

<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
1077. Mercury Wet Cell Batteries - Debris or Not Debris	ENCORE	SEP 17, 2015
1078. Hazardous Debris and Non-Radioactive Lead Acid Batteries		SEP 24, 2015
1079. Unused Paraformaldehyde - U Listed Hazardous Waste or Not?	ENCORE	OCT 1, 2015
1080. CAS Numbers and the Hazardous Waste "U" and "P" Listings	ENCORE	OCT 8, 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: CAS NUMBERS AND THE HAZARDOUS WASTE "U" AND "P" LISTINGS

DATE: OCTOBER 7, 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: CAS Numbers and the Hazardous Waste "U" and "P" Listings

Q: A customer has a three bottles of unused xylene isomers for discard. One bottle contains the isomer *meta*-xylene with the chemical abstract services number (CAS#) of 108-38-3. The other bottle contains *ortho*-xylene with the CAS# of 95-47-6. The last bottle contains *para*-xylene with the CAS# of 106-42-3. The customer reviews the hazardous waste U listings and notes that generic "Xylene" is present on the U list as U239 with a CAS# of 1330-20-7. None of the specific xylene isomers or their respective CAS#'s are found in the U list table. Since none of the CAS#s for the three bottles of unused xylene isomers are present in the U listings, are these chemicals not U listed dangerous or hazardous wastes?

A: [WAC 173-303-081](#), "Discarded Chemical Products", [\[40 CFR 261.33\(e\) and \(f\)\]](#), basically states that a waste will be designated as a U or P listed dangerous waste if it is an on or off-specification commercial chemical product or manufacturing chemical intermediate that has or would have the generic name listed in the U or P listings. Concerning the customer's waste, this means that even though the specific isomers of xylene (*m*-, *o*-, and *p*-xylene) are not found in the U listing by specific CAS#, the generic U239 listing for "Xylene" would include those isomers.

As further clarification, an EPA RCRA Hotline memo dated September 1995 ([RO 13760](#)), stated:

"EPA may choose to include all isomers of a chemical on the P or U list by listing the mixed isomer or generic name of the compound. If the generic mixed isomer name and CAS number of a compound appear on the P or U lists, then any individual isomers of that compound and all mixtures of isomers of that compound meet the listing description."

Concerning CAS#'s applicability to specific U and P listings, an EPA memo dated August 24, 1992 ([RO 11687](#)), stated:

"Chemical Abstract Numbers (CAS) were added "as an identification aid" to the tables in §261.33 (51 FR 28296). The hazardous waste codes of §261.33(e) [P listings] and (f) [U listings] apply to all commercial chemical products or manufacturing chemical intermediates having the generic name listed (§261.33(a))."

This means that if a chemical's CAS# does not correspond to a specific CAS#s in the U or P list, it does not necessarily mean that a chemical is not U or P listed. The generic chemical may have multiple isomers and those individual isomers would also be U or P listed, even if the CAS#s do not necessarily correspond.

Therefore, each of the customer's bottles of unused *m*-xylene (108-38-3), *o*-xylene (95-47-6), and *p*-xylene (CAS# 106-42-3) are U239 listed dangerous wastes for the generic listing of "Xylene" (1330-20-7).

SUMMARY:

- The U and P listings include generic names of commercial chemical products.
- CAS#s are "identification aids" and do not always correspond to U and P listed dangerous wastes.
- Isomers of generic U or P listed dangerous waste are also U or P listed dangerous wastes.

The EPA memos dated September 1995 and August 24, 1992 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: 10/8/15

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TWO MINUTE TRAINING - ATTACHMENT

SUBJECT: CAS Numbers and the Hazardous Waste "U" and "P" Listings

Faxback 13760

9444.1995(02)

HOTLINE QUESTIONS AND ANSWERS

September 1995

1. Isomers of P- and U-Listed Wastes

The P and U lists at 40 CFR 261.33(e) and (f) identify chemicals which, when discarded as unused commercial chemical products, are listed hazardous wastes. If a particular P- or U-listed chemical has many isomers, are those isomers listed hazardous wastes as well?

