriched uranium is comprised of and if there are any forms of enriched uranium that are not considered Class A waste.

Mr. Orton explained natural uranium and natural isotopic percentages associated with enriched uranium. Mr. Orton also explained that enriched uranium will always be classified as Class A waste and informed the Board of the types of wastes that *EnergySolutions* is permitted to accept, clarifying that *EnergySolutions* will not and cannot receive waste above 20% of enriched uranium.

Dr. Codell discussed the complexity, solubility, and different matrices and chemicals associated with and affecting uranium chemistry and asked if any leaching experiments have been done on the concrete-type mixture that encases the uranium.

Mr. Orton stated that he has not personally done any experiments on this specific matrix, but studies have been done with macroencapsulation formulas, which have been approved by the State of Utah for the past 20 years, that possibly could be provided to him. Furthermore, although it is unclear if experiments have been done by the experts dealing with this specific kind of waste at the Department of Energy (DOE) facility where the waste is originated from, the DOE has stated that the way they pack it in concrete form is safe. In addition, *EnergySolutions* further macroencapsulates the waste, putting it in a better concrete form.

Mr. Orton clarified that although *EnergySolutions* can receive up to 20% enriched uranium waste, they will actually only be receiving 5-6% enriched uranium waste.

Dr. Codell stated that one of his concerns deals with criticalities safety studies/issues.

Mr. Orton stated that they have done those types of studies as well, and that is one of the reasons *EnergySolutions* does not further treat/shred the waste.

Dr. Codell discussed the kinds of critical problems with enriched uranium being disposed of as he is aware of these matters and asked if any of those studies completed could be provided to the Board as possible background material.

Mr. Orton stated he will look into the matter and provide what is available to the Board.

Ms. Endres stated that the Board has seen this variance numerous times as it was noted that this variance request has been approved since 2008, and asked if anything had been noticed through the monitoring processes. Specifically, she asked if any problems have been noticed with this particular waste stream since *EnergySolutions* has treated the waste so many times.

Mr. Orton stated that he has never seen any issues associated with this waste stream as this is one of the easier waste streams to manage as it is placed in the macroencapsulation vaults and then macroencapsulated.

Dennis Riding asked about the long-term monitoring processes utilized by *EnergySolutions*, or more specifically what is watched for over time.

Mr. Orton stated that the waste is in the open air for six months as they are building the vaults around it. During that time, daily checks are conducted to determine if it is cracking. Also, the leachate is checked

annually to see if it has elevated concentrations of lead or other metals inside of it. Air monitoring is conducted as well.

Mr. Orton clarified that that the landfill is a RCRA designed landfill cell, which requires all waste in each portion of the cell (all leachate in the cell) go to one sump area which is then collected and checked. The waste can never be more than a foot deep in each of those areas which are sampled once a year. If anything is detected greater than that, *EnergySolutions* permit allows that waste to be pulled out and put in an onsite leachate impoundment pond, which also is a RCRA requirement.

Mark Franc requested confirmation that that this is a waste stream that comes fully enclosed in cement/fully encapsulated and would be a treatable waste if it were not fully encapsulated. However, in order to treat the waste, it would have to be unencapsulated, potentially exposing workers and the environment to contamination as opposed to the current method of taking that material as encapsulated and then re-encapsulating it further in the landfill cell. The reason the Board has repeated approval of this variance is that it makes sense from a safety standpoint and environmental standpoint to grant the variance, as opposed to opening the encapsulated waste, treating it, etc.

Mr. Orton confirmed Mr. Franc's statement.

Nathan Rich requested confirmation of the following statements: this material comes from a Department of Energy site and the DOE is supportive of this variance. Specifically, not treating the waste, but macroencapsulating the waste instead.

Mr. Orton confirmed Mr. Rich's statements.

Doug Hansen, Director of the Division of Waste Management and Radiation Control, informed the Board that in their Board packet, the Executive Summary references the incorrect code twice. It is referenced incorrectly as UAC R315-40, the correct code citation is UAC R315-268-40. Director Hansen stated that since this is an information item, this code citation will be corrected prior to this matter being brought back to the Board for final action.

