SUBJECT	DATE
SUBJECT	_ <u>_</u> _

1056. 1057. 1058.	Hazardous Waste Tanks and the Less than 90-Day Accumulation Time Limit Decharacterized RCRA Waste - Manifesting and LDR Reporting Decharacterized Hazardous Waste Assessed for Non-Toxic Characteristics	ENCORE ENCORE ENCORE	APR 23, 2015 APR 30, 2015 MAY 7, 2015
1059. 1060.	Decharacterized Wastes, <90-Day Accumulation Time Limits and LDR Storage Prohibition Decharacterized Wastes and the LDR Dilution Prohibition	ENCORE ENCORE	MAY 14, 2015 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

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 CADMIUM BATTERIES

DATE: SEPTEMBER 3, 2015

	1	1	11		
CHPRC Projects	CH PRC - Env.	<u>MSA</u>	Hanford Laboratories	Other Hanford	Other Hanford
	Protection			Contractors	Contractors
Richard Austin		Jerry Cammann	(TBD)		
Tania Bates	Brett Barnes	Jeff Ehlis		Bill Bachmann	Dan Saueressig
Ty Blackford	Ron Brunke	Garin Erickson	DOE RL, ORP, WIPP	Dean Baker	Merrie Schilperoort
Bob Cathel	Bill Cox	Lori Fritz		Scott Baker	Joelle Moss
Rene Catlow	Laura Cusack	Panfilo Gonzales Jr.	Mary Beth Burandt	Lucinda Borneman	Glen Triner
Richard Clinton	Lorna Dittmer	Dashia Huff	Cliff Clark	Paul Crane	Greg Varljen
Larry Cole	Rick Engelmann	Mark Kamberg	Mike Collins	Tina Crane	Julie Waddoups
John Dent	Ted Hopkins	Edwin Lamm	Tony McKarns	Greta Davis	Kyle Webster
Brian Dixon	Jim Leary	Candice Marple	Ellen Mattlin	Jeff DeLine	Jeff Westcott
Eric Erpenbeck	Dale McKenney	Saul Martinez	Greg Sinton	Ron Del Mar	Ted Wooley
Stuart Hildreth	Jon McKibben	Jon Perry	Scott Stubblebine	John Dorian	
Mike Jennings	Rick Oldham	Thomas Pysto		Mark Ellefson	
Stephanie Johansen	Linda Petersen	Christina Robison		Darrin Faulk	
Jeanne Kisielnicki	Fred Ruck	Don Rokkan		Joe Fritts	
Melvin Lakes	Jennie Seaver	Lana Strickling		Tom Gilmore	
Jim McGrogan	Ray Swenson	Lou Upton		Rob Gregory	
Stuart Mortensen	Wayne Toebe			Gene Grohs	
Anthony Nagel	Lee Tuott			James Hamilton	
Dean Nester	Daniel Turlington			Andy Hobbs	
Dave Richards	Dave Watson			Ryan Johnson	
Phil Sheely	Joel Williams			Dan Kimball	
Connie Simiele				Megan Lerchen	
Roni Swan				Richard Lipinski	
Michael Waters				Charles (Mike) Lowery	
Jeff Widney				Michael Madison	
				Terri Mars	
				Cary Martin	
				Grant McCalmant	
				Steve Metzger	
				Tony Miskho	
				Matt Mills	
				Tom Moon	
				Chuck Mulkey	
				Mandy Pascual	
				Kirk Peterson	
				Jean Quigley	

TWO MINUTE TRAINING

SUBJECT: Hazardous Debris and Radioactively Contaminated Cadmium Batteries

- Q: A customer has a debris mixture consisting of primarily debris material (>50%) and a lesser portion of radioactively contaminated cadmium batteries (RCBs). The customer would like to manage the mixture per the alternative treatment standards for debris found at 40 CFR 268.45. Can a mixture of debris and radioactively contaminated cadmium batteries (RCBs) be managed under the alternative treatment standards of debris?
- **A:** Yes but with (interpretative) provisions.

