

<u>SUBJECT</u>		<u>DATE</u>
1056. Hazardous Waste Tanks and the Less than 90-Day Accumulation Time Limit	ENCORE	APR 23, 2015
1057. Decharacterized RCRA Waste - Manifesting and LDR Reporting	ENCORE	APR 30, 2015
1058. Decharacterized Hazardous Waste Listed Solely for Non-Toxic Characteristics	ENCORE	MAY 7, 2015
1059. Decharacterized Wastes, <90-Day Accumulation Time Limits and LDR Storage Prohibition	ENCORE	MAY 14, 2015
1060. Decharacterized Wastes and the LDR Dilution Prohibition	ENCORE	MAY 21, 2015
1061. Hazardous Debris Macroencapsulation and Size Reduction	ENCORE	MAY 28, 2015
1062. Universal Waste Lamps and Prohibition on Crushing		JUN 4, 2015
1063. F003 Listed Hazardous Waste and the 10% Rule	ENCORE	JUN 11, 2015
1064. F001 - F005 Listed Hazardous Waste and the 10% Rule	ENCORE	JUN 18, 2015
1065. Macroencapsulation of Hazardous Debris and Presence of Free Liquids	ENCORE	JUN 25, 2015
1066. DOT Shipping of Damaged, Defective or Recalled Lithium Batteries		JUL 1, 2015
1067. Used Oil Eligibility for Animal and Vegetable Oils	ENCORE	JUL 9, 2015
1068. Used Oil Eligibility for Petroleum Oils Mixed with Animal or Vegetable Oils		JUL 16, 2015
1069. Conditioned Exclusion for Listed Hazardous Waste Debris Treated via Extraction/Destruction	ENCORE	JUL 23, 2015
1070. Conditioned Exclusion for Characteristic Debris Treated via Immobilization		JUL 30, 2015
1071. RCRA Personnel Training and Classroom Training vs. Online Training		AUG 6, 2015
1072. PCB Decontamination Standards with No Decontamination Performed		AUG 13, 2015
1073. PCB Manifest Exceptions a.k.a. When is a PCB Manifest Not Required	ENCORE	AUG 19, 2015
1074. PCB Manifest Relief a.k.a. When is a PCB Manifest Not Required – The Sequel		AUG 27, 2015
1075. Hazardous Debris and Radioactively Contaminated Cadmium Batteries	ENCORE	SEP 3, 2015
1076. Hazardous Debris and Radioactively Contaminated Lead Acid Batteries	ENCORE	SEP 10, 2015

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## TWO MINUTE TRAINING

**TO:** CH2M HILL PLATEAU REMEDIATION COMPANY

**FROM:** PAUL W. MARTIN, RCRA Subject Matter Expert  
CHPRC Environmental Protection, Hanford, WA

**SUBJECT:** HAZARDOUS DEBRIS AND RADIOACTIVELY CONTAMINATED LEAD ACID BATTERIES

**DATE:** SEPTEMBER 10, 2015

<u>CHPRC Projects</u>	<u>CH PRC - Env. Protection</u>	<u>MSA</u>	<u>Hanford Laboratories</u>	<u>Other Hanford Contractors</u>	<u>Other Hanford Contractors</u>
Richard Austin Tania Bates Ty Blackford Bob Cathel Rene Catlow Richard Clinton Larry Cole John Dent Brian Dixon Eric Erpenbeck Stuart Hildreth Mike Jennings Stephanie Johansen Jeanne Kisielnicki Melvin Lakes Jim McGrogan Stuart Mortensen Anthony Nagel Dean Nester Dave Richards Phil Sheely Connie Simiele Roni Swan Michael Waters Jeff Widney	Brett Barnes Ron Brunke Bill Cox Laura Cusack Lorna Dittmer Rick Engelmann Ted Hopkins Jim Leary Dale McKenney Jon McKibben Rick Oldham Linda Petersen Fred Ruck Jennie Seaver Ray Swenson Wayne Toebe Lee Tuott Daniel Turlington Dave Watson Joel Williams	Jerry Cammann Jeff Ehlis Garin Erickson Lori Fritz Panfilo Gonzales Jr. Dashia Huff Mark Kamberg Edwin Lamm Candice Marple Saul Martinez Jon Perry Thomas Pysto Christina Robison Don Rokkan Lana Strickling Lou Upton	(TBD)  <u>DOE RL, ORP, WIPP</u>  Mary Beth Burandt Cliff Clark Mike Collins Tony McKarns Ellen Mattlin Greg Sinton Scott Stubblebine	Bill Bachmann Dean Baker Scott Baker Lucinda Borneman Paul Crane Tina Crane Greta Davis Jeff DeLine Ron Del Mar John Dorian Mark Ellefson Darrin Faulk Joe Fritts Tom Gilmore Rob Gregory Gene Grohs James Hamilton Andy Hobbs Ryan Johnson Dan Kimball Megan Lerchen Richard Lipinski Charles (Mike) Lowery Michael Madison Terri Mars Cary Martin Grant McCalmant Steve Metzger Tony Miskho Matt Mills Tom Moon Chuck Mulkey Mandy Pascual Kirk Peterson Jean Quigley	Dan Saueressig Merrie Schilperoort Joelle Moss Glen Triner Greg Varljen Julie Waddoups Kyle Webster Jeff Westcott Ted Wooley

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## TWO MINUTE TRAINING

**SUBJECT:** Hazardous Debris and Radioactively Contaminated Lead Acid Batteries

**Q:** Last week we learned that radioactively contaminated cadmium or mercury batteries could be macroencapsulated as debris per the waste specific treatment standards at 40 CFR 268.40. But what if the radioactive batteries were lead acid? Can mixtures of debris and drained radioactively contaminated lead acid batteries be managed as debris under 268.45?