**B. *EnergySolutions* request for a site-specific treatment variance from the Hazardous Waste Management Rules. *EnergySolutions* seeks authorization to receive lithium and lithium-ion batteries for direct macroencapsulation treatment (Information Item).**

Mr. Orton reviewed the request for a site-specific treatment variance from the Hazardous Waste Management Rules. *EnergySolutions* seeks authorization to receive lithium and lithium-ion batteries for direct macroencapsulation.

Mr. Orton explained that the waste stream for these batteries is also processed through macroencapsulation. The difficulty is that lithium and lithium-ion batteries typically exhibit the hazardous waste characteristics of ignitability and reactivity. The Environmental Protection Agency (EPA) has ruled that intact batteries are considered "containers" and not debris. The definition of macroencapsulation states that "macroencapsulation specifically does not include any material that would be classified as a tank or a 'container.'" Therefore, a variance is required.

Mr. Orton further explained that similar to previous variance requests, shredding the batteries potentially expose lithium and other reactive portions of the waste to the open air as opposed to if the batteries remain intact. *EnergySolutions* proposes to manage this waste by placing the batteries in the macroencapsulation vaults and directly macroencapsulating the intact batteries.

Ms. Endres asked if the lithium and lithium-ion batteries could be recycled as opposed to the requested method of disposal.

Mr. Orton stated because the batteries are radioactive they cannot be recycled; for most batteries, recycling is a better, cheaper way to manage them.

Shane Whitney asked if EnergySolutions receives the lithium and lithium-ion batteries the same way as the previous waste stream discussed.

Mr. Orton stated that this waste stream is received a bit differently and explained as a facility is cleaning out, they could potentially have up to a five-gallon bucket of this waste stream and hence, this waste stream does not have the volume as the previous waste stream discussed. Also, prior to arriving at EnergySolutions, this waste stream is not treated the same way as the prior waste stream discussed and Mr. Orton explained the process.

Dennis Riding asked if the biggest risk associated with this waste stream is that it is explosive or reactive.

Mr. Orton stated that reactivity is the biggest risk associated with managing this waste stream.

## **IX. Informational Highlight.**

### **A. A presentation on Used Oil Collection Centers in Utah.**

Rachel Boyer, Environmental Scientist, in the Division of Waste Management and Radiation Control provided to the Board Information Highlights on Used Oil Collection Centers (UOCCs). Ms. Boyer's presentation included the following topics: Benefits of Becoming a UOCC; Types of UOCCs; Recycling Fee; UOCC Grants; Collection Center Reimbursements; Post-Collection Uses of Used Oil; and a Recycling Map to find UOCC centers - Website: [recycle.utah.gov](http://recycle.utah.gov)

There were no comments or questions.

## **X. Director's Report.**

Director Hansen reported that he is aware that a number of Board member terms will be expiring this year and informed the Board that action cannot be taken to re-apply for Board seats until 120 days prior to the term ending. However, once within the required timeframe to move forward, those Board members will receive the necessary information and instructions via email on how to reapply to continue their service and tenure on the Board.

Director Hansen informed the Board that Division staff are currently undergoing some informal stakeholder engagement on possible rule revisions regarding environmental assessments within the Uranium Mill Program. It is anticipated that at some point in the near future the rule revisions will be brought before the Board. Over the past several months, Division staff have engaged with stakeholders across industry, as well as special interest groups to gain feedback on the possible rule revisions. Division staff are currently in the process of evaluating the feedback and are making necessary provisions to the rules before this matter is presented to the Board for the formal rulemaking process to begin, which will include a request for a public comment period.

Director Hansen recapped the recent lengthy process involving the Board's final approval of the Cleanup Action and Risk-Based Closure Standards Rules UAC R315-101. In conjunction with the rules, a guidance document was anticipated to be created. Director Hansen reported that the Corrective Action Section in the Division has completed the guidance document, and it is currently being solicited for informal feedback. Once that process is complete, the guidance document will be published to the Division's website. It is anticipated to be finalized within the next few months. Director Hansen stated that subsequently any person desiring to go through the risk-based corrective action process can not only utilize the UAC R315-101 rules but the newly developed guidance document to assist them through the process.

Dr. Codell commented that the guidance document will be a good addition for help. Dr. Codell also asked what the Board's involvement will be in the Uranium Mill matter.