Many chemicals on the P and U list have multiple isomers. Isomers are compounds made up of the same atoms in the same proportions, but which have different chemical structures and potentially different chemical properties. These different forms of a chemical can be identified precisely and given unique Chemical Abstract Service (CAS) numbers. For example, toluenediamine (C₇H₁₃N₂) may have many isomers, including toluene-2-4-diamine (CAS# 95-80-7) and toluene-2-6-diamine (CAS# 823-40-5), that differ structurally. Chemicals also may be identified as "mixed isomers." Mixed isomers include all mixtures of individual isomers of a compound. For instance, the generic mixed isomer designation of toluenediamine (CAS# 25376-45-8) includes mixtures of the isomers toluene-2-4-diamine and toluene-2-6-diamine.

EPA may choose to include all isomers of a chemical on the P or U list by listing the mixed isomer or generic name of the compound. If the generic mixed isomer name and CAS number of a compound appear on the P or U lists, then any individual isomers of that compound and all mixtures of isomers of that compound meet the listing description. Thus, when discarded in its commercial chemical product form, the isomer toluene-2-4-diamine (CAS# 95-80-7) is a listed hazardous waste, because the generic mixed isomer toluenediamine (CAS# 25376-45-8) is listed as U221.

EPA may also choose to designate only specific isomers of a chemical as P- or U-listed hazardous wastes. When a particular isomer is designated, then only that isomer is covered by that particular listing. For example, U140 covers isobutyl alcohol (CAS# 78-83-1), an isomer of butanol. Since the U140 listing includes only isobutyl alcohol, other isomers of butanol are not U140 (although they may be listed elsewhere).

FROM: Paul W. Martin

DATE: 10/8/15

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TWO MINUTE TRAINING - ATTACHMENT

SUBJECT: CAS Numbers and the Hazardous Waste "U" and "P" Listings

Faxback 11687

9444.1992(02)

United States Environmental Protection Agency
Washington, D.C. 20460
Office of Solid Waste and Emergency Response

August 24, 1992

Kathryn D. Lynnes
Director of Environmental Compliance
BHL Consultants, Ltd.
2 Fountain Place, Suite 350
Grand Rapids, Michigan 49503

Dear Ms. Lynnes:

I am writing in response to your inquiry concerning the regulation of the commercial chemical product cyclophosphamide as Hazardous Waste No., U058.

Cyclophosphamide is a hygroscopic substance and readily hydrates to cyclophosphamide monohydrate (CAS# 6055-19-2) on exposure to moisture. Storage in air tight containers is recommended. IARC cancer review indicates sufficient evidence of human carcinogenicity for both forms of the chemical. The carcinogenicity of cyclophosphamide was the basis for hazardous waste regulation.

As you are aware, 40 CFR 261.33(f) assigns hazardous waste number U058 to cyclophosphamide (CAS# 50-18-0). Cyclophosphamide is also listed as a hazardous constituent in 40 CFR 261 Appendix VIII. Chemical Abstract Numbers (CAS) were added "as an identification aid" to the tables in §261.33 (51 FR 28296). The hazardous waste codes of §261.33(e) and (f) apply to all commercial chemical products or manufacturing chemical intermediates having the generic name listed (§261.33(a)).

In the case of cyclophosphamide, separate CAS numbers are assigned to anhydrous cyclophosphamide (CAS# 50-18-0) and cyclophosphamide monohydrate (CAS# 6055-19-2) by the abstract service. However, both the anhydrous cyclophosphamide and cyclophosphamide monohydrate are generically referenced as simply "cyclophosphamide" and are regulated as Hazardous Waste No. U058.

Sincerely,

Edwin F. Abrams, Chief
Waste Identification Branch

FROM: Paul W. Martin

DATE: 10/8/15

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