**A:** Lead acid batteries have two strikes against them in terms of the alternative standards of debris at 40 CFR 268.45. First, the drained lead acid batteries are still considered RCRA containers and if the batteries are intact and mixed with debris, the intact lead acid batteries would have to be removed from the debris, if the generator wanted to manage the remaining debris per the 268.45 standards. Secondly, the lead acid batteries have a specified technology treatment standard of thermal recovery of lead in secondary smelters (RLEAD); or if radioactively contaminated a specified technology treatment standard for radioactive lead solids of macroencapsulation (MACRO). Per an EPA memo dated August 9, 2001, the Department of Energy (DOE) asked EPA which LDR treatment standard should be applied to radioactively contaminated lead acid batteries: the LDR treatment standard that requires lead recovery (which is not appropriate for batteries that are radioactively contaminated), or the LDR treatment standard for radioactive lead solids (shielding and other forms of elemental lead) that requires macroencapsulation (MACRO) per 40 CFR 268.42. In the memo EPA stated:

*"We agree with you that the appropriate treatment standard is macroencapsulation. This treatment standard applies not only to lead shielding, but to other elemental forms of lead. Thus, there is latitude in the treatment standard to permit its application to radioactive lead acid batteries. We also believe that macroencapsulation is appropriate because it would require less worker handling than lead recovery, and we want to minimize worker exposure to radioactivity. Furthermore, lead recovery of these batteries would radioactively contaminate the entire mass of lead that was recovered, making it unusable."*

Also note that MACROencapsulation for radioactive lead solids as defined at 40 CFR 268.42 is slightly, but significantly different from macroencapsulation for hazardous debris as defined at 40 CFR 268.45. The major difference between the two definitions is that MACROencapsulation under 268.42 specifically does not allow macroencapsulation via the use of tanks or containers as defined at 40 CFR 260.10, whereas macroencapsulation under 268.45 does allow macroencapsulation via tanks or containers, e.g., debris can be disposed in stainless steel drums.

Therefore, a mixture of debris and drained radioactively contaminated lead acid batteries could be MACROencapsulated as defined at 268.42 to meet the LDR treatment standards for radioactive lead solids and for debris. However, the MACROencapsulation would have to be in the form of surface coating materials such as polymeric organics (e.g., resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media, Tanks or containers could not be used since this is not macroencapsulation as defined at 40 CFR 268.45.

### SUMMARY:

- A mixture of debris and drained radioactively contaminated lead acid batteries could be MACROencapsulated as radioactive lead solids per 40 CFR 268.42 to meet LDR treatment standards for both the batteries and the debris.
- The 268.42 and 268.45 definitions of macroencapsulation are slightly different, and per 40 CFR 268.42 a tank or container cannot be used to macroencapsulate debris such as radioactively contaminated lead acid batteries.
- If the mixture of debris and batteries is MACROencapsulated via surface coatings or inert jackets, the LDR treatment standards for both radioactive lead solids and debris are met.

Excerpts from 40 CFR 268.40, 268.42 and 268.45 are attached to the e-mail. If you have any questions, please contact me at "Paul\_W\_Martin@rl.gov" or at (509) 376-6620.

**FROM:** Paul W. Martin

**DATE:** 9/10/15

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## TWO MINUTE TRAINING - ATTACHMENT

**SUBJECT:** Hazardous Debris and Radioactively Contaminated Lead Acid Batteries

### 40 CFR 268.40 Applicability of treatment standards / Treatment Standards for Hazardous Wastes

Regulated hazardous constituent				Wastewaters	Nonwastewaters
Waste Code	Waste Description and treatment/Regulatory Subcategory	Common Name	CAS#	Concentration in mg/L; or Technology Code	Concentration in mg/kg unless noted as "mg/L TCLP" or Technology Code
D008	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for lead based on the toxicity characteristic leaching procedure (TCLP) in SW846.	Lead	7439-92-1	0.69 and meet §268.48 standards	0.75 mg/L TCLP and meet §268.48 standards
	Lead Acid Batteries Subcategory (Note: This standard only applies to lead acid batteries that are identified as RCRA hazardous wastes and that are not excluded elsewhere from regulation under the land disposal restrictions of 40 CFR 268 or exempted under other EPA regulations (see 40 CFR 266.80). This subcategory consists of nonwastewaters only.)			NA	RLEAD <i>[Thermal recovery of lead in secondary lead smelters.]</i>
	Radioactive Lead Solids Subcategory (Note: These lead solids include, but are not limited to, all forms of lead shielding and other elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organo-lead materials that can be incinerated and stabilized as ash. This subcategory consists of Nonwastewaters only.)			NA	MACRO

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## TWO MINUTE TRAINING - ATTACHMENT

**SUBJECT:** Hazardous Debris and Radioactively Contaminated Lead Acid Batteries

### 40 CFR 268.42 Treatment standards expressed as specified technologies

**MACRO:** Macroencapsulation with surface coating materials such as polymeric organics (e.g., resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media.

Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 260.10.

**RLEAD:** Thermal recovery of lead in secondary lead smelters.

### 40 CFR 268.45 Treatment standards for hazardous debris / Table 1.--Alternative Treatment Standards For Hazardous Debris

Technology description C. Immobilization	Performance and/or design and operating standard	Contaminant restrictions
<b>1. Macroencapsulation:</b> Application of surface coating materials such as polymeric organics (e.g., resins and plastics) or use of a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media.*	Encapsulating material must completely encapsulate debris and be resistant to degradation by the debris and its contaminants and materials into which it may come into contact after placement (leachate, other waste, microbes).	None.

*\* Note the lack of prohibitive wording about not using tanks or containers to achieve macroencapsulation. PWMartin comment*

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