Director Hansen stated that the Board's involvement with the Uranium Mill matter is the approval of the rules, i.e., approval of the rulemaking process. Dr. Codell inquired if the Board would have a role in any licensing decisions regarding Uranium Mill matters. Director Hansen responded that the Board does not have any role in licensing decisions regarding Uranium Mill matters, as that authority rests solely with the Director.

**XI. Other Business.**

**A. Miscellaneous Information Items -None.**

**B. Scheduling of next Board Meeting (June 8, 2023).**

The next meeting is scheduled for June 8, 2023, at the Utah Department of Environmental Quality, Multi-Agency State Office Building.

Interested parties can join via the Internet: [meet.google.com/gad-sxsd-uvs](https://meet.google.com/gad-sxsd-uvs)  
Or by phone: (US) +1 978-593-3748 PIN: 902 672 356#

**XII. Adjourn.**

The meeting was adjourned at 2:10 p.m.

**PST STATISTICAL SUMMARY**

**May 1, 2022 -- April 30, 2023**

PROGRAM

	May	June	July	August	September	October	November	December	January	February	March	April	(+/-) OR Total
Regulated Tanks	4,176	4,182	4,178	4,188	4,184	4,191	4,190	4,196	4,188	4,200	4,203	4,198	22
Tanks with Certificate of Compliance	4,057	4,071	4,061	4,065	4,072	4,073	4,085	4,083	4,089	4,088	4,093	4,103	46
Tanks without COC	119	111	117	123	112	118	105	113	99	112	110	95	(24)
Cumulative Facilities with Registered A Operators	1,286	1,286	1,288	1,285	1,279	1,278	1,276	1,282	1,280	1,279	1,276	1,279	98.16%
Cumulative Facilities with Registered B Operators	1,287	1,287	1,289	1,287	1,280	1,279	1,277	1,282	1,281	1,281	1,279	1,280	98.23%
New LUST Sites	6	7	9	11	5	10	8	9	9	9	4	2	89
Closed LUST Sites	13	9	2	12	7	3	14	3	7	8	17	6	101
Cumulative Closed LUST Sites	5454	5455	5463	5474	5474	5491	5494	5501	5509	5524	5531	5539	85

FINANCIAL

	May	June	July	August	September	October	November	December	January	February	March	April	(+/-)
Tanks on PST Fund	2,609	2,613	2,651	2,655	2,645	2,636	2,635	2,628	2,623	2,621	2,617	2,619	10
PST Claims (Cumulative)	705	710	710	711	711	711	711	711	711	711	710	711	6
Equity Balance	-\$986,270	-\$639,953	-\$646,753	-\$295,722	-\$127,174	-\$281,835	\$80,750	\$274,341	\$739,913	\$1,273,567	\$1,223,767	\$1,689,965	\$2,676,235
Cash Balance	\$26,411,258	\$26,757,575	\$26,750,775	\$27,693,250	\$27,524,702	\$27,889,815	\$28,252,400	\$28,445,991	\$28,911,563	\$29,445,217	\$29,395,417	\$29,861,615	\$3,450,357
Loans	1	0	0	1	5	0	0	0	0	0	0	0	-1
Cumulative Loans	122	122	122	123	128	128	128	128	128	128	128	128	6
Cumulative Amount	\$4,740,989	\$4,740,989	\$4,740,989	\$5,040,989	\$6,014,420	\$6,014,420	\$6,014,420	\$6,014,420	\$6,014,420	\$6,014,420	\$6,014,420	\$6,014,420	\$1,273,431
Defaults/Amount	0	0	0	1	0	0	0	0	0	0	0	0	0

	May	June	July	August	September	October	November	December	January	February	March	April	TOTAL
Speed Memos	78	65	32	47	77	105	60	31	42	44	79	40	700
Compliance Letters	9	6	8	8	7	7	9	9	5	3	7	27	105
Notice of Intent to Revoke	0	0	0	0	0	0	0	0	0	0	0	0	0
Orders	0	0	0	0	0	0	0	qq	0	0	1	1	2

**WASTE MANAGEMENT AND RADIATION CONTROL BOARD**  
**Executive Summary**  
**Main Street Family Medicine Portable X-ray Use Exemption**  
**June 8, 2023**