If the waste mixture is primarily debris with some RCBs, the waste mixture could be managed under 40 CFR 268.45, "Treatment standards for hazardous debris" and use any appropriate destruction, extraction, or immobilization technology listed in Table 1 of 40 CFR 268.45. A limiting factor would be the radioactive contamination which could render most, if not all, of the available destruction or extraction technologies as technically inappropriate. As an example, a treater would not want to use physical, chemical or thermal extraction or thermal destruction technologies on RCBs due to the likely spread of radioactive contamination to workers and the environment. However, if the treater could address the radioactive issues and meet any contaminant restrictions noted in Table 1 of 40 CFR 268.45, any technically appropriate debris treatment method could be used for this mixture of primarily debris with some RCBs. The most practical treatment option would be an immobilization technology such as macroencapsulation, microencapsulation, or sealing.

On the other hand, if the waste mixture is primarily RCBs and some debris, the waste would require management under 40 CFR 268.40, Table "Treatment Standards for Hazardous Waste" and the waste-specific treatment standards for D006 RCBs which is "Macroencapsulation in accordance with 40 CFR 268.45". The limiting factor in this scenario is that the mixture of primarily RCBs and some debris <u>must</u> be treated specifically via macroencapsulation. Other alternative immobilization treatment standards of debris such as microencapsulation or sealing, or destruction or extraction technologies, would not be available.

Therefore, if the mixture is primarily debris and some RCBs, any appropriate alternative treatment standard of debris could be used. Most likely that would be an immobilization technology of macroencapsulation, microencapsulation or sealing. However, if the mixture is primarily RCBs and some debris, only the alternative treatment standard of debris for macroencapsulation could be used.

[Note that the above concepts would also apply to radioactively contaminated mercury and silver batteries.]

SUMMARY:

- Radioactive cadmium batteries can be managed under the alternative treatment standards for debris with provisions.
- If the waste mixture is primarily debris and some radioactively contaminated cadmium batteries, any technically appropriate alternative treatment standard of debris under 40 CFR 268.45 can be used.
- If the waste mixture is primarily radioactively contaminated cadmium batteries and some debris, the treatment standard under 40 CFR 268.40 which references the 40 CFR 268.45 alternative treatment standard of debris for macroencapsulation, must be used.

Excerpts from 40 CFR 268.40 and 40 CFR 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:** 9/3/15 **FILE:** c:\...\2MT\2015\090315.rtf **PG:** 1

TWO MINUTE TRAINING - ATTACHMENT

SUBJECT: Hazardous Debris and Radioactively Contaminated Cadmium 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
D006	Wastes that exhibit, or are expected to exhibit, the characteristic of toxicity for cadmium based on the toxicity characteristic leaching procedure (TCLP) in SW846.	Cadmium	7440-43-9	0.69 and meet \$268.48 standards	0.11 mg/L TCLP and meet §268.48 standards
	Cadmium Containing Batteries Subcategory. (Note: This subcategory consists of nonwastewaters only).			NA	RTHRM [Thermal recovery of metals or inorganics from nonwastewaters in industrial furnaces.]
	Radioactively contaminated cadmium containing batteries. (Note: This subcategory consists of nonwastewaters only).			NA	Macroencapsulation in accordance with 40 CFR 268.45.

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
1. Macroencapsulation: 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 materialist 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.
2. Microencapsulation: Stabilization of the debris with the following reagents (or waste reagents) such that the leachability of the hazardous contaminants is reduced: (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust). Reagents (e.g., iron salts, silicates, and clays) may be added to enhance the set/cure time and/or compressive strength, or to reduce the leachability of the hazardous constituents.	Leachability of the hazardous contaminants must be reduced.	None.
3. Sealing: Application of an appropriate material which adheres tightly to the debris surface to avoid exposure of the surface to potential leaching media. When necessary to effectively seal the surface, sealing entails pretreatment of the debris surface to remove foreign matter and to clean and roughen the surface. Sealing materials include epoxy, silicone, and urethane compounds, but paint may not be used as a sealant.	Sealing must avoid exposure of the debris surface to potential leaching media and sealant must 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.

FROM: Paul W. Martin **DATE:** 9/3/15 **FILE:** c:\...\2MT\2015\090315.rtf **PG:** 2