<b>What is the issue before the Board?</b>	Approval of an exemption from the rule requiring portable or mobile X-ray equipment to be used only if it is impractical to transfer the patient to a stationary installation.
<b>What is the historical background or context for this issue?</b>	<p>UAC R313-28-31(5) states that portable or mobile equipment shall be used only for examinations if it is impractical to transfer the patient to a stationary radiographic installation. This rule exists because typically rooms where mobile equipment is used are not shielded and therefore do not provide the necessary protection for individuals who are not the subject of the X-ray.</p> <p>Main Street Family Medicine is a small practice located in the rural town of Enterprise, Utah. They were issued X-ray Registration Number 5223 in January of 2022. Under this registration they have one general purpose mobile X-ray unit.</p> <p>Main Street Family Medicine has submitted a request for exemption from the requirement found in UAC R313-28-31(5) for the following reasons:</p> <ol style="list-style-type: none"> <li>1) The nearest hospitals with stationary installations are located 45 miles away in Cedar City or 50 miles away in St. George.</li> <li>2) They frequently triage and treat patients for which it is not practical or necessary for them to travel the long distance to the nearest facility with a stationary installation.</li> <li>3) Because the facility is in a rural part of the state without a large number of patients it is cost prohibitive to install fixed equipment. The cost of fixed equipment would have been the same as the cost of their building thus doubling the cost to build their facility.</li> <li>4) The room where they use their mobile X-ray unit has been shielded. The shielding design was performed by a registered Utah Qualified Expert and has been reviewed by Division staff.</li> </ol>
<b>What is the governing statutory or regulatory citation?</b>	In accordance with UAC R313-12-55 the Board may grant exemptions or exceptions from the requirements of these rules as it determines are authorized by law and will not result in undue hazards to public health and safety or the environment.
<b>Is Board action required?</b>	Yes.
<b>What is the Division Director's recommendation?</b>	The Director of the Division of Waste Management and Radiation Control believes that the use of a mobile x-ray unit by Main Street Family Medicine will not result in undue hazards to public health and safety or the environment and recommends that the Board issue an exemption from UAC R313-28-31(5) to Main Street Family Medicine.
<b>Where can more information be obtained?</b>	Please contact Lisa Mechem, DVM, at 385-454-5471.

**WASTE MANAGEMENT AND RADIATION CONTROL BOARD**  
**Executive Summary**  
**REQUEST FOR A SITE-SPECIFIC TREATMENT VARIANCE**  
**EnergySolutions, LLC**  
**June 8, 2023**

<p><b>What is the issue before the Board?</b></p>	<p>On April 18, 2023, EnergySolutions, LLC submitted a request to the Director of the Division of Waste Management and Radiation Control for a one-time site-specific treatment variance from the Utah Hazardous Waste Management Rules. EnergySolutions seeks authorization to receive an exemption from the treatment standards described in Utah Administrative Code (UAC) R315-268-40(a)(2) for uranium extraction process residuals encased in cement for macroencapsulation.</p>
<p><b>What is the historical background or context for this issue?</b></p>	<p>EnergySolutions requests approval to receive an exemption from the treatment standards described in Utah Administrative Code (UAC) R315-268-40(a)(2) for uranium extraction process residuals encased in cement that retain hazardous waste codes D004 (arsenic); D005 (barium); D006 (cadmium); D007 (chromium) D008 (Lead); D010 (Selenium); D011 (Silver); D030 (2,4-dinitrotolunene); D032 (hexachlorobenzene); D033 (hexachlorobutadiene) and F001, F002, and F005 (spent solvents) for macroencapsulation. All other required treatment standards associated with the waste will be met prior to disposal.</p> <p>This variance is being requested for approximately 2,100 cubic feet of cemented uranium extraction process residuals as part of uranium recovery processes at the generator’s facility. The residual waste from each of these processes is collected in small cans (~ 2 ½ gallons each) and stored at the generator’s facility. The process residuals within the cans have been characterized through a random sampling and analysis process. At the beginning of this campaign, approximately 2,000 cans of process residues were collected and stored by the generator. The process is ongoing and additional cans are being generated every year. Further, due to safety concerns, some of the cans are being split prior to the repackaging process described below; thereby generating more total material for disposal.</p> <p>F-listed solvent codes within this waste are derived from rags that are burned in a furnace in order to recover the uranium present within them. None of the F-listed constituents were present above their respective treatment standard concentrations within the random characterization samples of the process residues. The random characterization samples were also analyzed for metals using the Toxicity Characteristic Leaching Procedure (TCLP). These samples detected elevated concentrations of barium (up to 6,740 mg/L TCLP), cadmium (up to 16.4 mg/L TCLP), chromium (up to 15.2 mg/L TCLP), and lead (up to 10.5 mg/L TCLP).</p>

Based on these elevated metal concentrations, the characteristic waste codes D005, D006, D007, and D008 were applied to the process residues. Slightly elevated concentrations of arsenic (D004), selenium (D010), silver (D011), 2,4-dinitrotoluene (D030), hexachlorobenzene (D032) and hexachlorobutadiene (D033) were also detected in separate analyses. The residue may potentially contain these codes also.

The uranium content within the process residues is enriched. From a health and safety standpoint, the enrichment makes the waste more hazardous to employees managing the waste. Further, the enriched material has increased security concerns and must be managed appropriately. To ensure the enriched uranium concentration limits required for worker safety, security, and transportation of this waste are met, appropriate packaging procedures were created and are currently being utilized at the generator's facility. These packaging procedures include repackaging the cans into 16-gallon drums and filling the void spaces with cement; formal treatment for the elevated metals concentrations is not performed during this process. The generator has assessed other options, including treatment for the hazardous constituents; however, additional processing introduced unacceptable hazards from a health and safety and security viewpoint. Additionally, the waste within the cans is inherently safe from a criticality aspect and the generator concluded that it is unwise to perform extra processing that could potentially change this aspect. Furthermore, encasing enriched uranium within concrete is the preferred method of stabilization as recommended by the Nuclear Regulatory Commission (NRC).

The waste material packaged in these 16-gallon monolithic forms is inherently safe and is the form that will be shipped and received at the *EnergySolutions* Clive facility. The characteristic hazardous waste codes associated with the process residues have numerical concentration-based treatment standards based upon the leachability of the contaminants. Treatment of the monolithic form for these concentration-based treatment standards would entail a process that includes shredding of the monolith followed by mixing with a stabilizing reagent in a permitted mixer. Both steps could mobilize the enriched uranium and possibly cause airborne contamination, increasing the potential for releases to the environment as well as the potential for personnel exposure; thereby violating radiation protection (ALARA – As Low as Reasonably Achievable) principles. Also, the shredding of the solidified uranium ash results in a more accessible form of enriched uranium with potential security ramifications.

*EnergySolutions'* proposes to macroencapsulate the waste, thereby isolating the waste from potential leaching media. Macroencapsulation is a permitted process utilized at the Clive facility that significantly reduces the potential for migration (leaching) of waste.

Macroencapsulation requires less handling of the waste and creates a waste form for disposal that is protective of human health and the environment. Macroencapsulation also adds a further level of security restricting access to the enriched uranium.

	<p>EnergySolutions will manage this waste as debris and final disposal of the waste will occur in the Mixed Waste Disposal Cell at the EnergySolutions Mixed Waste Facility.</p> <p>A notice for public comment was published in the <i>Salt Lake Tribune</i>, the <i>Deseret News</i>, and the <i>Tooele County Transcript Bulletin</i> on April 26, 2023. The comment period began April 27, 2023 and ended May 26, 2023. No comments were received.</p>
<b>What is the governing statutory or regulatory citation?</b>	<p>Variances are provided for in 19-6-111 of the Utah Solid and Hazardous Waste Act. This is a one-time site-specific variance from an applicable treatment standard as allowed by R315-268-44 of the Utah Administrative Code.</p>
<b>Is Board action required?</b>	<p>Yes, this is an action item before the Board. The Variance Request was presented to the Board on May 11, 2023.</p>
<b>What is the Division/Director's recommendation?</b>	<p>The Director recommends approval of this variance request. The Director's recommendation is based on the following findings: the proposed alternative treatment method meets the regulatory basis for a variance and will be as safe to human health and the environment as the required method.</p>
<b>Where can more information be obtained?</b>	<p>For technical questions, please contact Tyler Hegburg (385) 622-1875. For legal questions, please contact Bret Randall at (801) 536-0284.</p> <p><b>EnergySolutions request for a site-specific treatment variance for uranium extraction process residuals encased in cement for macroencapsulation was provided in the May 11, 2023 Board's packet (DSHW-2023-004303).</b></p>

DSHW-2023-004885

**WASTE MANAGEMENT AND RADIATION CONTROL BOARD**  
**Executive Summary**  
**REQUEST FOR A SITE-SPECIFIC TREATMENT VARIANCE**  
**EnergySolutions, LLC**  
**June 8, 2023**

<p><b>What is the issue before the Board?</b></p>	<p>On April 11, 2023, EnergySolutions, LLC submitted a request to the Director of the Division of Waste Management and Radiation Control for a one-time site-specific treatment variance from the Utah Hazardous Waste Management Rules. EnergySolutions seeks authorization to receive an exemption from Utah Administrative Code (UAC) R315-268-40 and UAC R315-268-45 for the direct macroencapsulation treatment of approximately 1200 lbs. of lithium and lithium-ion batteries.</p>
<p><b>What is the historical background or context for this issue?</b></p>	<p>Lithium and lithium-ion batteries typically exhibit the hazardous characteristics of ignitability (D001) and reactivity (D003).</p> <p>Regulations in UAC R315-268-40 (40 CFR 268.40, 2015 Edition, incorporated by reference) require that these characteristic hazards be deactivated to remove the characteristic prior to land disposal. As an alternative, UAC R315-268-45 allows hazardous debris to be treated using an immobilization technology (e.g., macroencapsulation). However, the Environmental Protection Agency (EPA) has ruled that intact batteries are containers and not considered debris. Furthermore, the definition of macroencapsulation in UAC R315-268-42 states that “Macroencapsulation specifically does not include any material that would be classified as a tank or container.”</p> <p>In order to meet the regulatory standards described above, lithium and lithium-ion batteries would need to be shredded and mixed with chemicals to deactivate them; or punctured (and then considered debris) to macroencapsulate them. Both activities (shredding and puncturing) severely agitate the waste and would expose the reactive portion of the waste to open air which could cause an adverse reaction or explosion. Although this type of waste management is possible, from a safety and health standpoint, it is inappropriate.</p> <p>EnergySolutions proposes to manage this waste by directly macroencapsulating the intact batteries. Macroencapsulation is a permitted treatment technology that isolates hazardous waste from the environment, eliminating the potential for harmful reactions from exposure to the environment. Macroencapsulation requires less handling of the waste and creates a waste form for disposal that is protective of human health and the environment.</p> <p>Final disposal of the waste will occur in the Mixed Waste Disposal Cell at the EnergySolutions Mixed Waste Facility.</p>

	<p>A notice for public comment was published in the <i>Salt Lake Tribune</i>, the <i>Deseret News</i> and the <i>Tooele Transcript Bulletin</i> on April 26, 2023. The comment period began April 27, 2023 and ended May 26, 2023. No comments were received.</p>
<p><b>What is the governing statutory or regulatory citation?</b></p>	<p>Variances are provided for in 19-6-111 of the Utah Solid and Hazardous Waste Act. This is a one-time site-specific variance from an applicable treatment standard as allowed by R315-268-44 of the Utah Administrative Code.</p>
<p><b>Is Board action required?</b></p>	<p>Yes, this is an action item before the Board. The Variance request was presented to the Board as an information item during the May 11, 2023 Board meeting.</p>
<p><b>What is the Division/Director's recommendation?</b></p>	<p>The Director recommends approval of this variance request. The Director's recommendation is based on the following findings: the proposed alternative treatment method meets the regulatory basis for a variance and will be as safe to human health and the environment as the required method.</p>
<p><b>Where can more information be obtained?</b></p>	<p>For technical questions, please contact Tyler Hegburg (385) 622-1875. For legal questions, please contact Bret Randall at (801) 536-0284.</p> <p><b>EnergySolutions request for a site-specific treatment variance for the macroencapsulation of lithium and lithium-ion batteries was provided in the May 11, 2023 Board's packet (DSHW-2023-004303).</b></p>

DSHW-2023-004910